GW- 71-0

GENERAL CORRESPONDENCE



DISCHARGE PLAN FOR

EL PASO NATURAL GAS COMPANY'S

CHACO PLANT

SAN JUAN COUNTY, NEW MEXICO



NOVEMBER 1991

NOV 1 8 1991 OIL CONSERVATION DIV. SANTA FE

VOLUME 1

DISCHARGE PLAN APPLICATION FOR EL PASO NATURAL GAS COMPANY'S CHACO PLANT

NOVEMBER 15, 1991

Submitted to:

NEW MEXICO OIL CONSERVATION DIVISION P.O. Box 2088 Santa Fe, New Mexico 87501

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AFFIRMATION:

"I hereby certify that I am familiar with the information contained in and submitted with this application and that such information is true, accurate and complete to the best of my knowledge and belief."

Signature

11/15/91

Date

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Larry R./Tarver, North Region Vice President

1.0 EXECUTIVE SUMMARY

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1.0 EXECUTIVE SUMMARY

El Paso Natural Gas Company's Chaco Plant discharges approximately 65,700,000 gallons of wastewater annually. The Chaco Plant is located in Section 16, T. 26 N., R. 12 W., San Juan County, near Farmington, New Mexico. More than 75 percent of the wastewater is blowdown from the plant's cooling towers, boilers and water treatment facility (non-contact wastewater). Non-contact wastewater has a TDS of approximately 1100 mg/l and during periods of normal plant operation contains no toxic hydrocarbon compounds. Wastewater which comes into contact with hydrocarbons during natural gas processing (contact wastewater) passes through an oil-water separator and then is comingled with non-contact wastewater and discharged to evaporation lagoons located north of the facility. Separated oil hydrocarbons are sold. EPNG intends to close the existing evaporation ponds and replace them with engineered, lined, evaporative lagoons. Also it will retire the existing flare pit and two "french drains".

Groundwater at the Chaco Plant is estimated to lie at a depth of approximately 220 feet below the surface (Stone et al, 1983) and is assumed to be a potable water supply.

EPNG is wholly committed to using out sound disposal practices and to this end submits this plan outlining the proposed procedures. Likewise, EPNG is committed to cooperating fully with the New Mexico Oil Conservation Division (NMOCD) in honoring requests for additional information or providing clarification of existing information related to the discharge plan.



2.0 GENERAL INFORMATION

2.1 NAME OF DISCHARGER/LEGALLY RESPONSIBLE PARTY

All correspondence regarding this discharge plan should be sent to EPNG North Region headquarters at the address below:

> Larry R. Tarver Vice President North Region El Paso Natural Gas Company P.O. Box 1492 El Paso, Texas 79978 (915) 541-5050

2.2 LOCAL REPRESENTATIVE OR CONTACT

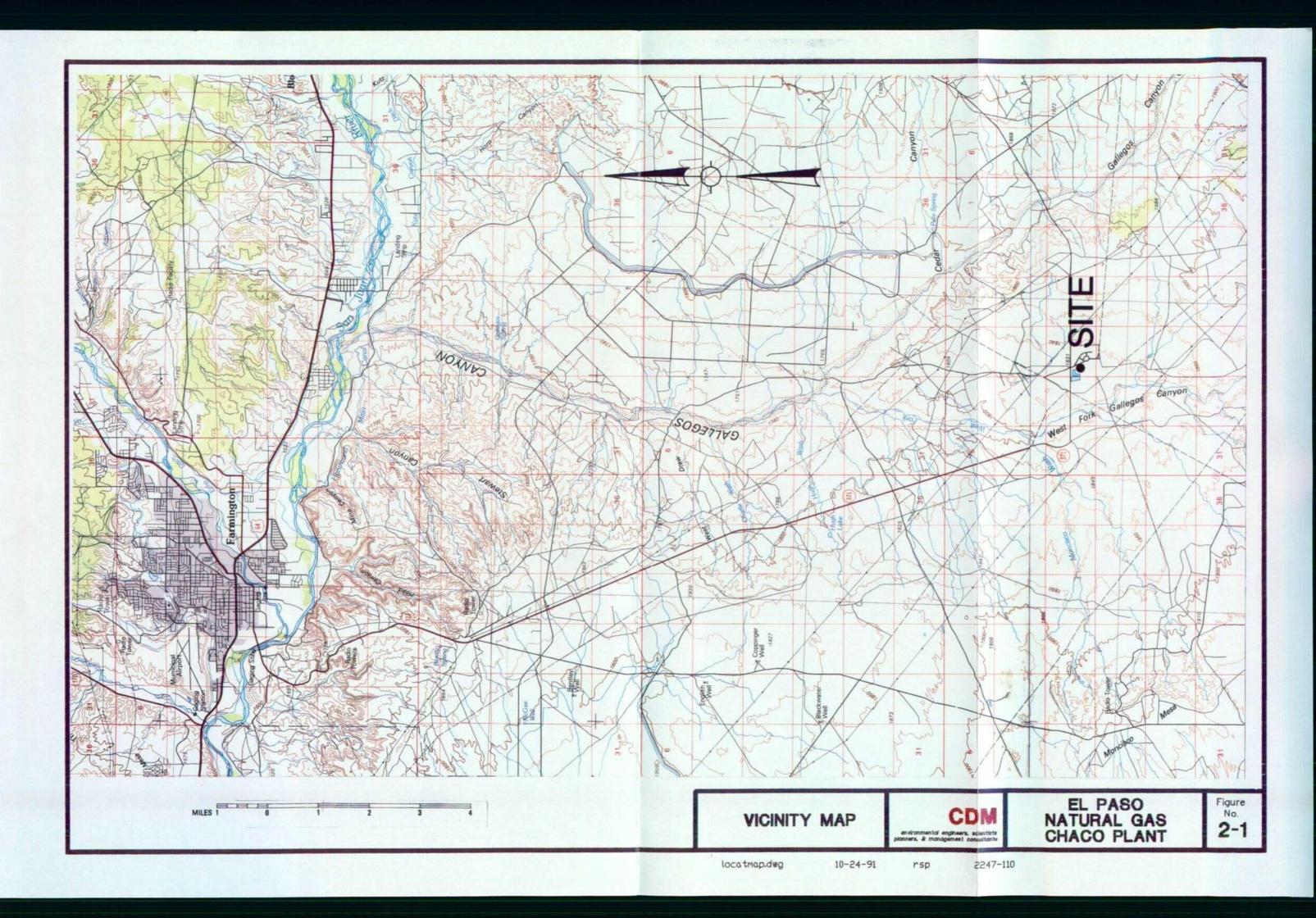
A copy of all correspondence and all questions should be directed to the North Region Manager of Compliance Engineering:

> Thomas Hutchins Manager Compliance Engineering North Region El Paso Natural Gas Company P.O. Box 1492 El Paso, Texas 79978 (915) 541-3531

2.3 LOCATION OF DISCHARGE

The Chaco Plant is located in Section 16, T. 26 N., R. 12 W., San Juan County, New Mexico, approximately 20 miles south of Farmington, New Mexico (Figure 2-1). An unpaved access road from old State Road No. 371 provides access to the plant. In addition, access is provided from a paved road which leads from New Mexico State Highway 44. An aerial photographic base map of the facility is included as Plate 2-1.

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2.4

TYPE OF NATURAL GAS OPERATION

The EPNG Chaco Plant is engaged in the compression and processing of natural gas. Presently the Chaco Plant receives approximately 250 MMCF/day of gas for compression from the Bisti, Ballard, Ojito and Lindreth Fields. This natural gas is obtained from Picture Cliff Formation, Dakota Formation, Gallup Formation, Mesa Verde Formation and the Fruitland Formation. Following compression and processing by EPNG, the gas then enters EPNG's pipelines for transmission to market. A listing of the plant facilities are provided below:

A. <u>Gas Compression Facilities</u>

1. Main engine (11-"A" Plant; 3-"B" Plant)

		<u>Sea Level</u>	Altitude
a.	Nine Cooper-Besser	mer	
	GMVC-10 Turbo	1,800	1,800
b.	Two Cooper-Besser	ner	
	GMWC-10 Turbo	3,500	3,500
c.	Three Clark TLA-1	0	,
	Turbo	3,400	3,400
d.	Two G.E. Turbines	-	
	"C" Plant (ISO)	22,280	16,117 &
e.	Total Installed		15,955
	HP (15 Units)	77,960	65,472

2. Compressors - Single Stage

- a. Cylinders Chaco "A" Plant
 4-11-1/2" X 14" for each of nine (9) GMVC-10
 3-15" X 20" for each of two (2) GMWC-10
- b. Cylinders Chaco "B" Plant 3-10-1/2" X 19" and 1-12-1/2" for each of three (3) TLA-10
- c. Compressor Unit De Lava Model 1 B 30/30 for G.E. Turbines

3. HP placed in service as follows:

"A" Plant

One 1800 HP Unit	Sept. 9, 1957
Two 1800 Hp Units	Sept. 10, 1957
One 1800 HP Unit	Sept. 13, 1957
One 1800 HP Unit	Sept. 16, 1957
One 1800 HP Unit	Sept. 17, 1957

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One 1800 HP Unit Two 3500 HP Units	Sept. 1, 1958 Sept. 1, 1958
One 1800 HP Unit	Oct. 1, 1958
One 1800 HP Unit	Feb. 25, 1963
"B" Plant	
Three 3400 HP Units	Dec. 25, 1966
"C" Plant	
One 12,00 G.E. Turbine 3,000 HP Addition	May, 1970
To Turbine	Nov. 1970
2,000 HP Addition	1404. 1970
To Turbines	July, 1971
One 17,000 HP	-
G.E. Turbine	Nov. 1971

B. <u>Recompressor Engines For Gasoline Plant Fuel</u>

1. Main Engines

		<u>Sea Level</u>	<u>Altitude</u>
a.	Two Ingersoll-Rand	8	
	SVGS-1-"A" Plant	440	440
b.	One Ingersoll-Rand		
	SVGA-10-"B" Plant	550	550
c.	One Ingersoll-Rand		
	KVGA-83-"B" Plant	: <u>880</u>	<u> </u>
d.	Total Installed		
	HP (4 Units)	2,310	2,310

2. Compressors

a. Single - Stage 4 - 5 1/2" X 12" 2 - 10" X 14"
b. Two - Stage 4 - 5 1/2" X 12" 2 - 10" X 14"

3. Horsepower placed in service as follows:

a.	Two (2) 440 HP Units	Jan. 1958
b.	One (1) 550 HP Unit	May 1967
c.	One (1) 880 HP Unit	May 1967

C. <u>Power Generation Facilities</u>

- 1. Primary power furnished through transmission facilities connecting San Juan River and Blanco Plant.
- 2. Standby power furnished by City of Farmington.

D. <u>Water Supply System</u>

- 1. Number of wells (5) located 6 1/2 miles N/E of Plant.
- 2. Pump Capacity:
 - a. Well No. 6 60 GPMb. Well No. 7 120 GPM
 - c. Well No. 8 230 GPM
 - d. Well No. 9 90 GPM
 - e. Well No. 10 90 GPM
- Two (2) 500 GPM pumps located at Blanco Reservoir No.
 2
- 4. Thirteen point six (13.6) miles of 10-3/4" water-line tied to Chaco's 12-3/4" water line (12-15-71)

E. <u>Gas Processing Facilities</u>

1. Dehydration

a.	Design
	1. "A" Plant - Stearns-Roger
	2. "B" Plant - Fish Engineering
b.	Contractors
	1. "A" Plant - Two (2) 96" I.D. X 60'
	2. "B" Plant - Three (3) 78" I.D. X 20'
c.	Туре
	1. "A" Plant - Dry Bed (Silica Gel)
	2. "B" Plant - Triethylene Glycol
d.	Capacity
	1. "A" Plant - 265 M ² CFD at 14.73 psis
	2. "B" Plant - 370 M ² CFD at 14.73 psis

- e. In Service
 - 1. "A" Plant March 1, 1958
 - 2. "B" Plant May 15, 1967
- f. Regeneration Gas Compressor One 100 HP I-R (ES-1) w/Elec. Motor

2. Gasoline Absorption

Design a. 1. "A" Plant - Stearns-Roger 2. "B" Plant - Fish Engineering b. Absorbers 1. "A" Plant - Three (3) 96" I.D. X 55' 2. "B" Plant - Three (3) 96" I.D. X 55' c. Type 1. "A" Plant - Oil Absorption 2. "B" Plant - Oil Absorption d. Capacity "A" Plant - 269 M² CFD at 14.73 psis 1. "B" Plant - 325 M² CFD at 14.73 psis 2. Liquid Products Production e. "A" Plant - 313,978 gpd 1. 2. "B" Plant - 379,147 gpd f. In Service 1. "A" Plant - March 1, 1958 2. "B" Plant - May 15, 1967 3. Revised by Fish Engr. Feb. 1972 for 45% propane recovery

F. <u>Steam Generation Facilities</u>

- 1. Boiler Plant
 - a. Two Vogt, Class VS Bentube Boiler Units
 - 1. Boiler output 65,000 lbs. steam/hr.
 - 2. Design Pressure 675 psis
 - b. One Vogt, class MWH waste heat boiler
 - 1. Boiler Output 140,000 lbs. steam/hr.
 - 2. Design Pressure 700 psis
 - c. Plant Capacity 270,000 lbs. steam/hr.

- G. Bisti No. 8 (For Bisti G.S. Service)
 - 1. One 1250 HP I-R Electric Motor 4RDS-2 Reciprocating Compressor
 - 2. HP Placed In Service
 - a. One 1250 HP Electric Unit November 21, 1978
- NOTE: Product Treater retired on W.O. X49877 Bisti No. 7 retired in 1990 on W.O. X50636

2.5 **REGULATORY INDEX**

Table 2-1 presents the regulatory index. This table provides a cross reference between the requirements established by the New Mexico Water Quality Control Commission (NMWQCC) Regulations and this discharge plan.

TABLE 2-1 REGULATORY INDEX		
NMWQCC Regulation Required in Discharge Plan	Section in Discharge Plan	
1-201	1.0, 2.0	
1-203	3.3.4	
3-106 C.1	3.2	
3-106 C.2	2.3, 5.0, 5.5, Figure 5-2	
3-106 C.3	5.4.2	
3-106 C.4	5.5	
3-106 C.5	4.2	
3-106 C.6	5.1, 5.3	
3-106 C.7	5.0	
3-107	6.0	
3-108.B	1.0	

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3.0 EFFLUENT SOURCES, CHARACTERISTICS AND DISPOSAL

3.0 EFFLUENT SOURCES, CHARACTERISTICS AND DISPOSAL

3.1 PROCESS DESCRIPTION

The Chaco Plant receives raw natural gas from the Picture Cliff, Dakota, Mesa Verde, Gallup, and Fruitland Formations. Gas inlet streams are processed to:

- Remove water
- Add odorant into the natural gas
- Compress the gas for introduction into transmission pipelines
- Separate propane and other products
- Product sweetening

Data from 1991 indicates that total gas inlet flow averages 250 MMCF/day into the Chaco Plant. Typically, 15 to 20 percent of the inlet gas is consumed on-site as fuel or product removal via shrinkage, or due to miscellaneous losses. Approximately 90 percent of consumption is associated with product removal, averaging about 250,000 gallons of liquid per day. A block process diagram appears as Figure 3-1.

Figures 3-2(a) and 3-2(b) show the process block flow diagram and water balances for both average and worst cases. Plate 3-1 identifies the location of process and waste-management units. Plate 3-2 shows the piping layout at the Chaco Plant.

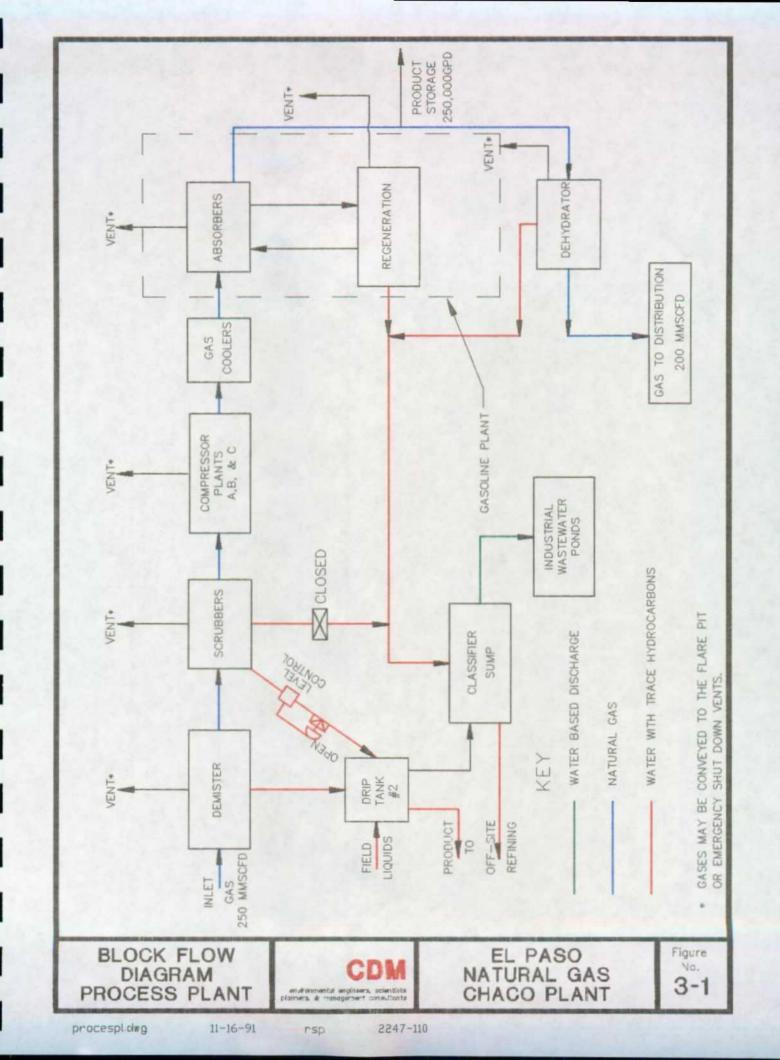
In the following subsections, unit processes are classified according to wastewater productions. Processes which produce no wastewater are considered "dry" (D).

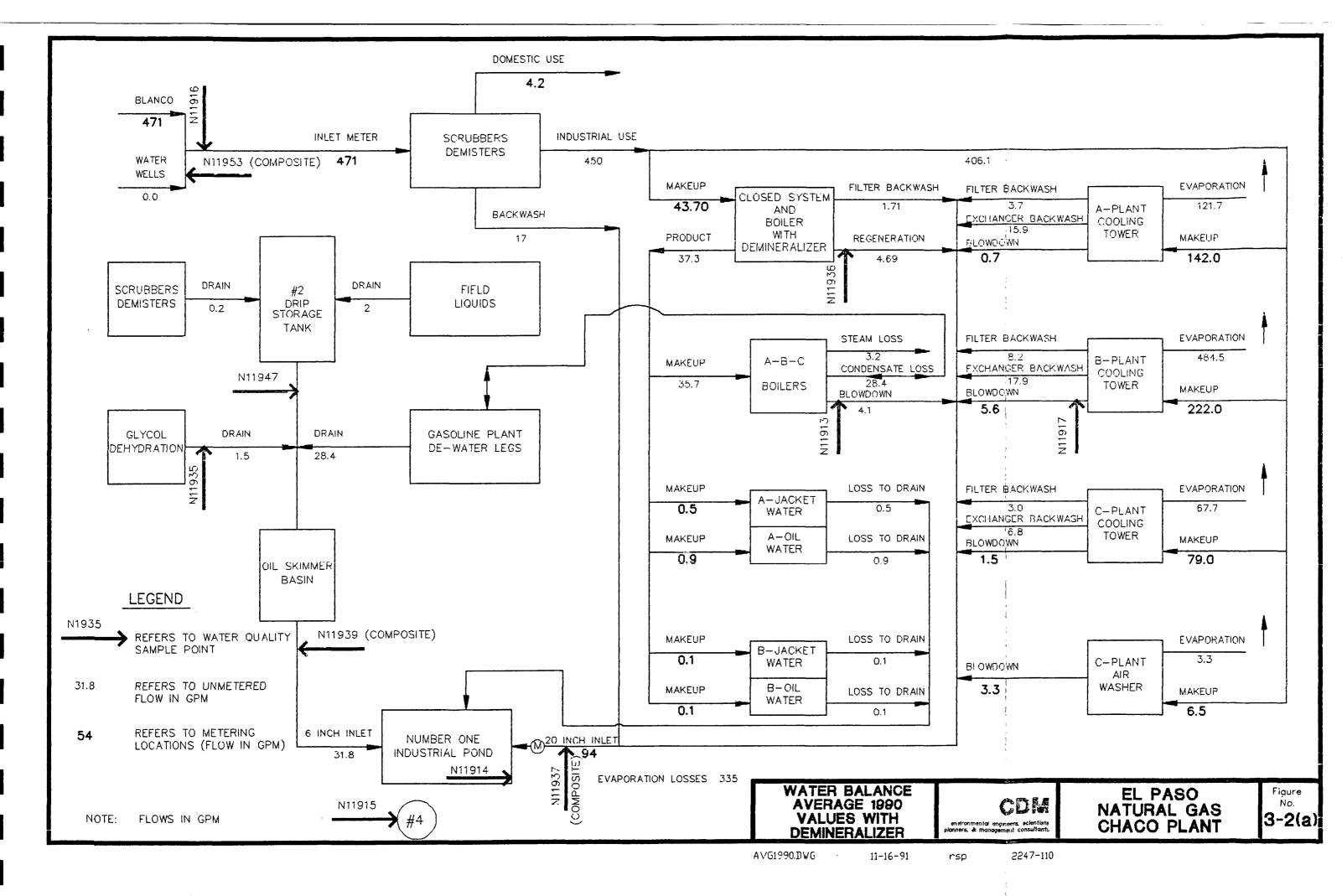
A plant process which produces wastewater due to contact with hydrocarbons is a "contact" process (C), and those processes which do not contact hydrocarbons are "non-contact" (NC) processes.

Dry processes include:

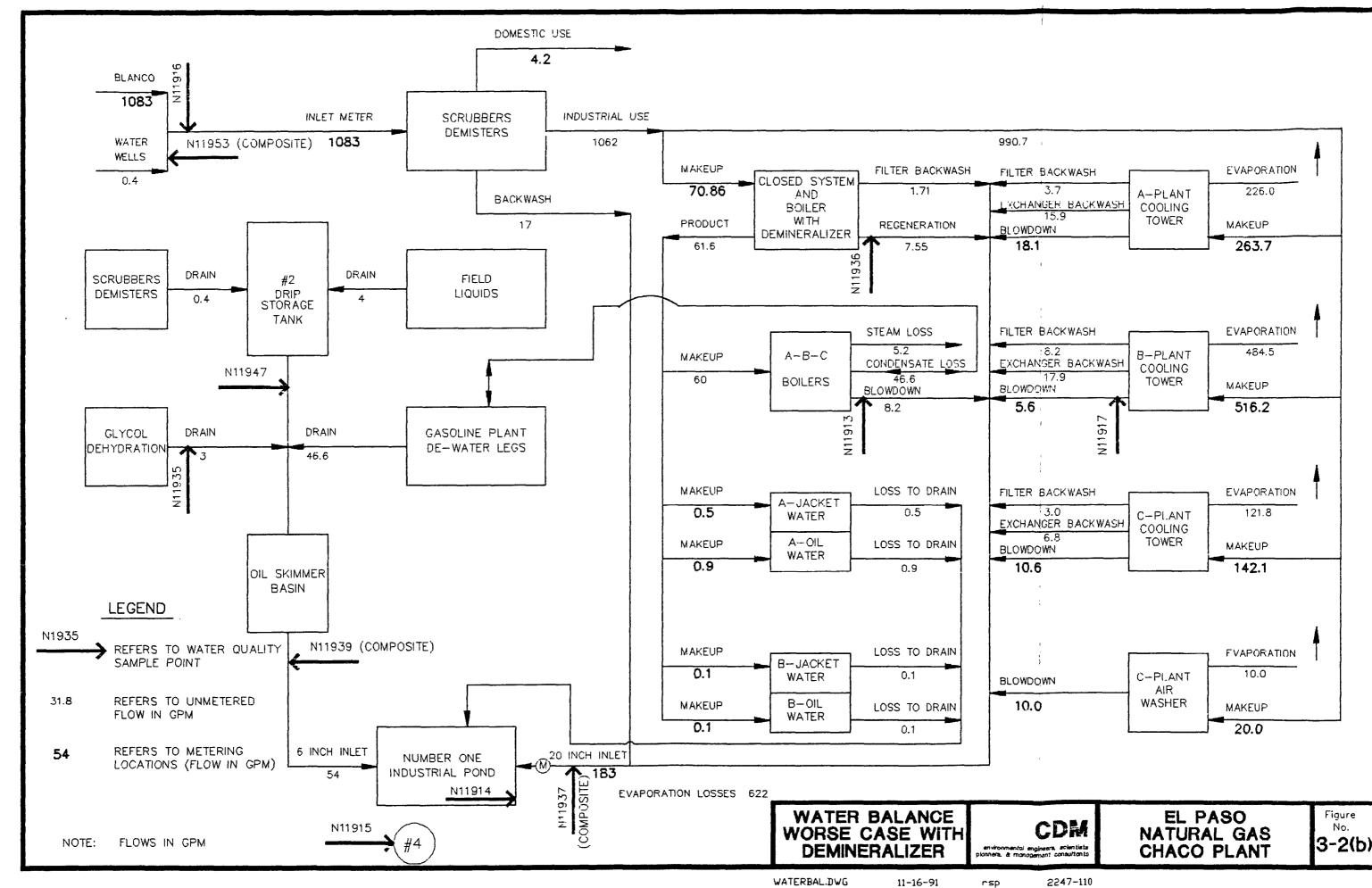
PROCESS SUBSECTION Compressors (D) 3.1.1

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Contact processes are:

SUBSECTION
3.1.2
3.1.10
3.1.11
3.1.12
3.1.13
3.1.14

Non-contact wastewater is generated by:

PROCESS	SUBSECTION
Water Treatment (NC)	3.1.3
Boilers (NC)	3.1.4
Cooling Towers (NC)	3.1.5
Air Washer (NC)	3.1.6
Domestic Sewage (NC)	3.1.7
Storm Water (NC)	3.1.8
Jacket and Oil Cooling Water	3.1.9

3.1.1 Compressors (D)

Gas is compressed by reciprocating and centrifugal compressors. These compressors do not generate wastewater, however, compression produces wastewater from cooling towers, oil and jacket water systems, and air washers.

3.1.2 Demisters/Scrubbers/Separators (C)

All inlet gas is passed through one or more scrubber/separator units to remove entrained water produced with the gas. Wastewater generated may contain some free and dissolved hydrocarbons. Separate phase hydrocarbons are removed from storage in Drip Tank #2. Once enough product has been removed, the hydrocarbon is transferred from Drip Tank #2 to Drip Tank #1. Any accumulated contact water is drained to the oil classifier from where the contact water is discharged to the industrial wastewater pond. The separate phase hydrocarbons are transferred from Drip Tank #2 to Drip Tank #1.

3.1.3 Water Treatment (NC)

Makeup water extracted from the San Juan River near Bloomfield is brought on-site and treated using filtration, softeners and demineralizers. This water is used to produce boiler feedwater, cooling water makeup, fire fighting water, domestic supply, and air washer makeup.

Wastewater is produced by boiler blowdown, filter backwash, water softeners, cooling water blowdown and exchanger backwash, demineralizer regeneration, and air washer blowdown. These various non-contact wastewater streams are collected in a 20-inch pipe and conveyed to the number one industrial wastewater pond with the possible exception of the closed cooling systems.

3.1.4 Boilers (NC)

These boilers produce on average about 150,000 pounds of stream per hour. The main boilers produce steam for on-site power generation and general process heating. To maintain proper boiler operation, a certain quantity of boiler water is "blown down" and replaced with purified makeup water. This prevents an increase in total dissolved solids (TDS) in the boiler water, which could potentially lead to scale formation and/or corrosion in the boiler core. Approximately 11,800 gpd of high TDS blowdown water is discharged to the industrial wastewater pond. The unaccounted for water (39,600 gpd), is lost from the system through evaporation, stripping process or other plant losses. An evaporator is available at the plant to evaporate boiler water condensate from untreated inlet water if needed. This unit was previously used to evaporate condensate from softened water, but the plant is currently in the process of converting to a demineralizer for the production of boiler quality feedwater.

3.1.5 Cooling Towers (NC)

Each compressor plant has a dedicated cooling tower that is used to cool compressed gases, as well as perform other general cooling requirements of the process units. Most of the cooling tower water is recycled during operation, thereby causing a high volume of evaporative losses to occur over time. The evaporative losses, in turn, cause salts to accumulate in the cooling tower waters such that some "blow down" is required to prevent TDS buildup. Treated water from the San Juan River is used as makeup water replacing waters that are discharged via the 20-inch pipe to industrial wastewater pond number one.

3.1.6 Air Washer (NC)

An air washer is available for use on the combustion air inlet of the "C" Plant turbine compressors to provide for inlet air cooling during periods of high ambient air temperature. Evaporation of the water from the air washer also causes a buildup of dissolved solids, increasing the TDS of water in the air washer sump, and requiring the blow down of water proportional to the amount of time the air washers are in service.

3.1.7 Domestic Sewage (NC)

Domestic sewage is generated by the plant work force of approximately 50 people. Sewage created by use of 1320 gallons of water per day (as estimated by the New Mexico Environment Department in the 1989 Wastewater Inventory Report) is discharged to six septic tanks. This discharge is then further directed to either leaching fields (4-inch open vitrified clay pipe) or a holding tank.

3.1.8 Storm Water (NC)

Located on a Tertiary alluvial deposit in the highlands above Gallegos Canyon, the facility is underlain by well draining sandy soils. These soils allow for seepage and rainfall loss due to infiltration. Additionally, the facility is sited in the upper reaches of the West Gallegos Creek watershed, with little basin area draining across its boundaries. That area above the facility typically generates sheet flow migrating down slope from east to west. EPNG has constructed earthen berms east of the facility to manage sheet flow by directing it to swales flanking the property both to the south and north.

Finally, the total rainfall in this area averages less than 10 inches per year. Therefore, very little stormwater is managed at this facility. That stormwater that does run-off is collected by a series of swales and concrete lined channels which direct

discharge to two basins located west of Compressor Plant "B", and west of the boiler building. The accumulated stormwater either evaporates or infiltrates.

3.1.9 Jacket and Oil Cooling Water (NC)

Jacket and oil cooling waters are used in both the "A" and "B" Compressor Plants. This water is maintained at a fairly consistent temperature using radiant cooling from the finfan units and heating from compressor engine heat exchangers. As with any recirculation system, this water tends to accumulate dissolved solids; therefore, small amounts of make-up water (approximately 2,300 gpd) from a softener or the demineralizer are used to offset minor losses related to evaporation or steam discharges. Wastewater is generated from this system at various locations along the jacket and oil cooling water piping systems. This water is collected and conveyed to the industrial wastewater pond.

3.1.10 Gasoline Plant Water Legs (C)

As part of the liquid absorption process, steam is introduced into the hydrocarbon liquid products in the absorption unit and accumulates in the dewatering legs (which are associated with the rich oil stabilizer, still, and product and reflux accumulators). This steam injection forms a condensate that constitutes, on average, nearly 39,600 gallons of water per day. This condensate, which has comingled with the hydrocarbon liquid products, is conveyed to the classifier and ultimately discharged to the industrial wastewater ponds.

3.1.11 Glycol Dehydration (C)

Before the gas stream exits the plant for transmission, absorbed water is removed in the glycol dehydration unit. These removed waters, averaging 2160 gpd, are conveyed to the classifier via the 6-inch inlet pipe.

3.1.12 Classifier Sump (C)

Contact waters from Drip Tank #2, assorted scrubbers, gasoline plant dewatering legs and the glycol dehydration unit are conveyed to the classifier via the 6-inch inlet pipe reach. The classifier consists of two multi-baffled concrete structures

serving to remove floating hydrocarbons from the waste stream. The floating products are skimmed off of the water phase. The lean oils are put back into the plant lean oil system. The heavier oils are collected in the above ground storage tank and sold to an oil reclaimer. The water phase is ultimately conveyed via a 6-inch pipe from the classifier to the industrial wastewater ponds for discharge. Flow through the classifiers may vary, depending on plant upsets and shutdowns. However, on average about 46,000 gallons of water per day are treated.

3.1.13 Drip Tank #2 (C)

Product and contacted/produced waters that are separated from the gas by demisters and scrubbers, various field liquids produced by pigging, and surge tank liquids are recovered and stored in Drip Tank #2. Product that accumulates is conveyed off-site for processing. Waters that accumulate within Drip Tank #2 are drained to the classifier sump for further separation and treatment. Water flow through Drip Tank #2 averages about 3,200 gallons per day.

3.1.14 Industrial Wastewater Ponds (C)

All wastewater from the classifier sump, 6-inch, 8-inch, and 20-inch drains is discharged into the industrial wastewater ponds that occupy nearly 14 acres northwest of the production area. These ponds, as presented in Plate 3-1, are used primarily for evaporation and waste stream aeration; however, since the ponds are unlined, some infiltration does occur. This infiltration is discussed in more detail in section 4.1.3.

3.1.15 Flare Pit (C)

The flare pit receives emergency releases of gas, which contain small amounts of liquids, for flaring. In addition, the flare pit is used for safety reasons to prevent over-pressuring of process piping and facilities. There is no discharge from these pits.

3.2 WASTE QUALITY CHARACTERISTICS

The Chaco Plant produces on average 180,000 gallons per day of process wastewater. Process wastewater is discharged to the industrial

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wastewater ponds to evaporate/infiltrate and aerate. A material balance of the plant intake water and estimated plant water losses is shown in Figures 3-2(a) and 3-2(b). EPNG is currently conducting a flow monitoring program to accurately determine wastewater production at the Chaco Plant. However, the above estimate of discharge is reasonable.

Table 3-1 correlates the sample collection points with the individual sample numbers.

Table 3-2 summarizes plant raw water inlet and wastewater characteristics at various locations in the Chaco Plant. Analytical laboratory reports are included in Appendix A.

The sample locations, identified in Figures 3-2(a) and 3-2(b), include pre- and post- plant contact and non-contact waters. Grab samples of the boiler blowdown, industrial wastewater ponds No. 1 and No. 4, Bcooling tower blowdown, demineralizer regeneration water, Drip Tank #2, glycol dehydrator drainline and the raw water plant inlet were collected during the week of September 4, 1991. In addition, a 48-hour composite sample of the 20-inch line influent to the industrial wastewater pond No. 1 and the 6-inch pipe conveying effluent from the classifier sump was collected during the same week. Finally, a composite sample of the water from wells, used for raw water supply in the case of emergency, was collected September 5, 1991.

Included in Table 3-1 is a listing of the New Mexico Water Quality Control Commission (NMWQCC) groundwater quality standards. These standards, which appear in Section 3-103 of the NMWQCC Regulations, pertain to groundwater quality standards in New Mexico where TDS concentrations are less than 10,000 milligrams per liter (mg/l, or parts per million).

Based on the data collected characterizing waters throughout the site, the following observations can be made:

- Raw water (N11916) for make-up and domestic distribution collected from the San Juan River contains detectable concentrations of barium, fluoride, nitrate, uranium, radium, chloride, iron, and sulfate.
- Raw water which can be obtained from the groundwater supply wells (located 8 to 10 miles from the plant) contains similar constituents as the San Juan River water plus the following

constituents: lead, copper, and manganese. The observed iron concentration exceeds the NMWQCC standards; however, CDM interprets this as characteristic of the naturally occurring groundwater in this area. Additionally, the total dissolved solids in the groundwater supply, 740 mg/l, are nearly 5 times greater than those measured in the San Juan River. These water supply wells are only used to supply backup water to the Chaco Plant. They are operated very infrequently. They are presently only operated to assure mechanical integrity in the event that a backup water supply is needed.

- Total dissolved solids are above the NMWQCC groundwater quality standard for domestic water supplies in the boiler blowdowns, cooling tower blowdown, demineralizer regeneration waters, 20-inch influent line to the industrial wastewater pond #1, Drip Tank #2, and industrial wastewater pond #4. Waters from the glycol dehydration and gasoline plant dewatering legs appear to dilute the Drip Tank #2 TDS contribution enough that effluent from the classifier is below 110 mg/l TDS.
- Although the waters within the plant exhibit elevated levels of some constituents at various locations (i.e., observed concentrations are greater than the NMWQCC groundwater quality standard), waters discharging to industrial wastewater pond #1 (sample N11914) only exceed the NMWQCC for the reported benzene concentration (13 micrograms per liter (mg/l) reported versus 10 mg/l NMWQCC standard). Downstream of this location, in industrial wastewater pond #4, exceedances are reported for chloride and TDS (which are standards for domestic water supplies). This condition is indicative of the evaporation process which occurs in the ponds.

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	WATER	TABLE 3-1 TER SAMPLE COLLECTION KEY	KEY	
SAMPLE #	STREAM	SAMPLE POINT	SAMPLE TYPE	DATE - TIME
N11913	Boiler Blowdown	Boiler #1 Sample Cooling Pot	Grab	09-04-91-1130
N11914	Industrial Pond #1	Composite along north shore line	Grab	09-09-91-1215
N11915	Industrial Pond #4	south west corner of pond	Grab	09-04-91-1245
91611N	Plant Inlet	Six inch line D/S of regulator 1/2" valve	Grab	09-04-91-0930
<i>L</i> 1611N	B - Cooling Tower	1" plastic valve at sample sink	Grab	09-04-91-1015
N11935	Dehydration	Glycol dehydrator 1/2" drain line	Grab	09-05-91-1100
N11936	Demineralization Regeneration	Siphoned from opening in top of tank	Grab	09-06-91-1100
N11937	20 Inch Discharge	U/S discharge meter dam	48 hr. composite	00-06-01-0000
N11939	Contact Water	Oil skimmer 6" outlet	48 hr. composite	00-08-91-1000
N11947	Scrubbers	Drip Storage Tank #2 -2" drain valve	Grab (VOA, metals, radio, 09/10)	09-04-91-1030
N11953	Water Wells	Composite of Wells #6, #8, #9 and #10	Composite of wells	09-05-91-0830

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3.2.1 Chemicals, Additives and Preservatives

The type and known quantities of chemicals and additives used in both contact and non-contact processes at the Chaco Plant are summarized in Table 3-2. Appendix B contains Material Safety Data Sheets for all products and chemicals used.

3.2.2 Possible Variation in Wastewater Chemistry and Quantity

Variations in production rates impact water treatment and contact wastewater streams, as well as boiler steam generation. Additionally, seasonal variations impact cooling water, and oil cooling and jacket waters and wastewater production. Given that production rates can vary from 80 to 600 MMSCFD, or by as much as 7.5 times, wastewater flow can be expected to vary similarly. This variation in flow does not, however, correlate directly with a variation in wastewater quality.

Wastewater quality is dependent more upon the liquids contained in the produced gases coming into the plant than on production rate. Field liquids contained in the inlet gas can contain slugs of produced water high in TDS or hydrocarbons, or both. These waters can and do impact Drip Tank #2 effluent rates, and can impact other processes down the line.

Occasional plant process upsets can also impact wastewater quality in the classifier and industrial wastewater ponds for short periods of time.

3.3 SPILL/LEAK PREVENTION AND HOUSEKEEPING PRACTICES

3.3.1 Operation and Maintenance Procedures

The Chaco Plant is operated in a manner to prevent and mitigate any unplanned releases to the environment. Plant process and storage units are regularly observed by a number of personnel during normal operations, and any evidence or sign of spills/leaks is routinely reported to supervisory personnel so that repairs or cleanup can be promptly effected. Routine maintenance procedures conducted at the Chaco Plant also help to assure that equipment remains functional and that the possibility of spills/leaks is minimized.

						TABLE 3-2							
SAMPL	SAMPLE LOCATION		BOILER	INDUSTRIAL POND NO. 1	INDUSTRIAL POND NO. 4	PLANT INLET	B-COOLING TOWER	DEHYDRATION	REGENERATION	20-INCH DISCHARGE	CONTACT WATER	SCRUBBERS	MELLS
ITEM #	PARAMETER	NMWQCC LIMITS MG/L	SAMPLE NUMBER N11913	SAMPLE NUMBER N11914	SAMPLE NUMBER N11915	SAMPLE NUMBER N11916	SAMPLE NUMBER N11917	SAMPLE NUMBER N11935	SAMPLE NUMBER N11936	SAMPLE NUMBER N11937	SAMPLE NUMBER N1 1939	SAMPLE NUMBER N11947	SAMPLE NUMBER N11953
-	ARSENIC (MG/L)	0.1	< 0.005	<0.005	<0.005	<0.005	0.006	< 0.005	0.009	<0.005	<0.005	0.082	< 0.005
2	BARIUM (MG/L)	1.0	<0.010	0.202	0.298	0.069	0.355	<0.010	0.6	0.158	0.077	0.737	0.019
m	CADMIUM (MG/L)	0.01	< 0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	<0.005	< 0.005	< 0.005	<0.005	<0.005
4	CHROMIUM (MG/L)	0.05	<0.010	<0.011	< 0.010	<0.010	0.016	<0.010	0.014	<0.010	<0.017	<0.5	<0.010
- In	CYANIDE, TOTAL (MG/L)	0.2	<0.01	<0.01	<0.01	10.0>	<0.01	<0.01	10.0>	<0.01	<0.01	<0.01	<0.01
9	FLUORIDE (MG/L)	1.6	0.06	0.64	0.11	0.18	1.44	<0.05	1.83	0.46	< 0.05	0.08	1.3
<u>-</u>	LEAD (MG/L)	0.05	0.005	0.003	<0.002	<0.002	<0.002	<0.002	0.003	0.004	<0.002	0.008	0.004
∞	TOTAL MERCURY (MG/L)	0.002	< 0.0002	0.0007	<0.0002	<0.000 2	0.0003	< 0.0002	< 0.0002	< 0.0002	0.0003	1.4	<0.0002
6	NITRATE AS NITROGEN (MG/L)	10	17	0.06	<0.06	0.09	<0.06	<0.06	0.79	0.33	<0.06	ŕ	0.59
2	SELENIUM (MG/L)	0.05	< 0.005	<0.005	< 0.005	<0.005	<0.005	<0.005	<0.005	<0.005	< 0.005	<0.005	<0.005
=	SILVER (MG/L)	0.05	<0.010	<0.010	<0.010	< 0.010	<0.010	<0.010	<0.010	< 0.010	<0.01	<0.01	<0.01
12	URANIUM (MG/L)	5.0	0.001	0.0041	0.0281	0.0031	0.0069	0.0034	0.005	0.0105	0.0044	0.0034	0.0035
13	RADIUM-226 AND RADIUM-228 (pCi/L)	30.0	1.2	1.5	1.1	1.8	2.5	0.3	0.6	0.6	0.2	2.1	1.2
4	BENZENE (MG/L)	0.01	<0.0005	0.013	< 0.0005	< 0.000 5	<0.0005	4.2	< 0.0005	< 0.0005	0.71	19.2	< 0.0005
15	POLYCHLORINATED BIPHENYLS (PCBs)(MG/L)	0.001	< 0.0005	<0.005	< 0.005	< 0.000 5	<0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.005	<0.005	<0.0005
16	TOLUENE (MG/L)	0.75	< 0.0005	<0.005	< 0.0005	< 0.000 5	< 0.0005	3.4	< 0.0005	< 0.0005	0.6	14.1	<0.0005
17	CARBON TETRACHLORIDE (MG/L)	0.01	< 0.0002	<0.002	< 0.0002	<0.000 2	<0.0002	<0.1	< 0.0002	< 0.0002	< 0.005	<0.05	<0.0002
18	1,2-DICHLOROETHANE(EDC)(MG/L)	0.01	< 0.0002	<0.002	< 0.0002	< 0.000 2	<0.0002	<0.1	< 0.0002	<0.0002	< 0.005	<0.05	<0.0002

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						TABLE 3-2							
SAMP	SAMPLE LOCATION		BOILER BLOWDOWN	INDUSTRIAL POND NO. 1	INDUSTRIAL POND NO. 4	PLANT INLET	B-COOLING TOWER	DEHYDRATION	REGENERATION	20-INCH DISCHARGE	CONTACT WATER	SCRUBBERS	MELLS
19	1,1-DICHOLOROETHYLENE(1,1- DCE)(MG/L)	0.005	<0.0002	< 0.002	<0.0002	<0.000 2	<0.0002	<0.1	< 0.0002	<0.0002	< 0.005	< 0.05	<0.0002
50	1,12,2- TETRACHLOROETHYLENE(PCE)(MG/L)	0.02	< 0.0002	<0.002	< 0.0002	< 0.000 2	< 0.0002	<0.1	<0.0002	< 0.0002	< 0.005	<0.05	<0.0002
21	1,1,2-TRICHLOROETHYLENE(TCE)(MG/L)	0.1	<0.0002	< 0.002	< 0.0002	<0.000 2	<0.0002	<0.1	< 0.0002	< 0.0002	< 0.005	< 0.05	< 0.0002
22	ETHYLBENZENE (MG/L)	0.75	< 0.0005	< 0.005	<0.0005	< 0.000 5	< 0.0005	0.6	< 0.0005	< 0.0005	<0.125	0.2	<0.0005
23	TOTAL XYLENES (MG/L)	0.62	<0.0005	< 0.005	<0.0005	<0.000	<0.0005	3.7	< 0.0005	<0.0005	0.12	8.	< 0.0005
24	METHYLENE CHLORIDE (MG/L)	0.1	< 0.002	<0.02	<0.002	<0.002	<0.002	< 1.0	<0.002	<0.002	< 0.05	<0.5	<0.002
25	CHLOROFORM (MG/L)	0.1	< 0.0002	< 0.002	< 0.0002	< 0.000 2	< 0.0002	<0.1	< 0.0002	0.0215	< 0.005	< 0.05	<0.0002
26	1,1-DICHLOROETHANE (MG/L)	0.025	< 0.0002	< 0.002	< 0.0002	<0.000 2	< 0.0002	<0.1	< 0.0002	< 0.0002	< 0.005	<0.05	< 0.0002
27	ETHYLENE DIBROMIDE(EDB)(MG/L7778)	0.0001	NR	NR	NR	R	NR	NR	NR	NR	NR	NR	R
28	1,1,1-TRICHLOROMETHANE (MG/L)	0.06	<0.0002	< 0.002	< 0.0002	< 0.000 2	< 0.0002	<0.1	< 0.0002	< 0.0002	< 0.005	< 0.05	<0.0002
29	1,1,2-TRICHLOROMETHANE (MG/L)	0.01	<0.0002	< 0.002	< 0.0002	< 0.000 2	<0.0002	<0.1	< 0.0002	< 0.0002	< 0.005	< 0.05	<0.0002
30	1,1,2,2-TETRACHLOROETHANE (MG/L)	0.01	<0.0002	< 0.002	<0.0002	<0.000 2	< 0.0002	٥.1	< 0.0002	<0.0002	< 0.005	<0.05	<0.0002
31	VINYL CHLORIDE (MG/L)	0.001	<0.0002	< 0.002	< 0.0002	<0.000 2	< 0.0002	<0.1	< 0.0002	<0.0002	< 0.005	< 0.05	< 0.0002
32	PAHS: TOTAL NAPHTHALENE (MG/L)	0.03	0.00095	<0.015	< 0.0003	<0.000 3	< 0.0003	4.7	< 0.0003	< 0.0003	0.1	0.007	< 0.0003
33	BENZO-A-PYRENE (MG/L)	0.0007	<0.00001	< 0.0005	< 0.00001	<0.000 01	< 0.00001	<0.005	< 0.00001	< 0.00001	< 0.00001	<0.00001	<0.0001
34	CHLORIDE (MG/L)	250	1.2	160	580	2.4	50	< 0.5	2200	440	<0.5	6400	16
35	COPPER (MG/L)	1.0	0.047	0.021	<0.010	<0.010	0.067	<0.010	<0.010	0.174	<0.001	<0.010	0.141

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SAMPLE LOCATION BOILER INDUSTRIA SAMPLE LOCATION BLOWDOWN BOILER INDUSTRIA 36 IRON (MG/L) 1.0 0.07 0.878 37 MANGANESE (MG/L) 0.2 0.07 0.878 38 PHENOLICS, TOTAL (MG/L) 0.2 0.03 0.119 39 SULFATE (MG/L) 0.005 0.03 <0.04 40 TOTAL DISSOLVED SOLIDS (MG/L) 1000 130 32 41 ZINC (MG/L) 1000 1200 890 42 pH (UNITS) 6.9 12.1 6.5							TABLE 3-2						ļ	
(MG/L) • 1.0 0.07 (MG/L) • 0.2 <0.010 TOTAL (MG/L) • 0.005 0.03 5/L) • 0.005 0.03 5/L) • 600 130 0LVED SOLIDS (MG/L) • 1000 1200 0LVED SOLIDS (MG/L) • 10.0 0.155	AMPLE	E LOCATION		BOILER BLOWDOWN	INDUSTRIAL POND NO. 1	INDUSTRIAL POND NO. 4	PLANT INLET	B-COOLING TOWER	DEHYDRATION	REGENERATION	20-INCH DISCHARGE	CONTACT WATER	SCRUBBERS	WELLS
MANGANESE (MG/L) • 0.2	<i>"</i>	IRON (MG/L)	0.1	0.07	0.878	0.12	0.03	1.22	25.7	0.198	0.974	0.653	1830	3.2
PHENOLICS, TOTAL (MG/L) • 0.005 0.03 SULFATE (MG/L) • 600 130 TOTAL DISSOLVED SOLIDS (MG/L) • 1000 1200 ZINC (MG/L) • 1000 1200 PH (UNITS) • 6.9 12.1		MANGANESE (MG/L)	• 0.2	<0.010	0.119	0.18	<0.010	0.043	0.108	0.012	0.219	0.02	17.3	0.106
SULFATE (MG/L) • 600 130 TOTAL DISSOLVED SOLIDS (MG/L) • 1000 1200 ZINC (MG/L) • 10:0 0.155 pH (UNITS) • 6.9 12.1	6	PHENOLICS. TOTAL (MG/L)	. 0.005	0.03	<0.04	< 0.04	<0.02	<0.02	0.47	<0.02	<0.02	0.17	4.6	<0.02
T0TAL DISSOLVED SOLIDS (MG/L) • 1000 1200 ZINC (MG/L) • 10.0 0.155 pH (UNITS) • 6 - 9 12.1		SULFATE (MG/L)	600	130	32	270	46	760	<0.3	490	190	1.6	410	340
ZiNC (MG/L) • 10.0 0.155 pH (UNITS) • 6-9 12.1		TOTAL DISSOLVED SOLIDS (MG/L)	1000	1200	890	1800	160	1500	< 10	5100	1100	10	18000	740
pH (UNITS) • 6-9 12.1	-	ZINC (We/L)	10.0	0.155	0.032	<0.010	<0.010	0.093	<0.010	<0.010	0.183	0.022	0.137	<0.010
t		pH (UNITS)	6-9	12.1	6.5	8.8	8.3	8.4	5.3	7.4	7.4	5.8	5.5	8.8
43 BORON (MG/L) •• 0.75 <-0.10 0.16		3/L)		<0.10	0.16	0.22	<0.10	0.17	<0.10	0.22	<0.10	<0.10	<0.10	0.26

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standard for domestic water supply
 standard for irrigation use

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The majority of process and storage units at the Chaco Plant are bermed or curbed and have underdrains or natural diversions which will direct any unplanned spills or releases to existing waste management areas. Each shift is required to report and clean up any identified release before shift change.

Some of the tankage on the plant, however, is contained within either an earthen berm or concrete berm with an earthen basin. In the case of a spill or overfill, earth or soils may contact produced waters or hydrocarbons. In fact, in some locations, past overfills or spills have visibly contaminated soils, as is evident adjacent to the classifier sump and Drip Tank #2. Maintenance and clean-up of these materials plus other minor "one-time" discharges are addressed in the proposed modifications portion of Section 4.0.

3.3.2 Chemical and Environmental Hazards

A number of process and non-process chemicals or additives (Table 3-3) used at the Chaco Plant could present a threat to the environment only in the event of a major spill or release. The majority of the chemicals are used in small quantities (55 gallons to 2,500 gallons per year) and any spills or leaks would be very small in volume and easily contained in the immediate area.

Major spills could result from the release of lubricating oils. A spill of wastewater could also result from cooling pond dike failure.

3.3.3 Cleanup Procedures

Cleanup procedures would obviously vary with the nature and extent of any unplanned release. Spills of bases are relatively easy to control and general procedures would include neutralization of the material in-place before a final evaluation is made on its ultimate disposal. Once neutralization is confirmed by sampling, it is quite probable that no further actions would be required to ensure protection of human health and the environment.

TABLE 3-3					
	CHEMICA	LS USED AT THE CHACO PLA	NT		
Chemical Name	Manufacturer	Maximum Amount Kept on Hand	General Location Where Stored		
ABSORPTION OIL		80,000 gallons	TANK - GAS PIT AREA		
SULFURIC ACID		750 gallons	TANK - COOLING TOWERS A, B, C		
AMBITROL F-L		1500 gallons	TANK-TURBINE AREA		
CAUSTIC SODA FLAKE		3 - 100# BARRELS	CHEMICAL BUILDING		
GLYCOL TRIETHYLENE		2500 gallons	TANK - GAS PLANT AREA		
MONOTHALIMINE		1500 gallons	TANK- ANETH TREATER AREA		
VARSOL		500 gallons	TANK-A-COMPRESSOR & BOILER AREA		
CAT-FLOC T		1 - 450# BARREL	CHEMICAL BUILDING		
HYDROCHLORIC ACID	·····	2000 gallons	TANK - WATER TREATER BUILDING ARE		
HYDROXIDE CAUSTIC		3000 gallons	TANK - WATER TREATER BUILDING ARE		
ALPHA 512	• • • • • • • • • • • • • • • • • • •	110 gallons (2 barrels)	CHEMICAL BUILDING		
ALPHA 570		110 gallons (2 barrels)	CHEMICAL BUILDING		
UI 3030		110 gallons (2 barrels)	CHEMICAL BUILDING		
UI 1705		2 @ 200 gallons (2 barrels)	TANKS - COOLING TOWER A, B, C		
UI 3140		110 gallons (2 barrels)	CHEMICAL BUILDING		
UI 3270		110 gallons (2 barrels)	CHEMICAL BUILDING		
UI 2310		110 gallons (2 barrels)	CHEMICAL BUILDING		
CHLORINE GAS		5 - 150 # cylinder	WATER TREATING BUILDING AREA		
CALCIUM HYPOCHLORITE 65%		1 - 100# drum	CHEMICAL BUILDING		
490 MOBIL OIL		15,000 gallons	TANKS - 3 @ A-COMP. 1 @ B-COMP. AREA		
797 MOBIL OIL		5,000 gallons	TANK - TURBINE AREA		
797 MOBIL OIL		55 gallon barrel	STORAGE DECK, SOUTH OF BOILER PLT		
600W MOBIL OIL		55 gallon barrel	STORAGE DECK, SOUTH OF BOILER PLT		
DTE HEAVY MEDIUM OIL		110 gallon barrel	STORAGE DECK, SOUTH OF BOILER PLT		
MOBIL GEAR 629		55 gallon barrel	STORAGE DECK, SOUTH OF BOILER PLT		
890 HEAVY TRIHOL OIL	····	55 gallon barrel			
UNLEADED GASOLINE		750 gallons	TANK - N. SIDE OF WAREHOUSE BLDG.		
DIESEL		150 gallons	TANK - A COMPRESSOR AREA		
PROPANE		3500 gallons	GASOLINE PLANT AREA		
METHANOL		200 gallons	TANK - A COMPRESSOR AREA		
AUTO/TRANS FLUID	SHELL	6 gallons, 1 qt. can	WAREHOUSE		
RIMULA 30 WT. OIL	SHELL	3 gallons, 1 qt. can	WAREHOUSE		
ROTELLA T 15-40 WT. OIL	SHELL	3 gallons, 1 qt. can	WAREHOUSE		

TABLE 3-3

CHEMICALS USED AT THE CHACO PLANT

Chemical Name	Manufacturer	Maximum Amount Kept on Hand	General Location Where Stored
ROTELLA T 30 WT. OIL	SHELL	3 gallons, 1 qt. can	WAREHOUSE
ANTIFREEZE		6 gallons, 1 qt. can	WAREHOUSE
1170 PRIMER	PROTECTO WRAP	4 gallons, 1 qt. can	WAREHOUSE
SHIELD CONCENTRATE CLEANER	SHIELD	100 gallon barrel	CHEMICAL BUILDING
PAINT		50, 1-gallon can	WAREHOUSE
SPRAY PAINT		30, 12 oz	WAREHOUSE
PAINT THINNER		4, 1-gal can	WAREHOUSE
WD-40		24, 12 oz. cans	WAREHOUSE
KNOCKER LOOSE		24, 9 oz. can	WAREHOUSE
CLEANER/REMOVER PENETRANT	MAGNAFLUX	12, 12 oz. can	WAREHOUSE
DEVELOPER D-701	MET-L-CHEK	6, 10 oz. can	WAREHOUSE
SPOTCHEK	MAGNAFLUX	6, 10 oz. can	WAREHOUSE
ANTISEIZE, AEROSOL	FEL-PRO, INC.	6, 16 oz. can	WAREHOUSE
ANTISEIZE	KOPR-KOTE	12, 8 oz. can	WAREHOUSE
ELECTRIC CONTACT CLEANER	OSBORN	6, 16 oz. can	WAREHOUSE
PAINT REMOVER SPRAY	KLEAN-STRIP	6, 16 oz. can	WAREHOUSE
SILICONE SEALANT	DEVCON	24, 10 oz. tube	WAREHOUSE
CUTTING FLUID	RELTON	12, 16 oz. can	WAREHOUSE
730 SPRAGRIP	A.W. CHESTERTON	6, 12 oz. can	WAREHOUSE
BLASTER- PENETRATING	BLASTER	12, 13 oz. can	WAREHOUSE
XALA		24, 21 oz. can	WAREHOUSE
BOWL CLEANER	PHILLIPS	24, 1 qt. bottle	WAREHOUSE
DRAIN AWAY		12, 32 oz. bottle	WAREHOUSE
GLASS CLEANER		12, 19 oz. can	WAREHOUSE
ACTIVATED CARBON		70 CUBIC FEET	WATER TREATER BLDG.
ALPHA 512		615 GALLONS	TANKS C.T. AREA
ALPHA 570		615 GALLONS	TANKS C.T. AREA
ANION RESIN		28 CUBIC FEET	WATER TREATER BLDG.
CALCIUM HYPOCHLORITE		2-100 # DRUMS	WATER TREATER BLDG./CHEMICAL BLDG.
CAT - FLOC T			WATER TREATER BLDG./CHEMICAL BLDG.
CAUSTIC SODA FLAKE		3-100 # DRUMS	CHEMICAL BLDG.
CATION RESIN	,	28 CUBIC FEET	WATER TREATER BLDG.

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TABLE	3-3
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CHEMICALS USED AT THE CHACO PLANT

Chemical Name	Manufacturer	Maximum Amount Kept on Hand	General Location Where Stored
CHLORINE GAS		5-150# CYLINDERS	WATER TREATER BLDG.
FERREX MEDIA		800 CUBIC FEET	WATER TREATER BLDG./C.T. AREA
GARNET		16 CUBIC FEET	WATER TREATER BLDG.
GRADED ROCK		1200 CUBIC FEET	WATER TREATER BLDG.
GRADED SAND		220 CUBIC FEET	WATER TREATER BLDG./C.T. AREA
		2000 GALLONS	WATER TREATER BLDG. AREA
SODA ASH (NaCO3)		4-80 # SACKS	CHEMICAL BLDG.
SODIUM HYDROXIDE		3000 GALLONS	WATER TREATER BLDG. AREA
SODIUM HYPOCHLORITE		2-55 GALLON DRUMS	WATER TREATER BLDG./CHEMICAL BLDG.
SULFURIC ACID			TANKS C.T. AREA
UI-1000		240 GALLONS	CHEMICAL BLDG./C.T. AREA
UI-1705		785 GALLONS	TANKS C.T. AREA
UI-2310		4-55 GALLON DRUMS	CHEMICAL BLDG./C.S. PUMP HOUSES
UI-3030	-	260 GALLONS	CHEMICAL BLDG./TANKS BOILER AREA
UI-3140		260 GALLONS	CHEMICAL BLDG./TANKS BOILER AREA
UI-3270		260 GALLONS	CHEMICAL BLDG./TANKS BOILER AREA
UI-4000		2-55 GALLON DRUMS	WATER TREATER BLDG./C.T. AREA
UI-7227		2-55 GALLON DRUMS	CHEMICAL BLDG. OIL SEPARATOR ARE
UI-9035		2-55 GALLON DRUMS	WATER TREATER BLDG./CHEMICAL BLDG.

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Spills or leaks of hydrocarbons could potentially occur from the lube oil storage tanks, used oil storage tank, drip tanks, and product storage tanks. Lube oils are stored in above ground storage tanks located throughout the plant near each point of use. These tanks are contained within concrete floored berms to prevent infiltration of the oils to the ground.

If an oil spill occurs, general cleanup procedures would involve minor earthwork to prevent migration, and recovery of as much free liquid as possible. Recovered oil would then be transported to the waste oil tank for storage prior to off-site reclamation. Any material which may have soaked into the soil will be excavated and transported to the SRS. This proposed procedure is discussed in Section 4.0.

Spills of other organic materials which might occur at the drum storage area will be small in nature and easily contained. If a spill occurs, any free liquids will be contained by earthwork, recovered if possible, and held in storage pending a decision on final disposal. Based on existing literature, analysis, and regulatory guidelines, any affected soil will either be left in place, transferred to other existing wastemanagement areas (if no incompatibilities exist), or transported off-site for proper disposal.

Potential releases could result from failure of the boiler blowdown cooling pond dike. Should a release occur, several types of earth moving equipment are available to promptly repair damage to any dikes. Any liquids which have been released will be collected, where practical, and reintroduced into the wastewater treatment system.

3.3.4 Reporting

Should a significant release of materials occur, EPNG will provide oral notification to NMOCD as soon as possible after discovery, as required by NMOCD Rule No. 116.

3.3.5 General Housekeeping Procedures

EPNG strives to reduce the potential for spills and leaks in all non-process areas. Records from 1957 to present indicate that no liquid spills are documented at the Chaco Plant. Non-process chemicals are used in relatively small quantities at the plant and are managed in a manner to prevent discharges to the environment. Any chemical spills which might occur would be immediately contained and disposed of according to proper guidelines.

EPNG currently uses a non-halogenated solvent, Varsol, for degreasing operations. The spent solvent, which contains various aromatic compounds, is combined with other hydrocarbon fractions and discharged to the industrial ponds.

3.3.6 French Drains

"French drain" discharges of lubricant oils and compressor engine exhaust oils constitute an environmental discharge separate from the wastewater streams discussed in the previous section. These discharges are also separate from spills and housekeeping issues because the french drains are continuous discharges integral to the operation of the gas compressors and air compressors in the plant. Some of the gas compressor engines are equipped with recirculating mufflers which collect engine exhaust oils and pass them back into the engine coolant system. The other gas compressor engines discharge exhaust oils directly to the ground through "french drains" or stand pipes fitted into gravel packs in the shallow unsaturated zone. Air compressors used for make-up air to prime pumps, for instrument air to drive instruments, and for utility air for shop use also have engine oil discharges directed to french drains. These air compressors are located throughout the facility.

Reclamation of the unsaturated zone soils is discussed in Section 4.0.

4.0 EFFLUENT DISPOSAL

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4.0 EFFLUENT DISPOSAL

4.1 EXISTING OPERATIONS

Since 1967, EPNG's Chaco Plant has discharged most (greater than 99 percent) of its domestic, processed, contact, and all non-contact wastewater to a series of evaporative lagoons. These ponds are located west of the plant as depicted graphically in Plate 3-1. In 1989, use of the domestic ponds was discontinued. At present, only industrial ponds No. 1 through No. 4 and flare pit, are being used.

4.1.1 Domestic Effluent

These ponds are presently empty and dry. In 1989, this waste stream was re-directed to six septic tanks and three associated leach field systems. These septic tanks are located northeast of compressor building B, northeast of the A cooling tower, and west of the water treatment building. Sewage effluent from the office, warehouse and the change room discharges into septic tanks, which feed into a retention tank, which is in turn are pumped out by a septage hauler. Sewage effluent from compressor building B enters into a septic tank and is then discharged to a leach field.

No surfacing of sewage was noted at any septic tank and leach field location. The most recent inspection of this domestic sewage system was performed by New Mexico Environment Department official Mr. David Tomko on September 12, 1989. At that time, some domestic effluent was still being directed to an evaporative lagoon. A copy of this most recent report appears as Table 4-1.

4.1.2 Contact and Non-Contact Water

All contact and non-contact water is introduced into the evaporative lagoons labelled industrial ponds No. 1 through No. 4 (Plate 3-1). Effluent flows first into pond No. 1 and then pond No. 2, where the flow is split to ponds Nos. 3 and

ENVIRONMENTAL IMPROVEMENT DIVISION

WASTEWATER INVENTORY REPORT

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Report Completed By: David Tomko ⁰ /Y Date <u>09-12-89</u> County San Juan
Name and Location of Facility: <u>El Paso Natural Gas Company - Chaco Plant</u>
Address: P.O. Box 4990, Farmington, NM 87499
Type of Wastewater: Sanitary or Domestic X Industrial X Other
Plant Products or processes (if Industrial): <u>Natural Gas Compression</u> and Liquid Petroleum Products Removal
Loading Data: Number of Dwellings 13 plant buildings Population Estimate 66 Gallons per Day 1320 est. (20 gallons per person per day)
Type of System: Septic Tank 6 Lagoon or Oxidation Pond X
Package PlantTrickling Filter
Activated SludgeOther
Number of Lift Stations: None Emergency Power Source (if applicable): Yes No
Sime of System or Design Capacity: <u>3 cell lagoon system - total area l acre</u>
Final Nethod of Disposal: Surface Discharge(Chlorinated: YesNo). EvaporationXIrrigation(Chlorinated: YesNo
Sub-surface Seepage Bed or FieldOther
Remarks: Only 1 cell in use with less than 6" of water.
·
Table 4-1

4. An inspection of these ponds was performed by CDM staff on October 16, 1991, and the following conditions were observed:

- Industrial Pond No. 1: sheen or rainbow on water surface, no vegetative growth on pond sides, black soil on pond walls.
- Industrial Pond No. 2: slight sheen or rainbow on water surface, minor vegetative growth on lagoon sides, pond appears anaerobic.
- Industrial Pond No. 3: no sheen or rainbow on water surface, moderate vegetative growth.
- Industrial Pond No. 4: domestic sewage odor, pond appears aerobic, vigorous vegetative growth, color change in water at the end of the pipe.

None of the ponds at the Chaco Plant appear to be lined. For this reason, the following water balance calculations are provided in order to evaluate the relative importance of evaporation versus infiltration.

4.1.3 Evaporative Lagoon Water Balance

Current site process liquid disposal is to the evaporation ponds located north of the plant. The current effluent process involves discharge to industrial pond No. 1 (may contain some free phase hydrocarbon fuel compounds), discharge thereby controlled by free board elevation to industrial pond No. 2 (anaerobic condition) and final release to industrial pond Nos. 3 and 4 (aerobic conditions). The ponds are unlined and are prone to infiltration, seepage and evaporation processes.

In order to evaluate the component of losses from each process, a system water balance for the evaporative pond system was prepared. Each loss component is addressed separately with assumptions utilized and values calculated listed.

Evaporation Losses

The assumptions used to calculate evaporation losses include:

- a. Since there are a number of evaporation ponds located at the north end of the plant (see Plate 3-1), and four evaporation ponds are currently used at this time, an average area was computed for these ponds;
- b. The evaporation ponds contain at least six feet of water all year round;
- c. Any sediments and/or the oily liquids have reduced the permeability of the underlying pond soils and, therefore, evaporation is assumed to be the largest component of water loss from the ponds, with reduced infiltration of water into the ground taking place.

To calculate the amount of evaporation of water from the discharge lagoons, the areas of the ponds was calculated from aerial photographs (the scale of the photograph is one 1 inch equals 200 feet).

The amount of evaporation from each pond was calculated using the following formulas:

a. Ep = E/Cp

Where:	Ε	is the gross annual
		lake evaporation;

- Cp is the pan coefficient (.7); and
- Ep is the amount of evaporation from the evaporation pond;

b. $En = Ep \times Es - R$

Where: En is the net evaporation of the pond;

- Es is the coefficient of evaporation for small shallow ponds; and
- R is the average yearly rainfall of the area.

The average gross annual lake evaporation (E) is 62 inches/year for the Farmington area (Gabin and Lesperance, 1977). The coefficient of evaporation (Es) for small shallow ponds is 0.85, and the average rainfall for the Farmington area is 8.1 inches per year (Gabin and Lesperance, 1977). The areas and calculations for each of the ponds are listed below.

Pond No. 1:	Surface area 24,800 ft ² Annual evaporation 3.19 acre ft/yr.
Pond No. 2:	Surface area 16,000 ft ²
	Annual evaporation 2.06 acre ft/yr.
Pond No. 3:	Surface area 82,400 ft ²
	Annual evaporation 10.60 acre ft/yr.
Pond No. 4:	Surface area 268,400 ft ²
	Annual evaporation 34.5 acre ft/yr.

Total evaporative lagoon evaporation rate is 50.35 acre ft/yr = 16,405,408 gal/yr.

Seepage Losses

The soils which underlie and surround the evaporative ponds are classified by the Soil Conservation Services (SCS) as the Doak (Du) and Sheppard Series. These soils formed in eolian and alluvium environments and include loamy fine sand. Further discussion of these soils is provided in Section 5.1. The SCS map for the site area is included as Figure 4-1. The listed range of physical properties for these soils series, as taken from this SCS publication (Keetch, 1980) includes:

hydrologic group	:	B (moderate infiltration rate)
flooding frequency	:	None
bedrock depth high water table	:	> 60.0 inches > 6.0 feet [•]
permeability	:	0.2 - 20.0 inches/hour
available water capacity	•	0.05 - 0.12 inches/inch

Using an average permeability of 9.0 inches/hour $(1.25 \times 10^{-2} \text{ ft/min})$ at the calculated pond surface area (equals seepage area) of 391,600 ft², a seepage loss of 59,081 acre feet per year was calculated.

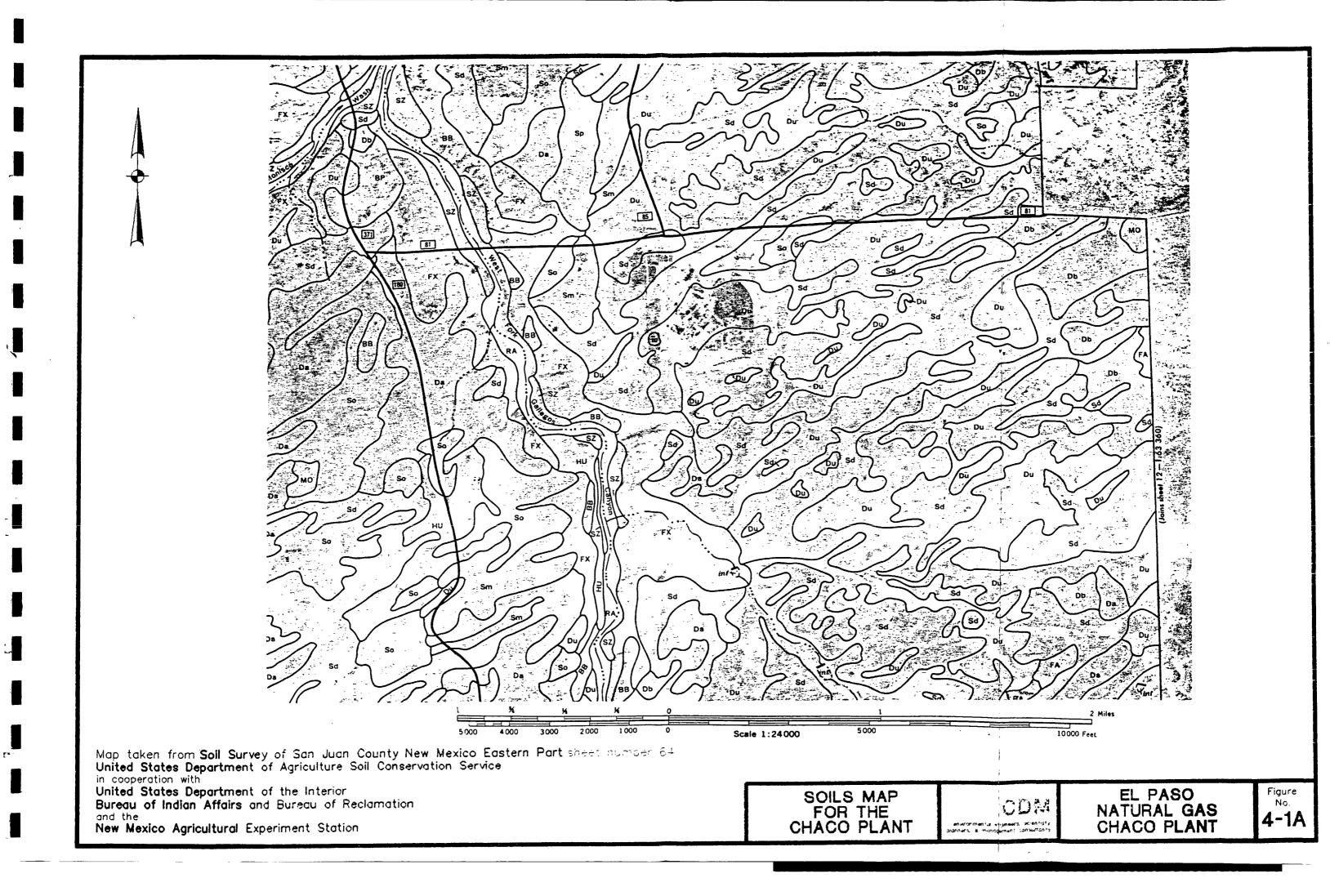
This volume is the maximum potential seepage rate that could occur from the ponds. As this number exceeds the total discharged volume, a much lower seepage volume actually occurs. The reduction in the infiltration rate is believed to be due to reduced permeability of the underlying pond soils by fine sediment and the oil globules causing skin affects.

For this reason, a "worst case infiltration" volume can be calculated by subtracting the calculated evaporitic volume from the discharge volume as performed below.

65,700,000 -	16,405,480 =	49,294,520
annual discharge	annual evaporitic	worst case
volume in gallons	volume in gallons	seepage estimate
per year	per year	in gallons per
		year

This indicates that as much as 75 percent of effluent discharged to the lagoon may reasonably be lost to infiltration.

'this value represents a high water table level for this soil series, but does not reflect Chaco Plant site conditions



SOIL LEGEND

The publication symbol does not designate slopes. The first letter, a capital, is the initial letter of the map unit name. The second letter is a capital if the map unit is broadly defined, otherwise, it is a lower case letter.

SYMBOL	NAME	SYMBOL	NAME
Ap	Apishapa clav loam	Ma	Mayqueen loamy fine sand
As	Apishapa clay	MQ	Monierco fine sandy loam, gently sloping
AŤ	Atrac Fiorita Travessilla association, hilly		
Av	Avalon sandy loam, 2 to 5 percent slopes	PO	Penistaja loam, gently sloping
Ax	Avaion sandy loam, 5 to 8 percent slopes	PP	Penistaja-Buckle association, gently sloping
Ay	Avalon loam, 0 to 3 percent slopes	PT	Penistaja-Travessilla association, moderately sloping
AZ	Avaion-Sheppard-Shiprock association, gently sloping	PX	Pits
8A	Badland	RA	Riverwash
88	Badiand-Monierco-Rock outcrop complex, moderately steep	RO	Rock outcrop
BC Be	Badland-Rock outcrop-Persayo complex, extremely steep Beebe loamy sand	RT	Rock outcrop-Travesilla-Weska complex, extremely steep
Br	Beebe Variant loamy sand	SB	Sheppard-Badland complex, very steep
Bk	Blackston loam, 0 to 3 percent slopes	SC	Sheppard-Huerfano-Notal complex, gently sloping
Bm	Blackston gravelly loam, 3 to 8 percent slopes	Sd	Sheppard-Mayqueen-Shiprock complex, 0 to 8 percent slopes
82	Blackston-Farb complex, moderately steep	Sh	Shiprock loamy fine sand, 0 to 2 percent slopes
BR		Sk	Shiprock loamy fine sand, 2 to 5 percent slopes
81	Blancot-Fruitland association, gently sloping	Sm	Shiprock fine sandy loam, 0 to 2 percent slopes
BU	Blancot-Notal assocation, gently sloping	So	Shiprock fine sandy loam, 2 to 5 percent slopes
вџ	Buckle silt loam, gently sloping	Sp	Shiprock fine sandy loam, 5 to 8 percent slopes
0.	Death learn Alter I annear alter a	Sr	Shiprock Variant fine sandy loam
Da Db	Doak loam, 0 to 1 percent slopes	, St	Stumble loamy sand, 0 to 3 percent slopes
	Doak loam, 1 to 3 percent slopes	Su	Stumble loamy sand, 3 to 8 percent slopes
Dc	Doak loam, 3 to 5 percent slopes	ŠV	Stumble sandy clay loam, gently sloping
Dd	Doak clay loam, 0 to 2 percent slopes	ŚW	Stumble Fruitland association, gently sloping
DN DS	Doak-Avaion association, gently sloping	SX	Stumble-Notal complex, gently sloping
	Doak-Sheppard-Shiprock association, rolling	SZ	Stumble-Slickspots complex, gently sloping
Du	Doak-Uffens complex, 0 to 3 percent slopes	~	aramore anerapara comprex, gently stoping
.Dw	Doak-Uffens complex, 3 to 8 percent slopes	TA	Travessilla-Weska-Rock outcrop complex, moderately steep
DZ	Dune land	To	Turley clay loam, 0 to 1 percent slopes
. .	- . -	Tr	Turley clay loam, 1 to 3 percent slopes
FA	Farb Persayo Rock outcrop complex, moderately steep	Ts	Turley clay loam, 3 to 5 percent slopes
FP	Fluvaquents, ponded	Ti	Turley clay loam, wet, 0 to 2 percent slopes
Fr	Fruitland sandy loam, 0 to 2 percent slopes	Tv	Turley-Slickspots complex, 0 to 3 percent slopes
Fs	Fruitland sandy loam, 2 to 5 percent slopes	TW	Twick-Silver association, moderately sloping
Ft	Fruitland sandy loam, wet, 0 to 2 percent slopes		THICK SINCE association, moderately sloping
Fu	Fruitland loam, 1 to 3 percent slopes	Wa	Wairees joam
Fw	Fruitland loam, 5 to 8 percent slopes	Wr	
FX	Fruitland-Persayo-Sheppard complex, hilly	Ws	Werlog loam Werlog loam, saline
Fy	Fruitland Slickspots complex, 0 to 3 percent slopes	44.2	werlog toarri, same
Ga	Garland loam	Yo	Youngston clay loam
Gr	Green River fine sandy loam		
GY	Gypsiorthids-Badland-Stumble complex, moderately steep		
HA	Haplargids-Blackston-Torriorthents complex, very steep		
1 /1 1			

Huerfano-Muff-Uffens complex, gently sloping HU

Key taken from Soil Survey of San Juan County New Mexico Eastern Part United States Department of Agriculture Soil Conservation Service in cooperation with United States Department of the Interior Bureau of Indian Affairs and Bureau of Reclamation and the

New Mexico Agricultural Experiment Station



BOUNDARIES		PITS
National, state or province		Gravel pit
County or parish		Mine or quarry
Minor civil division		MISCELLANEOUS CULTUR
Reservation (national forest or par state forest or park, and large airport)	·k, ·	Farmstead, house (omit in urban areas) Church
Land grant	<u> </u>	School
Limit of soil survey (label)		Indian mound (label)
Field sheet matchline & neatline	·	Located object (label)
AD HOC BOUNDARY (label)		Tank (label)
Small airport, airfield, park, oilfield, cemetery, or flood pool	Davis Airsing	Weils, oil or gas
conclusy, or nood poor	1 COOL	Windmill
STATE COORDINATE TICK	t	Kitchen midden
LAND DIVISION CORNERS (sections and land grants) ROADS	╘╶┷╶╈╶┯┷	
Divided (median shown if scale permits)		
Other roads		WATER FE
Trail		DRAINAGE
ROAD EMBLEMS & DESIGNATIONS		Perenniai, double line
Interstate	•	Perennial, single line
Federal	•••	Intermittent
State	(9)	Drainage end
County, farm or ranch	(33)	Canals or ditches
RAILROAD	++	Double-line (label)
POWER TRANSMISSION LINE (normally not shown)	••	Drainage and/or irriga
PIPE LINE (normally not shown)		LAKES, PONDS AND RESER
FENCE (normally not shown)	x	Perennial
LEVEES		Intermittent
Without road		MISCELLANEOUS WATER FE
144 00		
With road		Marsh or swamp
With railroad		Marsh or swamp Spring



DAMS

Large (to scale)

Medium or small

Well, irrigation Wet spot

Well, artesian



CONVENTION/ SYMBOLS

	GEND		
		SPECIAL SYMBOL SOIL SURVEY SOIL DELINEATIONS AND SYMBOLS	S FOR
	X a.P.	ESCARPMENTS	
1	*	Bedrock (points down slope)	******
RAL FEATU	RES	Other than bedrock	*********
:	•	(points down slope) SHORT STEEP SLOPE	
1 1	i	GULLY	·····
,	•	DEPRESSION OR SINK	٥
1	Indian Mound	SOIL SAMPLE SITE	\$
ļ	Tower O	(normally not shown) MISCELLANEOUS	
t	GAS	Biowout	
	. ه		ن *
1	8	Clay spot Gravelly spot	*
	-	Gumbo, slick or scabby spot (sodic)	ø
		Dumps and other similar	
\$		non soil areas Prominent hill or peak	E
L.		_	2,5
ATUR	ES	Rock outcrop (includes sandstone and shale)	•
:		Saline spot	+
)		Sandy spot	
		Severely eroded spot	÷
1 ,	<u> </u>	Slide or slip (tips point upslope)	5
		Stony spot, very stony spot	0 00
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EL PASO NATURAL GAS CHACO PLANT

Figure No 4-1B

CDM

A flare pit is located northeast of Industrial Pond No. 3 and downstream from the oil/water classifier and the scrubber. Vapors originate from the liquid and which cannot be recovered are flared. Major flares only occur during periods of plant upset.

4.2 PROPOSED MODIFICATIONS: CLOSURE OF UNLINED PITS, PONDS AND DRAINS

EPNG proposes to close the following unlined pits and ponds which currently or historically contained contact wastewater. These pits are depicted in Plate 3-1. These pits and ponds include:

- Industrial Ponds No. 1 through No. 10
- Former Domestic Ponds No. 1 through No. 3
- Former Domestic Overflow Pits
- Flare Pit
- French Drains

In keeping with sound environmental practices, EPNG proposes to provide engineered evaporation ponds to replace the above named pits, ponds, and drains. A smokeless flare will replace the existing flare pit. Effluent lines will be metered so that actual discharge volumes can be measured. The existing pits, ponds and drains will be closed in accordance with current state and federal environmental standards and guidelines.

The residues in the pits, ponds and drains will be analyzed for characteristics of hazardous waste in accordance with 40 CFR 261 and will be compared to "listed" wastes as well. If material from the ponds and pits is shown to be hazardous, this material will be disposed of in accordance with EPA guidelines. The excavated material will be replaced with clean soil. It has been EPNG's experience that after analysis by the Toxicity Characteristic Leaching Procedure (TCLP), this material will not be classified as hazardous. EPNG has developed a program for remediation of hydrocarbon contaminated soil using a designated Soil Remediation Site (SRS). Once permitted by NMOCD, pond residue would be placed at the SRS for remediation utilizing the Operational Procedures which appear in draft form in Appendix C.

The principle of operation of the SRS is to thin spread affected soils in 6-inch layers in order to enhance volatilization and natural biodegradation. Proposed soil cleanup target levels would be those which appear in the New Mexico Environmental Improvement Board's Underground Storage Tank Regulations (Section 1209.D.3.a and b). These levels are listed below:

- total BTEX <50 ppm
- benzene <10 ppm
- TPH <100 ppm

Once these levels have been reached (as determined by laboratory analysis), an additional lift can be placed on the remediated soil.

5.0 SITE CHARACTERISTICS

5.0 SITE CHARACTERISTICS

The plant is located in the San Juan River drainage basin (Figure 5-1), and within the west central portion of the San Juan structural basin. Topographic relief within one mile of EPNG's plant is about 80 feet, with elevations ranging from 6000 to 6080 feet above sea level.

The area is characterized by mesas and dry arroyos. The plant is on a gently sloping terrace on the west side of the mesa which separates Gallegos Canyon and West Gallegos Canyon. Both canyons contain salt encrusted dry washes. Tertiary sandstones are exposed in the walls of West Gallegos Canyon and Tertiary sandstones and mudstones crop out in Gallegos Canyon (Figure 5-2). Average annual precipitation in the area is 8.1 inches. Vegetation is characterized by desert brush that covers approximately 80 percent of the surface.

5.1 GEOMORPHOLOGY AND SOILS

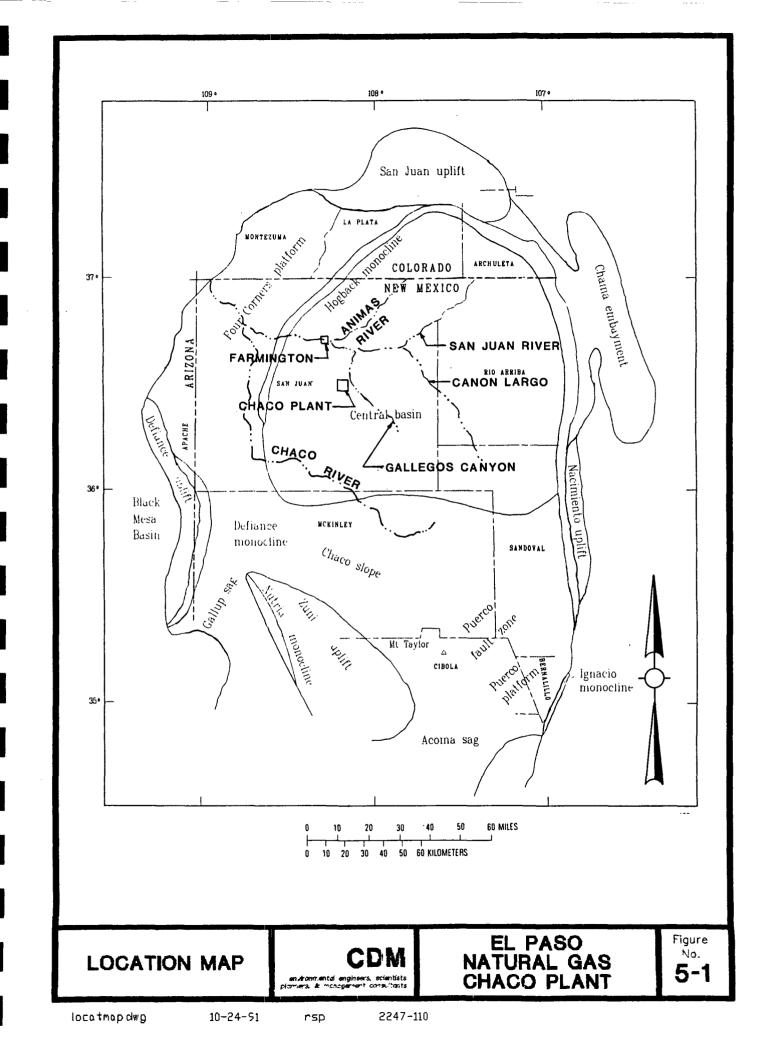
The plant is situated on a terrace between the crest of the mesa and West Gallegos Canyon. The surface slopes about three percent from the highest point, 6037 feet at the southeast corner to 6000 feet at the northwest corner. Three major soil associations are identified on the plant site: the Doak-Uffens complex, the Sheppard-Mayqueen-Shiprock complex, and the Shiprock fine sandy loam (Keetch, 1980). All of these soil associations are well drained soils which formed in alluvium or eolian deposits derived from sandstone and shale. Most of the plant facilities, including the evaporation ponds, are on Doak-Uffens soils. Permeability of these soils is low, ranging from 0.6 to 6.0 inches per hour. For this association runoff is very slow to slow and water erosion potential is low, but wind erosion potential is high.

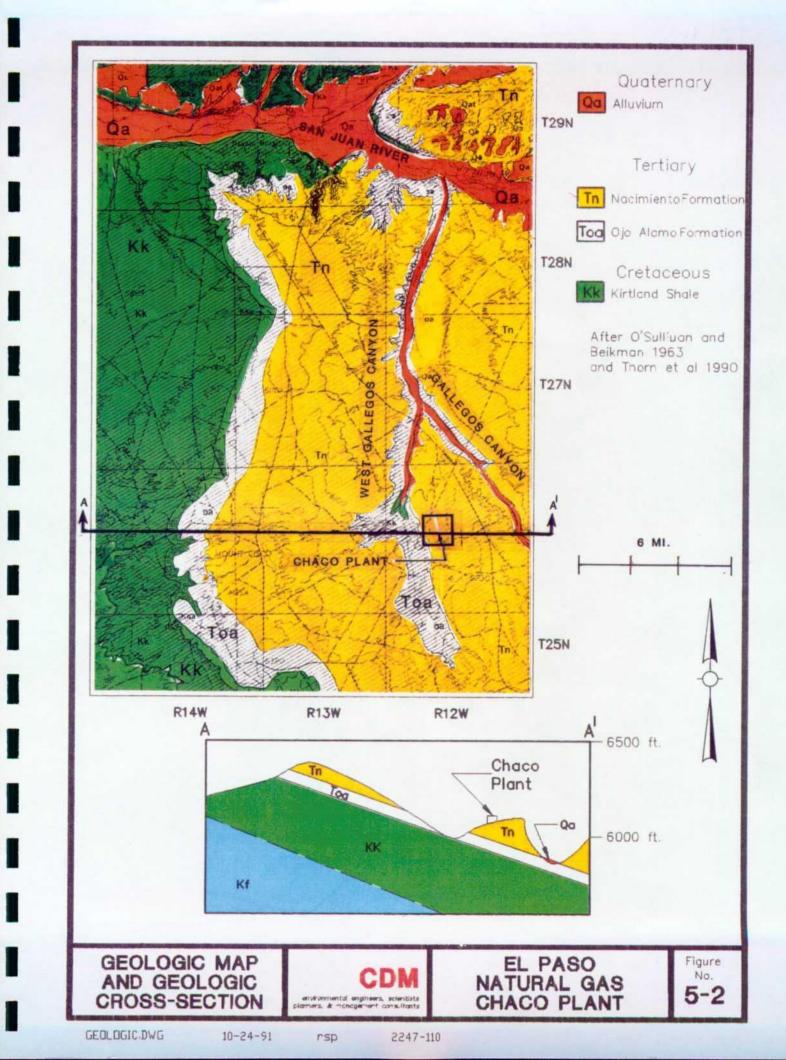
The facility landfill is constructed on Sheppard-Mayqueen-Shiprock soil. No other plant facilities are constructed on these or the Shiprock soils. Permeability of this soil association is moderately high, ranging from 2 to 20 inches per hour. Water runoff potential is low, but wind erosion potential is high.

5.2 **REGIONAL GEOLOGY**

The plant is located within the west-central part of the San Juan Basin (Figure 5-1). The deepest portion of the basin contains up to 15,000 feet of Paleozoic and Mesozoic sediments (Fassett and Hinds, 1971). Tertiary and Late Cretaceous age rocks crop out in the immediate vicinity of the plant (Figure 5-2).

Beneath the plant the Paleocene Ojo Alamo Sandstone lies unconformable above the Cretaceous Kirtland Shale (Figure 5-2). The Ojo Alamo Sandstone is composed of interbedded sandstone, conglomeratic sandstone, and shale. The





massive sandstone beds are sheetlike and discontinuous; they merge with other sandstone sheets, or wedge out into shale beds. The shale beds maintain relatively constant thickness. The unit varies from less than 20 feet to more than 400 feet thick throughout the basin. Channel depths of 50 or more feet have cut into the base of the underlying Fruitland Formation. The sandstone accumulated in stream channels and the shales in overbank deposits of rivers in a broad, wet alluvial apron.

The Paleocene Nacimiento Formation is conformable with the Ojo Alamo. It is comprised of gray to yellowish and reddish claystone and mudstone beds, interbedded with buff, gray or white lenticular sandstone beds. The clay component is described as "swelling" or "soapy." The formation contains significant amounts of carbonaceous material, leaf impressions and coal indicating that it was deposited by streams under more humid conditions than was the Ojo Alamo.

The Nacimiento varies from 400 to 800 feet in thickness and crops out in striking scarp or badlands exposures from the Colorado-New Mexico border southward across the San Juan River, then southeastward to the point of Cuba Mesa and northward to the upper Rio Puerco valley north of Cuba.

Thick Quaternary deposits are restricted to the San Juan, Animas and La Plata Valleys. Thin alluvial deposits are found in some arroyos and thin eolian deposits cap some mesas.

5.3 LOCAL GEOLOGY

The plant is located on a mesa where Quaternary eolian alluvium overlies the Tertiary Nacimiento and Ojo Alamo Sandstone. Fine- to medium-grained, light brown to moderate yellowish brown sand with varying amounts of silt and clay are exposed at the surface at the plant.

The Tertiary Nacimiento Formation caps the mesa according to O'Sullivan and Beikman (1963). In exposures in the badlands of West Gallegos Canyon six miles southeast (T25N, R12W, Sections 11, 14 and 15) the Nacimiento Formation is comprised of a lower mudstone, middle sandstone and upper mudstone and sandstone complex (Lucas, 1984). The thickness and composition of these units are highly variable, however, and individual beds are not laterally continuous.

A light brown sandstone unit of the Nacimiento Formation is present in roadcuts on the paved road to State Highway 44 adjacent to the plant, and in Gallegos Canyon three miles east of the plant and West Gallegos Canyon, one mile west of the plant. A gray and black mudstone unit is well exposed below the sandstone in Gallegos Canyon, but is either covered or not present in West Gallegos Canyon. Portions of the Nacimiento Formation have been removed by erosion in the area of the plant. Based on information reported by Petroleum Information (PI) for oil and gas wells in the area, the total thickness of the Nacimiento here is approximately 100 feet.

The Ojo Alamo Sandstone crops out below the Nacimiento Formation in West Gallegos Canyon and is approximately 150 feet thick under the plant according to PI data.

5.4 LOCAL HYDROLOGY AND GROUNDWATER QUALITY

5.4.1 Regional Groundwater Hydrology and Water Quality

Three major groundwater systems are present in the Cretaceous and younger-age sedimentary deposits of this area of the San Juan Basin (Stone et al, 1983):

- Confined aquifers within Cretaceous and Tertiary sandstone units;
- Water-table aquifers in Cretaceous and Tertiary sandstone units near their outcrop areas;
- Water-table aquifers in Quaternary alluvium in river valleys; and tributaries.

<u>Cretaceous units</u>. Occurrence of groundwater resources associated with the Cretaceous units is a function of the distribution of sandstone beds within these units. Recharge is dependent upon outcrop distribution, elevation, climate of the outcrop area, lithologic characteristics of the unit and leakage from other units. Hydraulic conductivity is usually low due to the fine-grained textures characteristic of these sediments.

Groundwater quality in Cretaceous sandstone aquifers is controlled by several factors. Total dissolved solids (TDS) concentrations increase as a function of increasing groundwater residence time and reduced transmissivity of aquifer materials. Fresh water is associated with high transmissivity zones, while saline water is associated with low transmissivity zones. Groundwater moving along the sandstone-shale interfaces common to these rocks tends to exhibit increased TDS concentrations (Stone, et al., 1983). Water from these confined aquifers is suitable for livestock and domestic use in some areas, although in most cases it is not considered a major source. <u>Tertiary units</u>. Groundwater occurrence in the Tertiary units is associated with the distribution of sandstone beds within these units. Recharge to groundwater is by infiltration through formation exposures along the flanks of the Nacimiento Uplift and on the broad plateaus that occur in the central part of the basin. The amount of recharge to Tertiary aquifers is higher than that to Cretaceous aquifers due to broader exposures in areas of high precipitation. Groundwater in these aquifers flows from upland recharge areas to discharge areas along canyon floors. Springs and seeps result due to regional topographic and geomorphic controls. The hydraulic conductivity of the Tertiary sandstones varies significantly, as a function of grain size, sorting and cementation. The hydraulic gradient is controlled by topography, but the structural attitude of the formations can alter the flow direction.

Tertiary sandstone aquifers have generally lower TDS concentrations than the Cretaceous aquifers (Stone et al, 1983), and commonly provide major sources of water for domestic and agricultural usage. The complex intertonguing of sandstone and shale units is the primary influence on specific conductance, which can be as high as 10,500 um/cm.

<u>Quaternary units</u>. Quaternary age aquifers occur primarily as valley fill in the major river valleys and consist of gravel, sand, silt and clay. In arroyos the groundwater quality and quantity is highly variable. Where available, water from this source is used for livestock, irrigation and domestic purposes.

A summary of the Mesozoic and Cenozoic Stratigraphy of the South Central San Juan Basin (after Thorn et al, 1990) appears as Table 5-3.

5.4.2 Local Groundwater Hydrology and Quality

No alluvial aquifer exists at the plant site or in either Gallegos Canyon or West Gallegos Canyon.

The Nacimiento Formation is comprised of 100 feet of low permeability fine grained sandstone, siltstone and shale. No wells are reported in the Nacimiento near the plant. The low permeability material prevents downward percolation from the surface under the plant.

The State Engineer's Office reports one well and Stone et al (1983) reports two other wells in the Ojo Alamo Formation on the mesa which includes the plant site. Stone et al (1983) estimate groundwater to lie at a depth of approximately 220 feet below the plant site.

TABLE 5-3				
MESOZOIC AND CENOZOIC STRATIGRAPHY SOUTH CENTRAL SAN JUAN BASIN (After Thorn et al, 1990)				
C E	QUATERNARY	Alluvium		
N O	TERTIARY	San Jose Formation		
Z O		Nacimiento Formation		
I C		Ojo Alamo Sandstone		
	CRETACEOUS	Kirtland Shale		
		Fruitland Formation		
		Pictured Cliffs Sandstone		
		Lewis Shale		
M		Mesa Verde Group		
E		Mancos Shale		
S O		Dakota Sandstone		
	JURASSIC	Morrison Formation		
0		Wanakah Formation		
I C		Entrada Sandstone		
V	TRIASSIC	Chinle Formation		

2477.003

5-7

The total dissolved solids reported from this aquifer in wells in this area range from 560 to 1,000 ppm (Thorn et al, 1990). The potentiometric surface dips gently northwest toward the San Juan River.

5.5 Water Hydrology and Flooding Potential

The major local drainage feature is West Gallegos Canyon, located approximately one mile west of the site. West Gallegos Canyon enters Gallegos Canyon about six miles north of the site (Figure 5-1). Gallegos Canyon drains approximately 300 square miles and discharges into the San Juan River east of Farmington. Flooding potential from the San Juan River to the site is negligible because the plant is about 20 miles south of, and well outside the floodplain of the San Juan River.

The U.S. Geological Survey maintained a gauging station at the mouth of Gallegos Canyon four miles upstream of the San Juan River near Farmington from October 1977 through September 1981. Reported maximum discharge for this station was 900 cfs on January 17, 1979. The report states that no flow was reported "most of the time." No 100 year flood calculations are possible because of the limited data. The elevation difference between the waste impoundment and the arroyo (approximately 50 feet) presents a potential for flooding from this source along State Highway 44 into West Gallegos Canyon, but it is not expected to produce flooding of concern in Gallegos Canyon or the San Juan River.

Two ephemeral east to west drainages occur, one north of the plant boundaries, the other along the southern plant boundary. Both discharge to west of the plant where a berm prevents surface flow to West Gallegos Canyon. Surface flow to the west is also controlled by drainage-ways on property containing facilities operated by other pipeline companies.

6.0 MONITORING AND REPORTING

6.0 MONITORING AND REPORTING

Samples of wastewater discharged to the evaporative lagoons will be obtained annually and analyzed for the parameters listed in Section 3-103 of the NMWQCC Regulations (with the exception of radioactive species). This data will be presented to NMOCD each year in an annual report. Any changes or modifications to this plan (anticipated or otherwise), or to the effluent disposal system, will be reported to the NMOCD. The NMOCD is hereby notified of EPNG's intent to close the various domestic and industrial ponds as outlined in Section 4.

A. Proposed implementation schedule for construction of a lined evaporative pond and subsequent closure of existing ponds appears below.

TASK	COMPLETION DATE
Berm Areas Around Chemical Tanks	Spring 1992
Install New Smokeless Flare	Summer 1992
Retire Existing Flare Pit	Summer 1992
Begin Water Conservation Study	Fall 1992
Complete Water Conservation Study	Spring 1993
Begin Evaporative Ponds Construction	Fall 1993
Complete Evaporative Ponds Construction	Spring 1994
Close Existing Industrial Ponds/French Drains	Spring 1994

2477.003

7.0 BASIS FOR APPROVAL

7.0 BASIS FOR APPROVAL

The existing site conditions at the Chaco Plant indicate that there should be no present or foreseeable future danger to groundwater as the result of proposed discharge practices. No present or foreseeable future users of groundwater in the Chaco Plant area are anticipated to be negatively affected by the proposed effluent disposal practices for the following reasons:

- 100 percent of contact wastewaters undergo hydrocarbon separation prior to discharge to the evaporative ponds.
- 75 percent of all wastewaters are derived from non-contact processes and are of relatively good quality (Section 3.2).
- EPNG proposes to close all unlined pits and ponds to further improve environmental quality (Sections 4.2 and 6.0).
- There is no significant potential for wastewater release due to flooding by a 100-year storm (Section 5.5).
- EPNG is committed to using sound disposal practices and to this end submits this plan outlining the proposed procedures. Likewise, EPNG is committed to cooperating fully with NMOCD in honoring requests for additional information or clarification of existing information related to the discharge plan.

8.0 SUMMARY OF DISCHARGE PLAN REQUIREMENTS

8.0 SUMMARY OF DISCHARGE PLAN REQUIREMENTS

- 1) Annual analysis of effluent taken from the discharge to the evaporative lagoons.
- 2) Remediation of any soils containing elevated levels of petroleum hydrocarbon compounds (see Section 4.0) at an NMOCD-approved Soil Remediation Site.
- 3) NMOCD will be notified of any fire, break, leak, or spill pursuant to the terms and conditions set forth in NMOCD Rule 116.

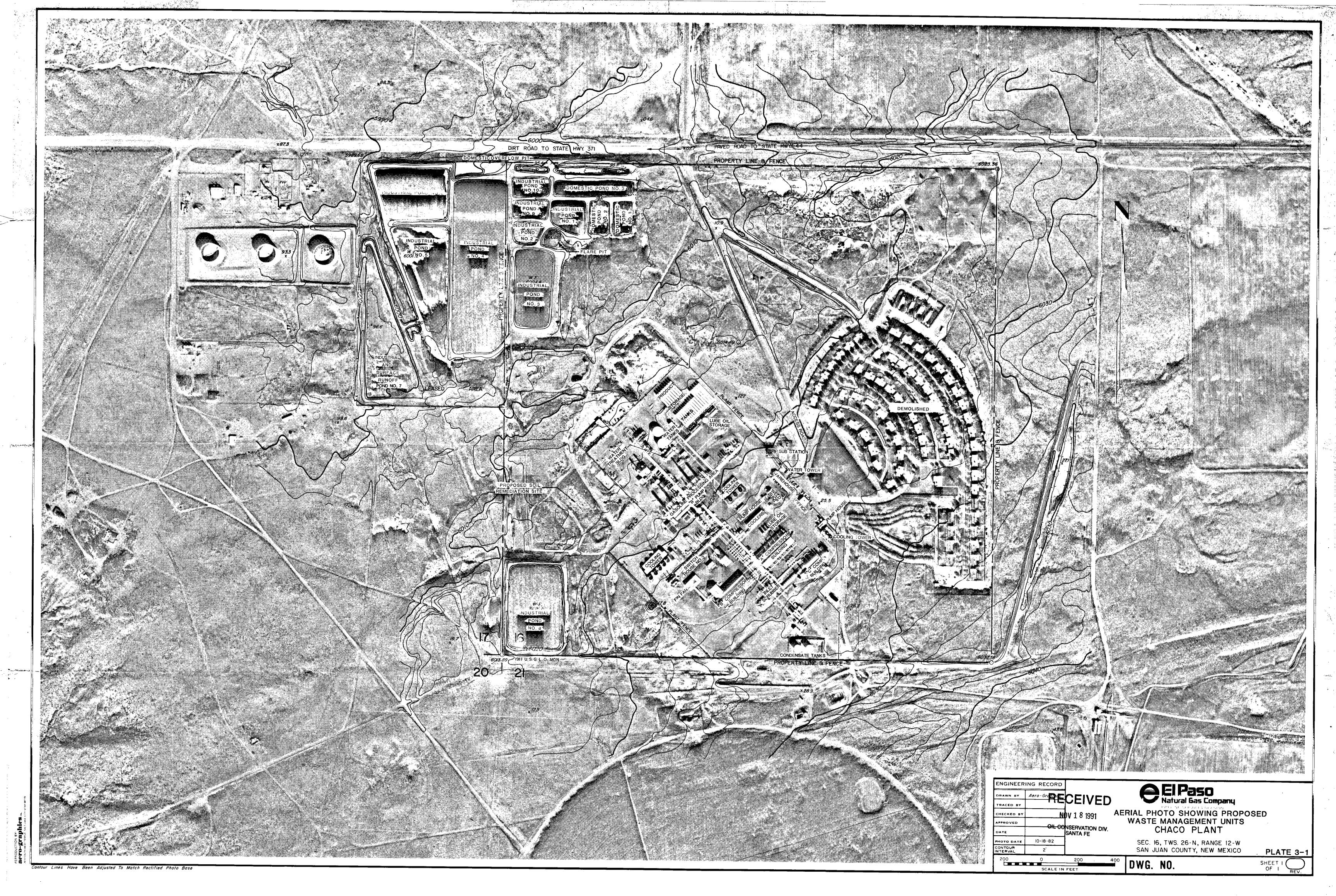
Immediate Notification (pursuant to Rule 116.C(7)) will be provided to NMOCD for all "major" breaks, spills, or leaks as defined by NMOCD Rule 116.C(2), as well as for Leaks and Gas Line Breaks as defined by NMOCD Rule 116.C(4). Subsequent notification, including a complete written report, will be provided to NMOCD within 10 days of the incident, as set forth in NMOCD Rule 116.C(8).

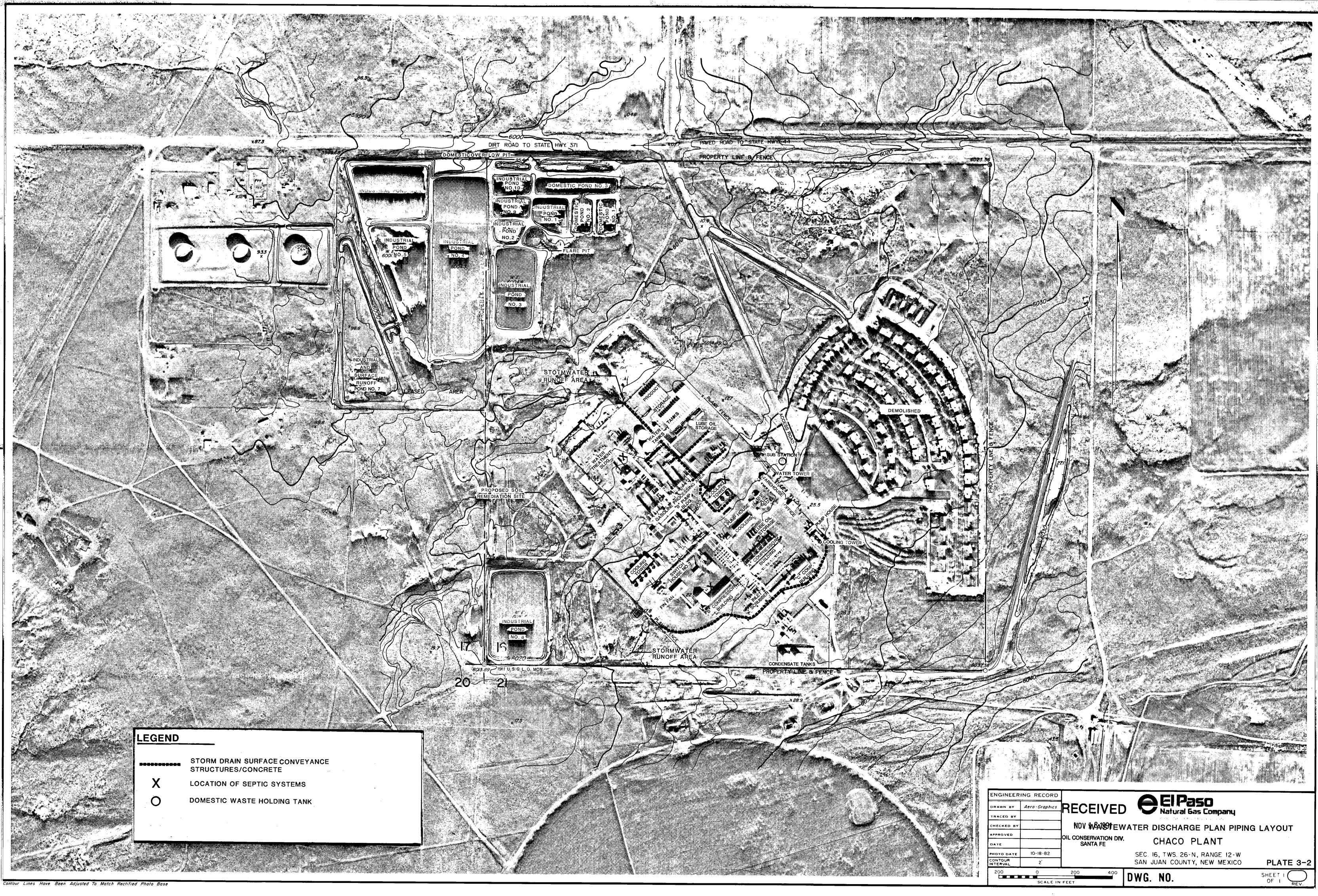
4) Maintain records of wastewater characterization for at least five years.

9.0 REFERENCES

9.0 REFERENCES CITED

- Gabin, V. L., and Lesperance, L. L., 1977, New Mexico Climatological Data: Precipitation, Temperature, Evaporation, and Wind-Monthly and Annual Means, 1850-1975: W. K. Summers and Assoc., p. 436.
- Keetch, C. W. 1980, Soil Survey of San Juan County, New Mexico, Eastern Part; U. S. Soil Conservation Service.
- Lucas, S. G., 1984, Early Paleocene vertebrates, stratigraphy, and biostratigraphy, West Fork of Gallegos Canyon, San Juan Basin, New Mexico; New Mexico Geology, V. 6, No. 3d, p. 56-60.
- O'Sullivan, R. B. and Beikman, H. M., 1963, Geology, Structure, and Uranium Deposits of the Shiprock Quadrangle, New Mexico and Arizona; U. S. Geological Survey Misc. Geological Investigations Map I-345.
- Stone, W. J., Lyford, F. P., Frenzel, P. F., Mizell, N. H., and Padgett, E. T., 1983, Hydrogeology and Water Resources of San Juan Basin, New Mexico; New Mexico Bureau of Mines and Mineral Resources, Hydrologic Report 6.
- Thorn, C. R., Levings, G. W., Craigg, S. D., Dam, W. L., and Kernodle, J. M., 1990, Hydrogeology of the Ojo Alamo Sandstone in the San Juan Structural Basin, New Mexico, Colorado, Arizona and Utah; U.S. Geological Survey Hydrologic Investigations Atlas 720-B.





DISCHARGE PLAN FOR

EL PASO NATURAL GAS COMPANY'S

CHACO PLANT

SAN JUAN COUNTY, NEW MEXICO



NOVEMBER 1991

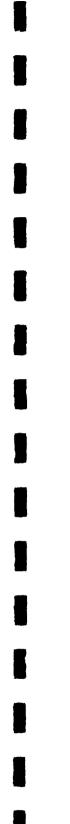
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OIL CONSERVATION DIV. SANTA FE

VOLUME 2

APPENDIX A ANALYTICAL LABORATORY REPORTS ----



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Analytical **Technologies**, Inc.

9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 109594

September 26, 1991

El Paso Natural Gas Company P.O. Box 4990 Farmington, NM 87499

Project Name/Number: Chaco Plant

Attention: John Lambdin

On 09/06/91, Analytical Technologies, Inc. received a request to analyze aqueous sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

Method 610 analyses were performed by ATI, Fort Collins. Uranium, Radium 226 and Radium 228 analyses were performed by Barringer Laboratories.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

Mary A. Lyce

Mary Tyer Project Manager

RVW:clf Enclosure

Juster V. Wood

Robert V. Woods Laboratory Manager

Corporate Offices: 5550 Morehouse Drive San Diego, CA 92121 (619) 458-9141



ri #	CLIENT DESC	CRIPTION	MATRIX	DATE COLLECTED
01 02	N11935 TRIP BLANK		AQUEOUS AQUEOUS	09/05/91 09/05/91
		TOTALS		
	MATRIX	# SAMPLES		
	AQUEOUS	2		
		ATI STANDARD DISPOSAL	PRACTICE	



GENERAL CHEMISTRY RESULTS

			ATI I.D. : 10	9594
CLIENT : EL PASO NATUR PROJECT # : (NONE)	AL GAS, NE	W MEXICO	DATE RECEIVED	
PROJECT NAME : CHACO PLANT			REPORT DATE	: 09/25/91
PARAMETER	UNITS	01		
CHLORIDE CYANIDE, TOTAL FLUORIDE NITRATE AS NITROGEN PH PHENOLICS, TOTAL SULFATE TOTAL DISSOLVED SOLIDS	MG/L MG/L MG/L UNITS MG/L MG/L	<0.05		

L

Analytical **Technologies**, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

LIENT : EL PASO D PROJECT # : (NONE) PROJECT NAME : CHACO PL		GAS, NEW	MEXICO	ATI	I.D.	: 10959	94	
PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE		۶ REC
CHLORIDE CYANIDE, TOTAL FLUORIDE NITRATE AS NITROGEN	MG/L MG/L MG/L MG/L	10960101 10956101 10960101 10960101	<0.01 0.22	260 <0.01 0.22 35	0 NA 0 3	510 0.21 0.41 132	250 0.25 0.20 100	100 84 95 98
PH PHENOLICS, TOTAL SULFATE TOTAL DISSOLVED SOLIDS	UNITS MG/L MG/L MG/L	10958601 10964001 10960101 10965801	0.17 150	7.3 0.17 140 18000	0 0 7 0	NA 0.42 280 NA	NA 0.25 150 NA	NA 100 87 NA

Ace toble Ace off-q-30-al

% Recovery = (Spike Sample Result - Sample Result) ---- X 100 Spike Concentration RPD (Relative Percent Difference) = (Sample Result - Duplicate Result) _____ Х

Average Result



METALS RESULTS

ATI I.D. : 109594	
-------------------	--

DATE	RECEIVED	:	09/06/91

CLIENT : EL PASO NATURAL GAS, NEW MEXICO PROJECT # : (NONE) PROJECT NAME : CHACO PLANT

REPORT DATE : 09/25/91

PARAMETER	UNITS	01
SILVER	MG/L	<0.010
ARSENIC	MG/L	<0.005
BORON	MG/L	<0.10
BARIUM	MG/L	<0.010
_CADMIUM	MG/L	<0.005
CHROMIUM	MG/L	<0.010
COPPER	MG/L	<0.010
IRON	MG/L	25.7
MERCURY	MG/L	<0.0002
MANGANESE	MG/L	0.108
LEAD	MG/L	<0.002
SELENIUM	MG/L	<0.005
URANIUM	MG/L	0.0034
ZINC	MG/L	<0.010



METALS - QUALITY CONTROL

PROJECT #	ATI	I.D.	:	109594

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT RPD	SPIKED SAMPLE		% REC
SILVER ARSENIC BORON BARIUM CADMIUM	MG/L MG/L MG/L MG/L MG/L	10959501 10964001 10959401 10957201 10957201	<0.10 0.608 <0.005	<0.010 NA <0.005 NA <0.10 NA 0.604 0.7 <0.005 NA	0.435 0.048 1.00 1.58 0.495	0.500 0.050 1.00 1.00 0.500	87 96 100 97 99
CHROMIUM COPPER IRON MERCURY MANGANESE	MG/L MG/L MG/L MG/L MG/L	10957201 10957201 10960101 10960001 10957201	<0.010 <0.020 <0.0002 4.02	<0.010 NA <0.010 NA <0.020 NA <0.0002 NA 4.00 0.5	0.990 0.488 10.3 0.0050 5.06	1.00 0.500 10.0 0.0050 1.00	99 98 103 100 104 ی
LEAD SELENIUM URANIUM ZINC	MG/L MG/L MG/L MG/L	10957101 10964001 10999910 10959501	<0.005 0.0045	<0.002 NA <0.005 NA 0.0042 4.5 <0.010 NA	0.040 0.045 NA 0.522	0.050 0.050 NA 0.500	800 90 NA 1.04

% Recovery = (Spike Sample Result - Sample Result) ----- X 100 Spike Concentration

peopletit q

RPD	(Relative	Percent	Difference)	=	(Sample	Result	-	Duplicate R	esult)		
										Х	100
						Avei	raç	ge Result			



GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10959401

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

CLIENT : EL PASO NATURAL GAS PROJECT # : (NONE) PROJECT NAME : CHACO PLANT CLIENT I.D. : N11935 SAMPLE MATRIX : AQUEOUS	, NEW MEXICO DATE SAMPLED : 09/05/91 DATE RECEIVED : 09/06/91 DATE EXTRACTED : N/A DATE ANALYZED : 09/09/91 UNITS : UG/L DILUTION FACTOR : 500
COMPOUNDS	RESULTS
BENZENE BROMODICHLOROMETHANE BROMOFORM BROMOMETHANE CARBON TETRACHLORIDE CHLOROBENZENE CHLOROETHANE CHLOROFORM CHLOROFORM CHLOROMETHANE DIBROMOCHLOROMETHANE 2-CHLOROETHYL VINYL ETHER 1,3-DICHLOROBENZENE 1,2 & 1,4-DICHLOROBENZENE DICHLORODIFLUOROMETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHENE (TOTAL) 1,2-DICHLOROPROPANE CIS-1,3-DICHLOROPROPENE TRANS-1,3-DICHLOROPROPENE ETHYLBENZENE METHYLENE CHLORIDE 1,1,2,2-TETRACHLOROETHANE TETRACHLOROETHENE 1,1,1-TRICHLOROETHANE 1,1,2-TRICHLOROETHANE TRICHLOROFLUOROMETHANE TRICHLOROFLUOROMETHANE VINYL CHLORIDE TOTAL XYLENES TRICHLOROTRIFLUOROETHANE SURROGATE PERCENT RECOVERI	$\begin{array}{c} 4200 \\ <100 \\ <100 \\ <100 \\ <250 \\ <100 \\ <100 \\ <100 \\ <100 \\ <250 \\ <250 \\ <250 \\ <250 \\ <250 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <100 \\ <1$
BROMOCHLOROMETHANE (%) BROMOFLUOROBENZENE (%)	82 83



_ ---- - - -

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10959402

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

.

TEST . VOLATIES MEDICARDOND/MOMMITCE (ETA 001/	
CLIENT : EL PASO NATURAL GAS, NEW MEXICO PROJECT # : (NONE)	D DATE SAMPLED : 09/05/91
PROJECT # : (NONE)	DATE RECEIVED : 09/06/91
PROJECT NAME : CHACO PLANT	DATE EXTRACTED : N/A
CLIENT I.D. : TRIP BLANK	DATE ANALYZED : 09/10/91 UNITS : UG/L
SAMPLE MATRIX : AQUEOUS	UNITS : UG/L
	DILUTION FACTOR : 1
COMPOUNDS	RESULTS
	<0.5
BENZENE BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<0.2
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.5
CHLOROETHANE	<0.2
CHLOROFORM	<0.2
CHLOROMETHANE	<0.2
DIBROMOCHLOROMETHANE	<0.2
2-CHLOROETHYL VINYL ETHER	<0.5
., 3-DICHLOROBENZENE	<0.5
1,2 & 1,4-DICHLOROBENZENE	<0.5
DICHLORODIFLUOROMETHANE	<0.2
1,1-DICHLOROETHANE 1,2-DICHLOROETHANE	<0.2 <0.2
1,1-DICHLOROETHENE	<0.2
1,2-DICHLOROETHENE(TOTAL)	<0.2
1,2-DICHLOROPROPANE	<0.2
CIS-1, 3-DICHLOROPROPENE	<0.2
TRANS-1, 3-DICHLOROPROPENE	<0.2
ETHYLBENZENE	<0.5
METHYLENE CHLORIDE	<2.0
1,1,2,2-TETRACHLOROETHANE TETRACHLOROETHENE	<0.2
	<0.2
	<0.2 <0.2 <0.5 <0.2
1,1,1-TRICHLOROETHANE	
1,1,2-TRICHLOROETHANE TRICHLOROETHENE	<0.2 × 0 1 <0.2 ×
TRICHLOROFLUOROMETHANE	<0.2
VINYL CHLORIDE	<0.5
TOTAL XYLENES	<0.2
TRICHLOROTRIFLUOROETHANE	<2.0
SURROGATE PERCENT RECOVERIES	
BROMOCHLOROMETHANE (%)	83
BROMOFLUOROBENZENE (%)	119
—	



GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/0 CLIENT : EL PASO NATURAL GAS, NEW MEXICO PROJECT # : (NONE) PROJECT NAME : CHACO PLANT CLIENT I.D. : REAGENT BLANK	ATI I.D.	: 09/09/9 : 09/09/9 : UG/L
COMPOUNDS	RESULTS	
BENZENE	<0.5	
BROMODICHLOROMETHANE	<0.2	
BROMOFORM	<0.2	
BROMOMETHANE	<0.2	
CARBON TETRACHLORIDE	<0.2	
CHLOROBENZENE	<0.5	
CHLOROETHANE	<0.2	
CHLOROFORM	<0.2	
CHLOROMETHANE	<0.2	
DIBROMOCHLOROMETHANE	<0.2	
2-CHLOROETHYL VINYL ETHER	<0.2	
	<0.5	
1, 3-DICHLOROBENZENE	<0.5	
1,2 & 1,4-DICHLOROBENZENE DICHLORODIFLUOROMETHANE	<0.2	
1,1-DICHLOROETHANE	<0.2	
1, 2-DICHLOROETHANE	<0.2	
1,1-DICHLOROETHENE	<0.2	
• •	<0.2	
1,2-DICHLOROETHENE(TOTAL) 1,2-DICHLOROPROPANE	<0.2	
CIS-1, 3-DICHLOROPROPENE	<0.2	
TRANS-1, 3-DICHLOROPROPENE	<0.2	
ETHYLBENZENE	<0.5	
METHYLENE CHLORIDE	<2.0	
	<0.2	
1,1,2,2-TETRACHLOROETHANE		
TETRACHLOROETHENE	<0.2	
TOLUENE	<0.5	N (
1,1,1-TRICHLOROETHANE	<0.2	W al
1,1,2-TRICHLOROETHANE	<0.2	191
TRICHLOROETHENE	<0.2	rla no -
TRICHLOROFLUOROMETHANE	<0.5	h a.T.
VINYL CHLORIDE	NO.2	3
TOTAL XYLENES	<0.5	-
TRICHLOROTRIFLUOROETHANE	<2.0	
SURROGATE PERCENT RECOVERIES		
	00	
BROMOCHLOROMETHANE (%)	98	



QUALITY	CONTRO	L DATA	2017 1	~ ¬		100504	
TEST : VOLATILE HALOCARBONS/AROMATI	CS (EPA	601/60	ATI])2)		:	109594	
CLIENT : EL PASO NATURAL GAS, PROJECT # : (NONE) PROJECT NAME : CHACO PLANT REF I.D. : 10999908	NEW ME	XICO		LE MA	YZED : ATRIX : ;		
COMPOUNDS		CONC. SPIKED	SPIKED SAMPLE		DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE TRICHLOROETHENE TETRACHLOROETHENE BENZENE BROMODICHLOROMETHANE CHLOROFORM 1,1,1-TRICHLOROETHANE TOLUENE CHLOROBENZENE M-XYLENE	<0.2 <0.2 <0.2 <0.5 <0.2 <0.2 <0.2 <0.2 <0.2 <0.5 <0.2 <0.5	20 20 20 20 20 20 20 20 20 20 20 20	21 23 20 23 23 21 20 21 18	115 100 115 115 105	21 21 19 21 23 21 19	105 105 95 105 115 105 95 100 85	0 9 5 9 0 0 5 5 6

Acre 9-70-8

% Recovery = (Spike Sample Result - Sample Result) Spike Concentration RPD (Relative % Difference) = (Spiked Sample - Duplicate Spike)

Result Sample Result Average of Spiked Sample



GAS CHROMATOGRAPHY - RESULTS

. _____

ATI I.D. : 10959401

TEST : POLYNUCLEAR AROMATICS (EPA 610)

CLIENT : EL PASO NATURAL (PROJECT # : (NONE) PROJECT NAME : CHACO PLANT CLIENT I.D. : N11935 SAMPLE MATRIX : AQUEOUS	GAS, NEW MEXICO DATE SAMPLED DATE RECEIVED DATE EXTRACTED DATE ANALYZED UNITS DILUTION FACTOR	: 09/10/91 : 09/13/91 : UG/L
COMPOUNDS	RESULTS	
NAPHTHALENE ACENAPHTHYLENE ACENAPHTHENE FLUORENE PHENANTHRENE ANTHRACENE FLUORANTHENE PYRENE BENZO(A)ANTHRACENE CHRYSENE BENZO(B)FLUORANTHENE BENZO(A)FLUORANTHENE BENZO(A)PYRENE DIBENZ(a,h)ANTHRACENE BENZO(g,h,i)PERYLENE INDENO(1,2,3-CD)PYRENE	4700 <150 <250 160 440 <5 <15 <20 <5 <10 <5 <5 <5 <5 <5 <5 <5 <5 <5 <10 <20 <10 <5 <5 <5 <5 <5 <5 <5 <5 <5 <5 <5 <5 <5	
SURROGATE PERCENT RECOVE	CRIES	

2-CHLOROANTHRACENE (%)

NA



GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

TEST : POLYNUCLEAR AROMATICS (EPA 610)

CLIENT : EL PASO NATURAL GAS, NEW MEXICO PROJECT # : (NONE) PROJECT NAME : CHACO PLANT CLIENT I.D. : REAGENT BLANK	ATI I.D. : 109594 DATE EXTRACTED : 09/10/91 DATE ANALYZED : 09/13/91 UNITS : UG/L DILUTION FACTOR : N/A
COMPOUNDS	RESULTS
NAPHTHALENE	<0.30
ACENAPHTHYLENE	<0.30
ACENAPHTHENE	<0.50
FLUORENE	<0.04
PHENANTHRENE	<0.03
ANTHRACENE	<0.01
FLUORANTHENE	<0.03
PYRENE	<0.04
BENZO(A)ANTHRACENE	<0.01
CHRYSENE	<0.02
BENZO (B) FLUORANTHENE	<0.01
BENZO(K)FLUORANTHENE	<0.01
BENZO(A)PYRENE	<0.01
DIBENZ(a, h)ANTHRACENE	<0.10
JENZO(g,h,i)PERYLENE	<0.04
INDENO(1,2,3-CD)PYRENE	<0.03

SURROGATE PERCENT RECOVERIES

2-CHLOROANTHRACENE (%)

NA

port 4-70 pl



QUALIT TEST : POLYNUCLEAR AROMATICS (EPA	Y CONTRO)L DATA	ATI I	.D.	:	109594	
CLIENT : EL PASO NATURAL GAS PROJECT # : (NONE) PROJECT NAME : CHACO PLANT REF I.D. : 10999909	•	SXICO		LE MA	ATRIX :	09/13/ AQUEOU UG/L	
COMPOUNDS			SPIKED SAMPLE			DUP. % REC.	RPD
ACENAPHTHYLENE PYRENE	<0.30 <0.04	300 40	180 25.0	60 63	157 22.7	52 57	14 10

Acceptable al

% Recovery = (Spike Sample Result - Sample Result) ______ X 100 Spike Concentration

RPD (Relative % Difference) = (Spiked Sample - Duplicate Spike) Result Sample Result Average of Spiked Sample



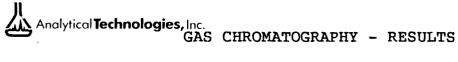
GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10959401

TEST : POLYCHLORINATED BIPHENYLS (EPA METHOD 608)

_														
	CLIENT				NATURAL	GAS,	NEW	MEXICO	DA	ATE	SAMP	LED	:	09/05/91
	PROJECT	#	:	(NONE)					DA	ATE	RECE	IVED	:	09/06/91
	PROJECT	NAME	:	CHACO PI	ANT				DA	ATE	EXTR	ACTED	:	09/10/91
-	CLIENT I	.D.	:	N11935								YZED		09/14/91
_	SAMPLE M									NITS		1000		UG/L
			•	110000										1007
									L L L	LTOI	TON	FACTOR	:	Ŧ
	COMPOUND													
	COMPOUND	5							RESUI	618				
	30007.00	1010												
	AROCLOR								<0.5					
	AROCLOR	-							<0.5					
	AROCLOR	1232							<0.5					
	AROCLOR	1242							<0.5					
-	AROCLOR	1248							<0.5					
	AROCLOR	1254							<0.5					
	AROCLOR								<0.5					
	ATTOCHOIL	1200							×0.5					
		SUBBOG	ימי	E PERCEN		סידעים								
		201/1/06	1	и гилсы	AT VECON	ULT DO								

ISODRIN (%)



REAGENT BLANK

CLIENT PROJECT # PROJECT NAME	LORINATED BIPHENYLS (EPA METHOD 608) : EL PASO NATURAL GAS, NEW MEXICO : (NONE) : CHACO PLANT : REAGENT BLANK LORIHOD 608) ATI I.D. DATE EXTRACTED : 09/10/91 DATE ANALYZED : 09/13/91 UNITS : UG/L DILUTION FACTOR : N/A
COMPOUNDS	RESULTS
AROCLOR 1016 AROCLOR 1221 AROCLOR 1232 AROCLOR 1242 AROCLOR 1248 AROCLOR 1254 AROCLOR 1260	<0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5

SURROGATE PERCENT RECOVERIES

ISODRIN (%)

I

Aouptall ai



QUALITY TEST : POLYCHLORINATED BIPHENYLS (F	CONTROL DATA		: 109594
CLIENT : EL PASO NATURAL GAS, PROJECT # : (NONE) PROJECT NAME : CHACO PLANT REF I.D. : 10961701	NEW MEXICO	DATE ANALYZED : SAMPLE MATRIX : UNITS :	
COMPOUNDS	SAMPLE CONC. RESULT SPIKED	DUP. SPIKED % SPIKEI SAMPLE REC.SAMPLI	
AROCLOR 1260	<0.5 5.0	4.7 94 5.0	100 6

port y- 20- 21

BARRINGER LABORATOR	IES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-168	FAX (303) 277-1689

ANALYTICAL TECHNOLOGIES, INC. (Phoenix) 9830 S. 51st St., Ste. B13 Phoenix, AZ 85044

19-Sep-91	
Page:	1

Copy: 1 of 2 Set: 1

9-Sep-91 10:29

Attn: Mary Tyer Project: 109594-95

Job: 911671E

.

PO #:

Status: Final

Received:

Sample Type: Water

Sample	Ra-226 Total <u>pCi/l</u>		Ra-228 Total pCi/l		U Total mg/l	U Total pCi/l(1)
109594-1 109595-1		±0.3 ±0.4		±1.1 ±1.2	0.0034 0.0035	2.3 2.4

Meeting The Analytical Challenges Of A Changing World

ł		-AX (303) 277-1689	19-Sep-91 Page: 2 Copy: 1 of 2
			Set : 2
Attn: Mary Tyer Project: 109594-9	5 PO #:	Received:	9-Sep-91 10:29
Job: 911671E		Stat	us: Final
Abbreviations:			
Parameters:			
Ra-226 Ra-228 U	: Radium-226 : Radium-228 : Uranium		
<u>Units:</u>			
pCi/l 2σ mg/l pCi/l(1)	: picoCuries per liter : Counting error at the : milligrams per liter : picoCuries per liter		
Job approved by: Signed: Ellen La R Radiochemi	Buuise Iviere stry Laboratory Manager		

Meeting The Analytical Challenges Of A Changing World

BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

19-Sep-91

ANALYTICAL TECHNOLOGIES, INC. (Phoenix) 9830 S. 51st St., Ste. B13 Phoenix, AZ 85044

Page:		1
Copy:	1 of	2
Set :		1

<u>Final</u>

Attn: Mary Tyer Project: 109594-95

PO #:

Received: 9-Sep-91 10:29

Status:

Job: 911671E

QUALITY CONTROL REPORT

Sample Type: Water

Sample Id	Total		Ra-228 Total pCi/l		U Total mg/l	U Total pCi/l(1)
Duplicate	0.5	±0.4	1.0	±1.5	0.0045	
Duplicate	0.6	±0.4	0.7	±1.2	0.0042	
Duplicate % diff.	9.1		18		4.5	
Std (found value)	108	±2	27	±2	33	
Std (true value)	101		32		34	
std 🕯 diff.	6.9		16		2.9	
Blank	0.1	±0.2	0.0	±0.8	<0.0003	
Spike % rec.					97	

NALYTICAL TECHNOL		nix)			Sep-91
9830 S. 51st St., 8 Phoenix, AZ 8504	Ste. B13 1			Page: Copy: Set :	1 of
Attn: Mary Tyer Project: 109594-95		PO #:	Received:	9-Sep-	91 10:3
Job: 911671E		······································		us:	Final
	QUALITY C	ONTROL RE	PORT		
Abbreviations:					
Parameters:					
Ra-226	: Radium-226				
Ra-228	: Radium-228 : Uranium				
U	: Uranium				
Jnits:					
pCi/l	: picoCuries per	liter			
2σ	: Counting error		5% confidenc	e level	, 2σ
mg/l pCi/l(1)	: milligrams per : picoCuries per		sed upon equ	ilibriu	m cond
P - 1/ 2 (1 /	·				
lob approved by:					

Quality Assurance Department

		-		LIN HAUNMENTAL SAN	11LI	NG DATA	(File:BLANK4	WKD
Facility Number	1	I Sample Matrix V	s	TTQ Sample Numb	er 11	VILITIC	13151	Fime 1212 1012)124 Hr Clk. CC Dish Plan Caind_hine _1 CompositeHrs. \$15) 599-2144
Sample Location EPV	ĮĮ	6 anaco	1	PLANT			Charge Cha	CO Dish Pland
Sampling Site Description D	>	Glycal De	(m)	drature Kir	1-6	~ Uhi	T-R clr	aid hite
Dute Of Collection (MMDDY	Y11			Col	lectic	n Method:	I√I Grab I	Composite Hrs.
nnie Collected By	ر- م	Rancol					Phone (P	8151599-2144
Laboratory Conducting Analy	d'a	ImLU						
			EOI	JESTED (Check Approp	riate	Blocks)		
GENERAL CHEMISTRY		METALS		RADIOCHEMISTRY	_			EPA METHOD SCANS
pH	-	Arsenic (As)	-	Combined Ra-226/228				EPA - 601
Chloride (Cl)	-	Barium (Ba)	-+-	Uranium (U)	╋┥			EPA - 602
Fluoride (F)		Cadmium (Cd)		K				EPA - 608, PCB'S Only
Nitrate (NO3 as N)		Chromium (Cr)	+	1				EPA - 610
Sulfate (SO4)		cad (Pb)			1-	4	·	
Total Dissolved Solids		Mercury (Hg), Total	-†-		+		∖ +	
Cyanide (CN)		Selenium (Se)	-		╋	1	\uparrow	1
Phenolics (Method 420)		Silver (Ag)		· · · · · · · · · · · · · · · · · · ·	+			+
		Copper (Cu)	+	· /	-1-	<u> </u>		+
		fron (Fe)	-†-	+	-1-	<u> </u>		
		Manganese (Mn)		+	╉	<u> </u>		-+
		Zinc (Zn)			+-	<u> </u>		
	-+	Boron (B)	-†-		+-	{		
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FOMMENTS/SPECIAL IN	Jet	PUCTIONS	<u></u>		=¥=	-		┝╾┠╍╍╍╍╍╍╍╍╍╍╍╌╍╍
COMMENTS/SPECIAL INSTRUCTIONS								
All Invoices and Results to: John Lambdin, c/o EPNG, P.O. Box 4990, Farmington, N.M. 87499								
CHAIN OF CUSTODY INFORMATION								
BELINQUISHED BY	<u> </u>			INQUISHED BY		2.	RELINQUISH	ED BY 3.
Dogel & Dens	zr,	1 539						
Jignatufe)	1	(time)	(Si	gnature)		(time)	(Signature)	(time)
BAER E. DIZ	22			·				
(Print Name) El Paso Natural Gas Co.		(date)	(Pr	int Name)		(date)	(Print Name)	(date)
El Paso Natural Gas Co. Company)			ic,	ompany)			(Company)	
RECEIVED BY	<u></u>	1.	THE REAL PROPERTY.	CEIVED BY		2.	RECEIVED B	Y 3.
lignaturc)		(time)	(\$1	gnature)		(time)	(Signature)	(time)
(, , int Name)		(date)	(Pr	int Name)		(date)	(Print Name)	(date)
Company)			(C	ompany)			(Company)	

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Analytical **Technologies**, Inc.

9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 109564

September 26, 1991

El Paso Natural Gas Company P.O. Box 4990 Farmington, NM 87499



Project Name/Number: Chaco Plant

Attention: John Lambdin

On 09/05/91, Analytical Technologies, Inc. received a request to analyze aqueous sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

Method 610 analyses were performed by ATI, Fort Collins. Uranium, Radium 226 and Radium 228 analyses were performed by Barringer Laboratories.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

Mary A. Tyer

Mary Tyer Project Manager

RVW:clf Enclosure

Phier Woods

Robert V. Woods Laboratory Manager

Corporate Offices: 5550 Morehouse Drive San Diego, CA 92121 (619) 458-9141

2	Analytical	Techno	logies, Inc.
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CLIENT : EL PASO NATURAL GAS, NEW MEX	ICO DATE RECEIVED : 09/05/91
PROJECT # : (NONE) PROJECT NAME : CHACO PLANT	REPORT DATE : 09/23/91
ATI I.D. : 1095	64

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	N11913	AQUEOUS	09/04/91
02	TRIP BLANK	AQUEOUS	09/04/91

----- TOTALS -----

MATRIX	
AQUEOUS	

SAMPLES

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.



GENERAL CHEMISTRY RESULTS

ATI I.D. : 109564

CLIENT: EL PASO NATURAL GAS, NEW MEXICODATE RECEIVED : 09/05/91PROJECT #: (NONE)REPORT DATE: 09/23/91PROJECT NAME : CHACO PLANTREPORT DATE: 09/23/91PARAMETERUNITS01CHLORIDEMG/L1.2CYANIDE, TOTALMG/L<0.01</td>FLUORIDEMG/L0.06NITRATE AS NITROGENMG/L17PHUNITS12.1PHENOLICS, TOTALMG/L0.03SULFATEMG/L130TOTAL DISSOLVED SOLIDSMG/L1200

Analytical **Technologies,** Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : EL PASO PROJECT # : (NONE) PROJECT NAME : CHACO PL		GAS, NEW	MEXICO	ATI I	I.D.	: 10956	54	
PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT I	RPD	SPIKED SAMPLE		% REC
CHLORIDE CYANIDE, TOTAL FLUORIDE NITRATE AS NITROGEN PH PHENOLICS, TOTAL SULFATE TOTAL DISSOLVED SOLIDS	MG/L MG/L MG/L MG/L UNITS MG/L MG/L MG/L	10957201 10960101 10954701 10957906 10887501 10964001 10962204 10958601	<0.01 0.24 1.40 8.7 0.17 11	300 <0.01 0.25 1.42 8.7 0.17 10 1900	NA 4 1 0	560 0.25 0.44 3.43 NA 0.42 20 NA	250 0.25 0.20 2.00 NA 0.25 10 NA	104 100 100 102 NA 100 90 NA

pertofic g-30-an

RPD (Relative Percent Difference) = (Sample Result - Duplicate Result) Average Result



METALS RESULTS

ATI I.D. : 109564

PROJECT # : (NONE)	RAL GAS, NEW MEXICO	
PROJECT NAME : CHACO PLANT		REPORT DATE : 09/23/91
PARAMETER	UNITS 01	
SILVER	MG/L <0.010	
ARSENIC	MG/L <0.005	
BORON	MG/L <0.10	
BARIUM	MG/L <0.010	
CADMIUM	MG/L <0.005	
CHROMIUM	MG/L <0.010	
COPPER	MG/L 0.047	
IRON	MG/L 0.070	
MERCURY	MG/L <0.0002	
MANGANESE	MG/L <0.010	
LEAD	MG/L 0.005	
SELENIUM	MG/L <0.005	
URANIUM	MG/L 0.0010	
ZINC	MG/L 0.155	



LEAD

ZINC

SELENIUM

URANIUM

METALS - QUALITY CONTROL

10956401 0.005

10956401 < 0.005

10999909 0.0045

10957201 0.266

0.005

<0.005

0.268

0.0042 4.5

0

NA

0.7

	109564
ARSENIC MG/L 10956401 <0.005	IKED SP MPLE CO
IRON MG/L 10960101 <0.020 <0.020 NA 10. MERCURY MG/L 10962701 <0.0002 <0.0002 NA 0.0	051 0. 00 1. 58 1. 495 0. 990 1. 488 0.

MG/L

MG/L

MG/L

MG/L

Here 107-70-91

0.046

0.050

0.771

NA

SPIKE

0.500

0.050

1.00

1.00

0.500

0.500

0.0050 102

1.00

10.0

1.00

0.050

0.050

0.500

NA

CONC

ક્ર

REC

88

102

100

97

99

99

98

103

104

100

NA

101

	Average Result	Х	10	
	RPD (Relative Percent Difference) = (Sample Result - Duplicate Result)			
1	Spike Concentration			
l	<pre>% Recovery = (Spike Sample Result - Sample Result) X 100</pre>			



GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10956401

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

I

SAMPLE MATRIX : AQUEOUS	NEW MEXICO DATE SAMPLED : 09/04/91 DATE RECEIVED : 09/05/91 DATE EXTRACTED : N/A DATE ANALYZED : 09/09/91 UNITS : UG/L DILUTION FACTOR : 1
COMPOUNDS	RESULTS
BENZENE BROMODICHLOROMETHANE BROMOFORM BROMOMETHANE CARBON TETRACHLORIDE CHLOROBENZENE CHLOROETHANE CHLOROFORM CHLOROMETHANE DIBROMOCHLOROMETHANE 2-CHLOROETHYL VINYL ETHER 1,3-DICHLOROBENZENE 1,2 & 1,4-DICHLOROBENZENE DICHLORODIFLUOROMETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHENE 1,2-DICHLOROPENE TRANS-1,3-DICHLOROPROPENE TRANS-1,3-DICHLOROPROPENE ETHYLBENZENE METHYLENE CHLORIDE 1,1,2,2-TETRACHLOROETHANE TETRACHLOROETHENE 1,1,2-TRICHLOROETHANE 1,1,2-TRICHLOROETHANE TRICHLOROFTHENE	$ \begin{array}{c} < 0.5 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ $
BROMOCHLOROMETHANE (%) BROMOFLUOROBENZENE (%)	92
BROMOFLOOROBENZENE (6)	85

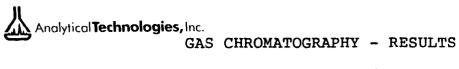


GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10956402

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

CLIENT : EL PASO NATURAL GAS, PROJECT # : (NONE) PROJECT NAME : CHACO PLANT CLIENT I.D. : TRIP BLANK SAMPLE MATRIX : AQUEOUS	NEW MEXICO DATE SAMPLED : 09/04/91 DATE RECEIVED : 09/05/91 DATE EXTRACTED : N/A DATE ANALYZED : 09/09/91 UNITS : UG/L DILUTION FACTOR : 1
COMPOUNDS	RESULTS
BENZENE BROMODI CHLOROMETHANE BROMOFORM BROMOMETHANE CARBON TETRACHLORIDE CHLOROBENZENE CHLOROETHANE DIBROMOCHLOROMETHANE 2-CHLOROETHYL VINYL ETHER 1,3-DICHLOROBENZENE 1,2 & 1,4-DICHLOROBENZENE DICHLORODIFLUOROMETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHENE 1,2-DICHLOROETHENE 1,2-DICHLOROETHENE 1,2-DICHLOROPROPANE CIS-1,3-DICHLOROPROPENE TRANS-1,3-DICHLOROPROPENE TRANS-1,3-DICHLOROPROPENE METHYLENE CHLORIDE 1,1,2,2-TETRACHLOROETHANE 1,1,2-TRICHLOROETHANE 1,1,2-TRICHLOROETHANE 1,1,2-TRICHLOROETHANE 1,1,2-TRICHLOROETHANE 1,1,2-TRICHLOROETHANE 1,1,2-TRICHLOROETHANE 1,1,2-TRICHLOROETHANE TRICHLOROFTUEN	
BROMOCHLOROMETHANE (%) BROMOFLUOROBENZENE (%)	92 84



REAGENT BLANK

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/6CLIENT : EL PASO NATURAL GAS, NEW MEXICOPROJECT # : (NONE)PROJECT NAME : CHACO PLANTCLIENT I.D. : REAGENT BLANK	ATT T.D. 109564
COMPOUNDS	RESULTS
BENZENE	<0.5
BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<0.2
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.5
CHLOROETHANE	<0.2
CHLOROFORM	<0.2
CHLOROMETHANE	<0.2
DIBROMOCHLOROMETHANE	<0.2
2-CHLOROETHYL VINYL ETHER	<0.5 <0.5
1,3-DICHLOROBENZENE 1,2 & 1,4-DICHLOROBENZENE	<0.5
DICHLORODIFLUOROMETHANE	<0.2
1,1-DICHLOROETHANE	<0.2
1,2-DICHLOROETHANE	<0.2
1,1-DICHLOROETHENE	<0.2
1,2-DICHLOROETHENE(TOTAL)	<0.2
1,2-DICHLOROPROPANE	<0.2
CIS-1, 3-DICHLOROPROPENE	<0.2
TRANS-1, 3-DICHLOROPROPENE	<0.2
ETHYLBENZENE	<0.5
METHYLENE CHLORIDE	<2.0
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE	<0.2
TOLUENE	<0.5
1,1,1-TRICHLOROETHANE	<0.2
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	<0.2
TRICHLOROFLUOROMETHANE	<0.5
VINYL CHLORIDE TOTAL XYLENES	<0.2
TRICHLOROTRIFLUOROETHANE	<0.5 <2.0
TUTCHINOLOTULT DOOKOFTHANE	
SURROGATE PERCENT RECOVERIES	<2.0 Autor all
BROMOCHLOROMETHANE (%)	81
BROMOFLUOROBENZENE (%)	85



QUALITY TEST : VOLATILE HALOCARBONS/AROMATI	Y CONTRO		ATI I)2)	.D.	:	109564	
CLIENT : EL PASO NATURAL GAS, PROJECT # : (NONE) PROJECT NAME : CHACO PLANT REF I.D. : 10999906	NEW ME	XICO		LE MA	ATRIX :	09/09/9 AQUEOUS UG/L	
COMPOUNDS			SPIKED SAMPLE			æ	RPD
1,1-DICHLOROETHENE TRICHLOROETHENE TETRACHLOROETHENE BENZENE BROMODICHLOROMETHANE CHLOROFORM 1,1,1-TRICHLOROETHANE TOLUENE CHLOROBENZENE M-XYLENE	<0.2 <0.2 <0.2 <0.5 <0.2 <0.2 <0.2 <0.2 <0.5 <0.2 <0.5 <0.2	20 20 20 20 20 20 20 20 20 20 20 20 20	21 18 24 19 23 20 20 21 18	120 90 95 115 100 100	19 24 17 20 24 21	115 95 120 85 100 120 105 100 110 90	9 5 0 6 5 4 5 0 5 0 5 0

Acuptable Acuptable 6-70.91

<u>.</u>____

% Recovery = (Spike Sample Result - Sample Result) ------ X 100 Spike Concentration RPD (Relative % Difference) = (Spiked Sample - Duplicate Spike) Result Sample Result ------ X 100 Average of Spiked Sample



GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10956401

TEST : POLYNUCLEAR AROMATICS (EPA 610)

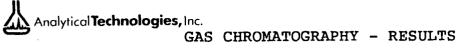
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CLIENT : EL PASO NATURAL GAS PROJECT # : (NONE) PROJECT NAME : CHACO PLANT CLIENT I.D. : N11913 SAMPLE MATRIX : AQUEOUS	, NEW MEXICO DATE SAMPLED : 09/ DATE RECEIVED : 09/ DATE EXTRACTED : 09/ DATE ANALYZED : 09/ UNITS : UG/ DILUTION FACTOR : 1	'05/91 '06/91 '16/91					
COMPOUNDS	RESULTS						
NAPHTHALENE ACENAPHTHYLENE ACENAPHTHENE FLUORENE PHENANTHRENE ANTHRACENE FLUORANTHENE PYRENE BENZO(A)ANTHRACENE CHRYSENE BENZO(B)FLUORANTHENE BENZO(A)FLUORANTHENE BENZO(A)PYRENE DIBENZ(a,h)ANTHRACENE BENZO(g,h,i)PERYLENE INDENO(1,2,3-CD)PYRENE	$\begin{array}{c} 0.95 \\ < 0.30 \\ < 0.50 \\ 0.44 \\ 0.27 \\ 0.01 \\ < 0.03 \\ < 0.04 \\ < 0.01 \\ < 0.02 \\ < 0.01 \\ < 0.02 \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 0.03 \end{array}$						

SURROGATE PERCENT RECOVERIES

2-CHLOROANTHRACENE (%)

NA



REAGENT BLANK

TEST : POLYNUCLEAR AROMATICS (EPA 610)CLIENT : EL PASO NATURAL GAS, NEW MEXICOPROJECT # : (NONE)PROJECT NAME : CHACO PLANTCLIENT I.D. : REAGENT BLANK	ATI I.D. : 109564 DATE EXTRACTED : 09/06/91 DATE ANALYZED : 09/13/91 UNITS : UG/L DILUTION FACTOR : N/A
COMPOUNDS	RESULTS
NAPHTHALENE ACENAPHTHYLENE ACENAPHTHENE FLUORENE PHENANTHRENE ANTHRACENE FLUORANTHENE PYRENE BENZO(A)ANTHRACENE CHRYSENE BENZO(B)FLUORANTHENE BENZO(A)FLUORANTHENE BENZO(A)PYRENE DIBENZ(a,h)ANTHRACENE 3ENZO(g,h,i)PERYLENE INDENO(1,2,3-CD)PYRENE	<pre><0.30 <0.30 <0.50 <0.04 <0.03 <0.01 <0.03 <0.01 <0.03 <0.04 <0.01 <0.02 <0.01 <0.01 <0.01 <0.01 <0.01 <0.01 <0.01 <0.01 <0.03 </pre>

SURROGATE PERCENT RECOVERIES

2-CHLOROANTHRACENE (%)

NA

Acceptable a.



QUALIT	Y CONTRO	DL DATA	ATI]	[.D.	:	109564	
TEST : POLYNUCLEAR AROMATICS (EPA	610)						
CLIENT : EL PASO NATURAL GAS PROJECT # : (NONE) PROJECT NAME : CHACO PLANT REF I.D. : 10999910	, NEW MI	EXICO		LE MA	ATRIX :	09/13/9 AQUEOUS UG/L	
COMPOUNDS		CONC. SPIKED		ہ REC		DUP. % REC.	RPD
ACENAPHTHYLENE PYRENE	<0.30 <0.04	300 40	180 25.0	60 62	157 22.7	52 57	14 10

Accepter A.

% Recovery = (Spike Sample Result - Sample Result) Spike Concentration RPD (Relative % Difference) = (Spiked Sample - Duplicate Spike) Result Sample Result

Average of Spiked Sample



GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10956401

TEST : POLYCHLORINATED BIPHENYLS (EPA METHOD 608)

ŧ

P P C	ROJECT ROJECT LIENT I	# : NAME : .D. :	ĊHACO PI		GAS,	NEW	MEXICO	DAT DAT DAT UNI	E RECI E EXTI E ANAI IS	PLED EIVED RACTED LYZED FACTOR	::	09/04/91 09/05/91 09/06/91 09/11/91 UG/L 5
C	OMPOUND	S						RESULT	s		•	
A A A A A	ROCLOR ROCLOR ROCLOR ROCLOR ROCLOR ROCLOR ROCLOR	1221 1232 1242 1248 1254						<2.5 <t><2.5<2.5<2.5<2.5<2.5<2.5<2.5</t>				
-		SURROGA	TE PERCE	NT RECOV	ERIES							

ISODRIN (%)

69



GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

CLIENT PROJECT #	LORINATED BIPHENYLS (EPA METHOD 608) : EL PASO NATURAL GAS, NEW MEXICO : (NONE) : CHACO PLANT : REAGENT BLANK LORINATED BIPHENYLS (EPA METHOD 608) ATI I.D. DATE EXTRACTED : 09/06/91 DATE ANALYZED : 09/11/91 UNITS : UG/L DILUTION FACTOR : N/A	
COMPOUNDS	RESULTS	
AROCLOR 1016 AROCLOR 1221 AROCLOR 1232 AROCLOR 1242 AROCLOR 1248 AROCLOR 1254 AROCLOR 1254	<0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5	

SURROGATE PERCENT RECOVERIES

ISODRIN (%)

84

Aceptalia Aceptalia G-30-20

Analytical Technologies, Inc.

QUALIT TEST : POLYCHLORINATED BIPHENYLS (Y CONTROL DATA EPA METHOD 608)	ATI I.D.	: 109564
CLIENT: EL PASO NATURAL GAS, NEW MEXICOPROJECT #: (NONE)PROJECT NAME : CHACO PLANTDATE ANALYZED : 09/11/91REF I.D.: 10999907UNITS: UG/LDUP.DUP.	AQUEOUS		
COMPOUNDS			D %
AROCLOR 1260	<0.5 5.0	4.7 94 4.9	98 4

Acrestabling

% Recovery = (Spike Sample Result - Sample Result) ______ X 100 Spike Concentration RPD (Relative % Difference) = (Spiked Sample - Duplicate Spike) Result Sample Result _____ X 100

Average of Spiked Sample

BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

19-Sep-91

<u>Final</u>

ANALYTICAL TECHNOLOGIES, INC. (Phoenix)		
9830 S. 51st St., Ste. B13	Page:	1
Phoenix, AZ 85044	Copy: 1 of	2
	Set :	1

Attn: Mary Tyer Project: 109560-565

PO #:

Received: 6-Sep-91 17:22

Status:

T.	ob	•	o	1	1	6	5	1	Е
U.	UD.	•	7	T.	Т	σ	Э	т	E.

Sample Type: Water

	Ra-226 Total	Error	Ra-228 Total	Error	U Total	U Total
<u>Sample</u>	_pCi/l	2σ	pCi/l	2σ	mg/l	pCi/1(1)
109560-1 109561-1 109562-1 109564-1 109565-1	0.9 1.8 1.1	±0.8 ±0.7 ±1.0 ±0.7 ±1.2	0.2 0.0 0.1	±1.2 ±1.1 ±1.1 ±1.2 ±1.2	0.0041 0.0281 0.0031 0.0010 0.0069	2.8 19 2.1 0.7 4.7

 ANALYTICAL TECH 9830 S. 51st St Phoenix, AZ &		19- Page: Copy: Set :	Sep-91 1 of		
Attn: Mary Tyer Project: 109560		PO #:	Received:	6-Sep-	91 17:2
Job: 911651E			Stat	us:	<u>Final</u>
Abbreviations:					
Parameters:					
Ra-226 Ra-228 U	: Radium- : Radium- : Uranium	228			
Units:			`.		
pci/1 2σ mg/1 pCi/1(1)	: Countin : milligr	ies per liter g error at the ams per liter ies per liter			
	-	-			

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BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

19-Sep-91

ANALYTICAL TECHNOLOGIES, INC. (Phoenix)
9830 S. 51st St., Ste. B13
Phoenix, ΛZ 85044

Page: 1 Copy: 1 of 2 Set: 1

6-Sep-91 17:22

Attn: Mary Tyer Project: 109560-565

PO #:

Status: Final

Received:

Job: 911651E

QUALITY CONTROL REPORT

Sample Type: Water

	Total		Ra-228 Total		U Total	U Total
<u>Sample Id</u>	_pCi/1	2σ	_pCi/l	2σ	mg/1	pCi/1(1)
Duplicate	2.8	±1.4	1.0	±1.5	0.0045	
Duplicate	1.1	±1.0	0.7	±1.2	0.0042	
Duplicate % diff.	44		18		4.5	
Std (found value)	91	±2	27	±2	33	
Std (true value)	101		32		34	
Std % diff.	9.9		16		2.9	
Blank	0.0	±0.1	0.0	±0.8	<0.0003	
Spike % rec.					97	

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According to all

1			19	-Sep-91	L
ANALYTICAL TECH 9830 S. 51st St Phoenix, AZ 8	NOLOGIES, INC. (Phoenix) ., Ste. B13 5044		Page: Copy: Set :	1 of	
Attn: Mary Tyer Project: 109560		Received:	6-Sep	-91 17:	2
Job: 911651E			us:	<u>Final</u>	
	QUALITY CONTROL RE	PORT			
<u>Abbreviations:</u>					
<u>Parameters:</u>					
Ra-226 Ra-228 U	: Radium-226 : Radium-228 : Uranium				
<u>Units:</u>					
pCi/l 2σ mg/l pCi/l(1)	: picoCuries per liter : Counting error at the 9 : milligrams per liter : picoCuries per liter ba				۱.

Job approved by:

Signed:< 4

Approved Quality Assurance Department

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	RINGER I							
15000 W. 6TH	AVE., SUITE 300 GOL	DEN, CO 80401	303) 277-1687	FAX (303) 277-168	89			
						1	9-Sep-93	1
ANALYTICAL TE 9830 S. 51st	CHNOLOGIES,	INC. (Pho	enix)			D		2
Phoenix, AZ						Page	: 2 of	5
						copi		2
Attn: Mary Ty	pr			Dec	-ived.	6-80	n-01 17	
Project: 1095			PO #:	Rece	sived:	0-5e	p-91 17:	
-								
Job: 911651	3				Stat	<u>us:</u>	Final	
		QUALITY	CONTROL	REPORT				
	QUAI	LITY CONTR	ol data	SHEET				
Received by:	ym	Via: Fe	d.Ex.					
Sample Contain Sample Type: V Preservative V Additional Lab	Nater Nhen Receive	d: HNO3						
Parameter	Method	LLD		Preser- vative		yst	Date(s) Analys	
Ra-226	SW				0-1-1-1		0 (10 0	
Ra-228	SM-705	0.2 pCi/ 0.9 pCi/		HNO3 HNO3	Seidel Howard		9/13- 9 9/13	/1/
U	ASTMD2907	0.0003 m		HNO3	Meyer		9/16- 9	/17
	arkhardt, Ph cory Directo			• • • • • • • • • • • • • •	reptorie	۵ĺ		
				Ke	M. J.	20		
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Analytical **Technologies,** Inc.

9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 109560

September 26, 1991

El Paso Natural Gas Company P.O. Box 4990 Farmington, NM 87499



Project Name/Number: Chaco Plant

Attention: John Lambdin

On 09/05/91, Analytical Technologies, Inc. received a request to analyze aqueous sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

Method 610 analyses were performed by ATI, Fort Collins. Uranium, Radium 226 and Radium 228 analyses were performed by Barringer Laboratories.

Due to matrix interference, Phenolics analysis was run at a dilution. Detection limits were raised accordingly.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

Mary A. Type Mary Tyer

Project Manager

Lorraine Davis

Lorraine Davis QA Coordinator

RVW:clf Enclosure

V. Donale

Robert V. Woods Laboratory Manager

儿. - Inchnologies, Inc

Analy Analy	tical Technologies, Inc.		
ROJECT #	: EL PASO NATURAL GAS, NEW MEXIC : (NONE) IE : CHACO PLANT ATI I.D. : 109560	REPORT	ECEIVED : 09/05/91 DATE : 09/23/91
 ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01 02	N11914 TRIP BLANK	AQUEOUS AQUEOUS	09/04/91 09/04/91

----- TOTALS -----

-

MATRIX _____

SAMPLES -----2

AQUEOUS

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical **Technologies**, Inc.

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GENERAL CHEMISTRY RESULTS

ATI I.D. : 109560

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CLIENT : EL PASO NATURAL PROJECT # : (NONE) PROJECT NAME : CHACO PLANT	GAS, NI	EW MEXICO	DATE RECEIVED REPORT DATE	-	09/05/91 09/23/91
PARAMETER	UNITS	01			
CHLORIDE CYANIDE, TOTAL FLUORIDE NITRATE AS NITROGEN PH PHENOLICS, TOTAL SULFATE TOTAL DISSOLVED SOLIDS		160 <0.01 0.64 0.06 6.5 <0.04 32 890			



GENERAL CHEMISTRY - QUALITY CONTROL

LIENT	:	EL PASO NATURAL GAS, NEW MEXICO	
PROJECT #	:	(NONE)	
PROJECT NAME	:	CHACO PLANT	

ATI I.D. : 109560

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE		% REC
CHLORIDE CYANIDE, TOTAL FLUORIDE NITRATE AS NITROGEN PH PHENOLICS, TOTAL SULFATE TOTAL DISSOLVED SOLIDS	MG/L MG/L MG/L UNITS MG/L MG/L MG/L	10957201 10964201 10962204 10957906 10887501 10956101 10962204 10954601	<0.01 0.42 1.40 8.7 <0.04 11	300 <0.01 0.44 1.42 8.7 <0.04 10 640	0 NA 5 1 0 NA 10 2	560 0.24 0.86 3.43 NA 0.45 20 NA	250 0.25 0.40 2.00 NA 0.50 10 NA	104 96 110 102 NA 90 90 NA

Acertal Acertal

RPD (Relative Percent Difference) = (Sample Result - Duplicate Result) ------ X 10

Average Result

Analytical **Technologies**, Inc.

METALS RESULTS

	EL PASO NATURAL GAS, N (NONE) CHACO PLANT	EW MEXICO	DATE RECEIVED REPORT DATE	
PARAMETER		01		
SILVER ARSENIC BORON BARIUM CADMIUM CHROMIUM COPPER IRON MERCURY MANGANESE LEAD SELENIUM URANIUM ZINC	MG/L MG/L MG/L MG/L MG/L MG/L MG/L MG/L	<0.010 <0.005 0.16 0.202		

ATI I.D. : 109560



METALS - QUALITY CONTROL

LIENT	:	EL PASO NATURAL GAS, NEW MEXICO
PROJECT # PROJECT NAME		
FROUDCI MAHE	•	CIACO FLANI

1

ATI I.D. : 109560

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
SILVER ARSENIC BORON BARIUM CADMIUM CHROMIUM COPPER IRON MERCURY	MG/L MG/L MG/L MG/L MG/L MG/L MG/L MG/L	10956201 10956401 10953101 10956201 10956201 10956201 10956201 10956201 10956201 10956201 10970302	<0.005 0.12 0.069 <0.005 <0.010 <0.010 0.030	<0.010 <0.005 0.12 0.069 <0.005 <0.010 <0.010 0.030 0.0002	NA NA 0 NA NA NA 0 0	0.468 0.051 1.14 1.09 0.514 1.05 0.504 1.04 0.0050	0.500 0.050 1.00 1.00 0.500 1.00 0.500 1.00 0.0050	94 102 102 102 103 105 101 101 96
MANGANESE LEAD SELENIUM URANIUM ZINC	MG/L MG/L MG/L MG/L MG/L	10956201 10956501 10956401 10999909 10956201	<0.010 <0.002 <0.005 0.0045	<0.010 <0.002 <0.005 0.0042 <0.010	NA NA NA 4.5 NA	1.04 0.045 0.050 NA 0.507	1.00 0.050 0.050 NA 0.500	104 90 100 NA 101

Hart & 30.21

% Recovery = (Spike Sample Result - Sample Result) ______ X 100 Spike Concentration RPD (Relative Percent Difference) = (Sample Result - Duplicate Result) _____ X 10(

Average Result



GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10956001

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

	NEW MEXICO DATE SAMPLED • 09/04/91
DDOIECT 4 (NONE)	NEW MEXICO DATE SAMPLED : 09/04/91 DATE RECEIVED : 09/05/91 DATE EXTRACTED : N/A DATE ANALYZED : 09/09/91
PROJECT # : (NONE)	
PROJECT NAME : CHACO PLANT	DATE EXTRACTED : N/A
CLIENT I.D. : NII914	DATE ANALIZED : 09/09/91
SAMPLE MATRIX : AQUEOUS	UNITS : UG/L
	DILUTION FACTOR : 10
COMPOUNDS	RESULTS
COMPOUNDS	
BENZENE	13
BROMODICHLOROMETHANE	<2.0
BROMOFORM	<2.0
BROMOMETHANE	<2.0
CARBON TETRACHLORIDE	<2.0
CHLOROBENZENE	<5.0
CHLOROETHANE	<2.0
CHLOROFORM	2
CHLOROMETHANE	<2.0
DIBROMOCHLOROMETHANE	<2.0
2-CHLOROETHYL VINYL ETHER	<5.0
1, 3-DICHLOROBENZENE	<5.0
1,2 & 1,4-DICHLOROBENZENE	<5.0
DICHLORODIFLUOROMETHANE	<2.0
1,1-DICHLOROETHANE	<2.0
1,2-DICHLOROETHANE	<2.0
1,1-DICHLOROETHENE	<2.0
1,2-DICHLOROETHENE(TOTAL)	<2.0
1,2-DICHLOROPROPANE	<2.0
CIS-1, 3-DICHLOROPROPENE	<2.0
TRANS-1, 3-DICHLOROPROPENE	<2.0
ETHYLBENZENE	<5.0
METHYLENE CHLORIDE	<20.0
1,1,2,2-TETRACHLOROETHANE	<2.0
TETRACHLOROETHENE	<2.0
_ TOLUENE	<5.0
1,1,1-TRICHLOROETHANE	<2.0
1,1,2-TRICHLOROETHANE TRICHLOROETHENE	<2.0
TRICHLOROFLUOROMETHANE	<2.0
	<5.0
VINYL CHLORIDE	<2.0
TOTAL XYLENES	<5.0
TRICHLOROTRIFLUOROETHANE	<20.0
SURROGATE PERCENT RECOVERIES	5
BROMOCHI OROMETHANE (8)	07
BROMOCHLOROMETHANE (%) BROMOFLUOROBENZENE (%)	97
- PROMOLPOOROBENZENE (2)	107



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GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10956002

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

SAMPLE MATRIX : AQUEOUS	NEW MEXICO DATE SAMPLED : 09/04/91 DATE RECEIVED : 09/05/91 DATE EXTRACTED : N/A DATE ANALYZED : 09/06/91 UNITS : UG/L DILUTION FACTOR : 1
COMPOUNDS	RESULTS
BENZENE BROMODICHLOROMETHANE BROMOFORM BROMOMETHANE CARBON TETRACHLORIDE CHLOROBENZENE CHLOROETHANE CHLOROFORM CHLOROMETHANE DIBROMOCHLOROMETHANE 2-CHLOROETHYL VINYL ETHER ', 3-DICHLOROBENZENE 1,2 & 1,4-DICHLOROBENZENE DICHLORODIFLUOROMETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHENE 1,2-DICHLOROETHENE (TOTAL) 1,2-DICHLOROPROPANE CIS-1,3-DICHLOROPROPENE TRANS-1,3-DICHLOROPROPENE ETHYLBENZENE METHYLENE CHLORIDE 1,1,2,2-TETRACHLOROETHANE TETRACHLOROETHENE 1,1,1-TRICHLOROETHANE 1,1,2-TRICHLOROETHANE 1,1,2-TRICHLOROETHANE 1,1,2-TRICHLOROETHANE 1,1,2-TRICHLOROETHANE 1,1,2-TRICHLOROETHANE 1,1,2-TRICHLOROETHANE 1,1,2-TRICHLOROETHANE	$ \begin{array}{c} < 0.5 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0$
TRICHLOROFLUOROMETHANE VINYL CHLORIDE TOTAL XYLENES TRICHLOROTRIFLUOROETHANE	<0.5 <0.2 <0.5 <2.0
SURROGATE PERCENT RECOVERIES	How
BROMOCHLOROMETHANE (%) JROMOFLUOROBENZENE (%)	105 95 70 70 611



GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/6CLIENT: EL PASO NATURAL GAS, NEW MEXICOPROJECT #: (NONE)PROJECT NAME: CHACO PLANTCLIENT I.D.: REAGENT BLANK	ATI I.D. : 109560
COMPOUNDS	RESULTS
BENZENE BROMODICHLOROMETHANE BROMOFORM BROMOMETHANE CARBON TETRACHLORIDE CHLOROBENZENE CHLOROBENZENE CHLOROFORM CHLOROMETHANE 2-CHLOROETHYL VINYL ETHER 1,3-DICHLOROBENZENE 1,2 & 1,4-DICHLOROBENZENE DICHLORODIFLUOROMETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHENE (TOTAL) 1,2-DICHLOROPROPANE CIS-1,3-DICHLOROPROPENE TRANS-1,3-DICHLOROPROPENE ETHYLBENZENE METHYLENE CHLORIDE 1,1,2,2-TETRACHLOROETHANE TOLUENE 1,1,1-TRICHLOROETHANE	<pre><0.5 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2</pre>
1,1,2-TRICHLOROETHANE TRICHLOROETHENE TRICHLOROFLUOROMETHANE VINYL CHLORIDE TOTAL XYLENES TRICHLOROTRIFLUOROETHANE	<0.2 <0.2 <0.5 <0.2 <0.5 <0.5 <2.0
SURROGATE PERCENT RECOVERIES BROMOCHLOROMETHANE (%) BROMOFLUOROBENZENE (%)	98 81 Derphills



QUALITY	CONTRO	L DATA	ATI]	[.D.	:	109560	
TEST : VOLATILE HALOCARBONS/AROMATI	ICS (EPA	601/60	02)				
CLIENT : EL PASO NATURAL GAS, PROJECT # : (NONE) PROJECT NAME : CHACO PLANT REF I.D. : 10999904		LE MA	LYZED : ATRIX : ;				
COMPOUNDS					DUP. SPIKED. SAMPLE	8	RPD
1,1-DICHLOROETHENE TRICHLOROETHENE TETRACHLOROETHENE BENZENE BROMODICHLOROMETHANE CHLOROFORM 1,1,1-TRICHLOROETHANE TOLUENE CHLOROBENZENE M-XYLENE	<0.2 <0.2 <0.2 <0.5 <0.2 <0.2 <0.2 <0.2 <0.2 <0.5 <0.2 <0.5 <0.2 <0.5	20 20 20 20 20 20 20 20	21 23 23 20 23 23 21 20 21 18	115 115 100 115 115 105 100	21 21 19 21 23 21 19 20 17	95 105 115	0 9 9 5 9 0 5 5 6

% Recovery = (Spike Sample Result - Sample Result) ______ X 100 Spike Concentration

RPD (Relative % Difference) = (Spiked Sample - Duplicate Spike) Result Sample Result Average of Spiked Sample



GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10956001

TEST : POLYNUCLEAR AROMATICS (EPA 610)

CLIENT : EL PASO NATURAL PROJECT # : (NONE) PROJECT NAME : CHACO PLANT CLIENT I.D. : N11914 SAMPLE MATRIX : AQUEOUS	DATE RECEIV DATE EXTRAC DATE ANALYZ	YED : 09/05/91 CTED : 09/06/91 SED : 09/16/91 : UG/L
COMPOUNDS	RESULTS	
NAPHTHALENE ACENAPHTHYLENE ACENAPHTHENE FLUORENE PHENANTHRENE ANTHRACENE FLUORANTHENE PYRENE BENZO(A)ANTHRACENE CHRYSENE BENZO(A)FLUORANTHENE BENZO(A)FLUORANTHENE BENZO(A)FLUORANTHENE BENZO(A)PYRENE DIBENZ(a,h)ANTHRACENE BENZO(g,h,i)PERYLENE INDENO(1,2,3-CD)PYRENE	<15 <15 <25 14 18 <0.5 <1.5 12 2.0 <1 <0.5 <0.5 <0.5 <0.5 <0.5 <2 <1.5	
SURROGATE PERCENT RECOVE	ERIES	

2-CHLOROANTHRACENE (%)

NA



GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

TEST : POLYNUCLEAR AROMATICS (EPA 610) CLIENT : EL PASO NATURAL GAS, NEW MEXICO PROJECT # : (NONE) PROJECT NAME : CHACO PLANT CLIENT I.D. : REAGENT BLANK	ATI I.D. : 109560 DATE EXTRACTED : 09/06/91 DATE ANALYZED : 09/13/91 UNITS : UG/L DILUTION FACTOR : N/A
COMPOUNDS	RESULTS
NAPHTHALENE ACENAPHTHYLENE ACENAPHTHENE FLUORENE PHENANTHRENE ANTHRACENE FLUORANTHENE PYRENE BENZO(A)ANTHRACENE CHRYSENE BENZO(B)FLUORANTHENE BENZO(A)FLUORANTHENE BENZO(A)PYRENE DIBENZ(a,h)ANTHRACENE 3ENZO(g,h,i)PERYLENE INDENO(1,2,3-CD)PYRENE	<pre><0.30 <0.30 <0.50 <0.04 <0.03 <0.01 <0.03 <0.04 <0.01 <0.02 <0.01 <0.02 <0.01 <0.01 <0.01 <0.01 <0.01 <0.01 <0.01 <0.01 <0.03</pre>

SURROGATE PERCENT RECOVERIES

2-CHLOROANTHRACENE (%)

NA

for tobal g. 70. a'

丛	Analytical Technologies, I nc.

QUALIT	Y CONTRO	OL DATA	ATI 1	[<i>.</i> D.		: 10956	0
TEST : POLYNUCLEAR AROMATICS (EPA	610)						
CLIENT : EL PASO NATURAL GAS PROJECT # : (NONE) PROJECT NAME : CHACO PLANT REF I.D. : 10999910	, NEW MI	EXICO	SAMPI	LE MA		: 09/13 : AQUEO : UG/L	
COMPOUNDS	RESULT	CONC. SPIKED	SAMPLE				RPD
ACENAPHTHYLENE PYRENE	<0.30	300 [′] 40	180				14 10
			١	Peccusar feccus	4		
					recht	e 13-5.1	
						J	
						Υ.	
<pre>% Recovery = (Spike Sample Result</pre>	- Sampl	e Resul		.00			
Spike Concentration			- A 1				
RPD (Relative % Difference) = (Sp	iked Sam Result		ouplicat Sample R			W 100	
	Averaç	ge of Sp	iked Sa	mple	}	X 100	



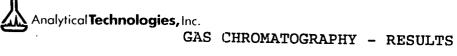
GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10956001

TEST : POLYCHLORINATED BIPHENYLS (EPA METHOD 608)

PROJECT #	: (NONE) : CHACO PLANT : N11914	, NEW MEXICO DATE SAMPLED DATE RECEIVED DATE EXTRACTED DATE ANALYZED UNITS DILUTION FACTO	: 09/05/91 : 09/06/91 : 09/11/91 : UG/L
COMPOUNDS		RESULTS	
AROCLOR 1016 AROCLOR 1221 AROCLOR 1232 AROCLOR 1242 AROCLOR 1248 AROCLOR 1254 AROCLOR 1260		<50 <50 <50 <50 <50 <50 <50 <50 <50	
SURRO	GATE PERCENT RECOVERIE	S	
ISODRIN (%)		* *	

** Due to the necessary dilution of the sample, result was not attainable



REAGENT BLANK

TEST : POLYCHLORINATED BIPHENYLS (EPA METHOD 608)

CLIENT PROJECT # PROJECT NAME		ATI I.D.	: 09/11/9
CLIENT I.D.	: REAGENT BLANK	DILUTION FACTOR	: UG/L : N/A
COMPOUNDS	I	RESULTS	
AROCLOR 1016			
AROCLOR 1221 AROCLOR 1232	•	<0.5	
AROCLOR 1242		<0.5 <0.5	
AROCLOR 1248		<0.5	
AROCLOR 1254 AROCLOR 1260		<0.5 <0.5	
	SURROGATE PERCENT RECOVERIES		

ROGATE PERCENT RECOVERIES

ISODRIN (%)

84

And John 20- 41



QUALI TEST : POLYCHLORINATED BIPHENYLS	TY CONTROL DATA (EPA METHOD 608	ATI I.D.	: 109560
CLIENT : EL PASO NATURAL GA PROJECT # : (NONE) PROJECT NAME : CHACO PLANT REF I.D. : 10999907	S, NEW MEXICO	DATE ANALYZED SAMPLE MATRIX UNITS	
COMPOUNDS	SAMPLE CONC. RESULT SPIKED	DUP. SPIKED % SPIKE SAMPLE REC.SAMPL	D %
AROCLOR 1260	<0.5 5.0	4.7 94 4.9	98 4

fulfs- cll

% Recovery = (Spike Sample Result - Sample Result) Spike Concentration RPD (Relative % Difference) = (Spiked Sample - Duplicate Spike) Result Sample Result

X 100

Average of Spiked Sample

BARRINGER LABORATORIES INC. 15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689			
ANALYTICAL TECHNOLOGIES, INC. (Phoenix)	19-	Sep-91	
9830 S. 51st St., Ste. B13 Phoenix, AZ 85044	Page: Copy: Set :	l of	1 2 1

Attn: Mary Tyer Project: 109560-565

PO #:

Sample Type: Water

Received: 6-Sep-91 17:22

Final

Status:

Job: 911651E

Ra-226	Error	Ra-228	Error	U	U
Total		Total		Total	Total
pCi/l	2σ	pCi/l	2σ	mq/1	pCi/l(1)

Sample	pCi/l_20	_pCi/1_2σ	mg/1pC	<u>i/1(1)</u>
109560-1	1.1 ± 0.8	0.4 ±1.2	0.0041	2.8
109561-1	0.9 ±0.7	0.2 ±1.1	0.0281	19
109562-1	1.8 ±1.0	0.0 ±1.1	0.0031	2.1
109564-1	1.1 ±0.7	0.1 ±1.2	0.0010	0.7
109565-1	2.0 ± 1.2	0.5 ±1.2	0.0069	4.7

	SUITE 300 GOLDEN, CO 8040			19-	Sep-91	
9830 S. 51st St.	OLOGIES, INC. (P , Ste. B13 044	noenixy		Page: Copy: Set :	1 of	2 2 2
Attn: Mary Tyer Project: 109560-	565	PO #:	Received:	6-Sep-	91 17:	22
Job: 911651E			Stat	us:	<u>Final</u>	
Abbreviations:						
<u>Parameters:</u>						
Ra-226 Ra-228 U	: Radium-226 : Radium-228 : Uranium					
<u>Units:</u>						
pCi/l 2σ mg/l pCi/l(1)	: picoCuries : Counting er : milligrams : picoCuries	ror at the per liter				
Job approved by: Signed: July Ellen La	Ja Runase		••			

BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

19-Sep-91

ANALYTICAL TECHNOLOGIES, INC. (Phoenix) 9830 S. 51st St., Ste. B13 Phoenix, AZ 85044

Page:		1
Copy:	1 of	2
Set :		1

Final

Attn: Mary Tyer Project: 109560-565

PO #:

Received: 6-Sep-91 17:22

Status:

Job: 911651E

QUALITY CONTROL REPORT

Sample Type: Water

Sample Id	Total		Ra-228 Total <u>pCi/l</u>		U Total mg/l	U Total pCi/l(1)
Duplicate Duplicate Duplicate % diff. Std (found value)	1.1	±1.4 ±1.0 ±2	0.7	±1.5 ±1.2 ±2	0.0045 0.0042 4.5 33	
Std (true value) Std % diff. Blank Spike % rec.	101 9.9 0.0	±0.1	32 16 0.0	 ±0.8	34 2.9 <0.0003 97	

Jal 5.

BARRINGER LABORAT	
1	19-Sep-91
ANALYTICAL TECHNOLOGIES, INC. (Phoeni 9830 S. 51st St., Ste. B13 Phoenix, AZ 85044	x) Page: 2 Copy: 1 of 2 Set: 2
Attn: Mary Tyer Project: 109560-565 PC	Received: 6-Sep-91 17:22
Job: 911651E	Status: Final
QUALITY CON	TROL REPORT
Abbreviations:	
<u>Parameters:</u>	
Ra-226 : Radium-226 Ra-228 : Radium-228 U : Uranium	
<u>Units:</u>	
mg/l : milligrams per l	t the 95% confidence level, 2σ
Job approved by:	
Signed:	

.

Approved Quality Assurance Department

	RINGER L						
l ANALYTICAL TE 9830 S. 51st Phoenix, AZ	St., Ste. B1	INC. (Pho 3	enix)			19-Se Page: Copy: 2	ep-91 3 2 of 2
Attn: Mary Ty Project: 1095			PO #:	Rec	eived: 6	5-Sep-91	L 17:22
<u>Job: 911651</u>	E		CONTRACT		Status	: Fi	lnal
			CONTROL				
	QUAL	ITY CONTI	OL DATA	SHEET			
Received by:	g m	Via: Fe	d.Ex.				
Sample Contai Sample Type: Preservative Additional La	Water When Receive	d: ниоз					
Parameter	Method	LLD		Preser- vative			ce(s) of nalysis
Ra-226 Ra-228 U	SM-705 ASTMD2907	0.2 pCi, 0.9 pCi, 0.0003 r	1	HNO3 HNO3 HNO3	Seidel Howard Meyer	9/1	13- 9/17 13 16- 9/17
	urkhardt, Ph tory Directo			•••••			٦
						Acc	tel 2-10-01
	Manuun The	AnalyticalC	1 allownor O	CA Change	. 117		

Meeting The Analytical Challenges Of A Changing World

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9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 109561

September 26, 1991

El Paso Natural Gas Company P.O. Box 4990 Farmington, NM 87499



Project Name/Number: Chaco Plant

Attention: John Lambdin

On 09/05/91, Analytical Technologies, Inc. received a request to analyze aqueous sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

Method 610 analyses were performed by ATI, Fort Collins. Uranium, Radium 226 and Radium 228 analyses were performed by Barringer Laboratories.

Due to matrix interference, Phenolics analysis was run at a dilution. Detection limits were raised accordingly.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

Many A. Typer

Mary Tyer Project Manager

RVW:clf Enclosure

aber U. Wood

Robert V. Woods Laboratory Manager

Corporate Offices: 5550 Morehouse Drive San Diego, CA 92121 (619) 458-9141

Analytical **Technologies**, Inc.

CLIENT	: EL PASO NATURAL GAS, NEW MEXICO	DATE RECEIVED : 09/05/91
PROJECT # PROJECT NAME	: (NONE) : CHACO PLANT	REPORT DATE : 09/25/91
	ATI I.D. : 109561	

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	N11915	AQUEOUS	09/04/91
02	TRIP BLANK	AQUEOUS	09/04/91

	TOTALS	
--	--------	--

MATRIX	
AOUEOUS	5

SAMPLES 2

,

AUGEOUS

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contaction our sample control department before the scheduled disposal date.



GENERAL CHEMISTRY RESULTS

ATI I.D. : 109561

CLIENT : EL PASO NATURAL GAS, NEW MEXICO PROJECT # : (NONE) DATE RECEIVED : 09/05/91 PROJECT NAME : CHACO PLANT **REPORT DATE : 09/25/91** ********* PARAMETER UNITS 01 CHLORIDE MG/L 580 MG/L <0.01 CYANIDE, TOTAL MG/L FLUORIDE MG/L 1.10 NITRATE AS NITROGEN MG/L <0.06 UNITS 8.8 PH MG/L PHENOLICS, TOTAL <0.04 SULFATE SULFATEMG/L270TOTAL DISSOLVED SOLIDSMG/L1800

Analytical Technologies	, Inc. GENERAL	CHEMISTRY	Y - QUAL	ITY CON	FROL			
CLIENT: EL PASOPROJECT #: (NONE)PROJECT NAME: CHACO PL		GAS, NEW	MEXICO	ITA	I.D.	: 1095	61	
PARAMETER	UNITS	ATI I.D.		DUP. RESULT				
CHLORIDE CYANIDE, TOTAL FLUORIDE NITRATE AS NITROGEN PH PHENOLICS, TOTAL SULFATE TOTAL DISSOLVED SOLIDS	MG/L MG/L MG/L UNITS MG/L MG/L MG/L	10957201 10956101 10956101 10957906 10887501 10956101 10962204 10954601	300 <0.01 1.10 1.40 8.7 <0.04 11 630	300 <0.01 1.10 1.42 8.7 <0.04 10 640	0 NA 0 1 0 NA 10 2		250 0.25 1.00 2.00 NA 0.50 10 NA	104 84 93 102 NA 90 90 NA
<pre>% Recovery = (Spike Sat Spike Con</pre>			ple Resu		100			

RPD (Relative Percent Difference) = (Sample Result - Duplicate Result) 10 Х ------Average Result



METALS RESULTS

ATI I.D. : 109561

PROJECT #	: EL PASO NATURAL GAS, NEW M : (NONE) : CHACO PLANT	IEXICO DATE RECEIVE REPORT DATE	
PARAMETER	UNITS 01		
SILVER	MG/L <0.	010	
ARSENIC	MG/L <0.	005	
BORON	MG/L 0.2	22	
BARIUM	MG/L 0.2	298	
CADMIUM	MG/L <0.	005	
CHROMIUM	MG/L <0.	010	
COPPER	MG/L <0.	010	
IRON	MG/L 0.1	20	
MERCURY	MG/L <0.	0002	
MANGANESE	MG/L 0.1	80	
LEAD	MG/L <0.	002	
SELENIUM	MG/L < 0.	005	
URANIUM		281	
ZINC		.010	



ZINC

METALS - QUALITY CONTROL

JLIENT PROJECT # PROJECT NAME	: EL PASO NATURAL : (NONE) : CHACO PLANT	GAS, NEW MEX	ICO ATI I.D.	: 109561
PARAMETER	UNITS	SAM ATI I.D. RES		SPIKED SPIKE % SAMPLE CONC REC
SILVER	MG/L	10956201 <0.	010 <0.010 NA	0.468 0.500 94
ARSENIC	MG/L	10956401 <0.	005 <0.005 NA	0.051 0.050 102
BORON	MG/L	10953101 0.1	2 0.12 0	1.14 1.00 102
BARIUM	MG/L	10956201 0.0	69 0.069 0	1.09 1.00 102
CADMIUM	MG/L	10956201 <0.	005 <0.005 NA	0.514 0.500 103
CHROMIUM	MG/L	10956201 <0.	010 <0.010 NA	1.05 1.00 105
COPPER	MG/L	10956201 <0.	010 <0.010 NA	0.504 0.500 101
IRON	MG/L	10956201 0.0	30 0.030 0	1.04 1.00 101
MERCURY	MG/L	10962701 <0.	0002 <0.0002 NA	0.0051 0.0050 102
MANGANESE	MG/L	10956201 <0.	010 <0.010 NA	1.04 1.00 104
LEAD	MG/L	10956501 <0.	002 <0.002 NA	0.045 0.050 90
SELENIUM	MG/L	10956401 <0.	005 <0.005 NA	0.050 0.050 100
URANIUM	MG/L	10999909 0.0	045 0.0042 4.5	NA NA NA

MG/L

0.507

<0.010 NA

0.500

101

% Recovery = (Spike Sample Result - Sample Result) Х 100 Spike Concentration RPD (Relative Percent Difference) = (Sample Result - Duplicate Result) 100 Х _ _ _ _ Average Result

10956201 <0.010



GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10956101

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

- -

CLIENT : EL PASO NATURAL GAS, PROJECT # : (NONE) PROJECT NAME : CHACO PLANT CLIENT I.D. : N11915 SAMPLE MATRIX : AQUEOUS	NEW MEXICO DATE SAMPLED : 09/04/91 DATE RECEIVED : 09/05/91 DATE EXTRACTED : N/A DATE ANALYZED : 09/09/91 UNITS : UG/L DILUTION FACTOR : 1
COMPOUNDS	RESULTS
BENZENE BROMODICHLOROMETHANE BROMOFORM BROMOMETHANE CARBON TETRACHLORIDE CHLOROBENZENE CHLOROETHANE CHLOROFORM CHLOROMETHANE DIBROMOCHLOROMETHANE 2-CHLOROETHYL VINYL ETHER 1,3-DICHLOROBENZENE 1,2 & 1,4-DICHLOROBENZENE DICHLORODIFLUOROMETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHENE 1,2-DICHLOROETHENE 1,2-DICHLOROETHENE CIS-1,3-DICHLOROPROPENE TRANS-1,3-DICHLOROPROPENE TRANS-1,3-DICHLOROPENE ETHYLBENZENE METHYLENE CHLORIDE 1,1,2,2-TETRACHLOROETHANE TETRACHLOROETHENE TOLUENE 1,1,2-TRICHLOROETHANE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROFLUOROMETHANE VINYL CHLORIDE TOTAL XYLENES TRICHLOROTIFLUOROETHANE	<pre><0.5 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2</pre>
BROMOCHLOROMETHANE (%) BROMOFLUOROBENZENE (%)	93 83



GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10956102

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

	DATE EXTRACTED : N/A DATE ANALYZED : 09/09/91 UNITS : UG/L DILUTION FACTOR : 1
COMPOUNDS	RESULTS
BENZENE BROMODICHLOROMETHANE BROMOMETHANE CARBON TETRACHLORIDE CHLOROBENZENE CHLOROETHANE CHLOROFORM CHLOROMETHANE DIBROMOCHLOROMETHANE 2-CHLOROETHYL VINYL ETHER ., 3-DICHLOROBENZENE 1,2 & 1,4-DICHLOROBENZENE DICHLORODIFLUOROMETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHENE 1,2-DICHLOROETHENE 1,2-DICHLOROETHENE 1,2-DICHLOROPROPANE CIS-1,3-DICHLOROPROPENE TRANS-1,3-DICHLOROPROPENE ETHYLBENZENE METHYLENE CHLORIDE 1,1,2,2-TETRACHLOROETHANE TETRACHLOROETHENE 1,1,1-TRICHLOROETHANE 1,1,2-TRICHLOROETHANE 1,1,2-TRICHLOROETHANE TRICHLOROETHENE TRICHLOROFLUOROMETHANE VINYL CHLORIDE TOTAL XYLENES	<pre><0.5 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2</pre>
TRICHLOROTRIFLUOROETHANE SURROGATE PERCENT RECOVERIES	<2.0
BROMOCHLOROMETHANE (%) BROMOFLUOROBENZENE (%)	<2.0 Harf H- 81 (2.0)



GAS CHROMATOGRAPHY - RESULTS

____. · · · · ·

REAGENT BLANK

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/6	ATI I.D. : 109561
CLIENT : EL PASO NATURAL GAS, NEW MEXICO	DATE EXTRACTED : 09/06/9
PROJECT # : (NONE)	DATE ANALYZED : 09/06/9
PROJECT NAME : CHACO PLANT	UNITS : UG/L
CLIENT I.D. : REAGENT BLANK	DILUTION FACTOR : N/A
COMPOUNDS	RESULTS
BENZENE BROMODICHLOROMETHANE BROMODICHLOROMETHANE BROMOMETHANE CARBON TETRACHLORIDE CHLOROBENZENE CHLOROBENZENE CHLOROFORM CHLOROMETHANE DIBROMOCHLOROMETHANE 2-CHLOROETHYL VINYL ETHER 1, 3-DICHLOROBENZENE 1, 2 & 1, 4-DICHLOROBENZENE DICHLORODIFLUOROMETHANE 1, 2-DICHLOROETHANE 1, 2-DICHLOROETHENE 1, 2-DICHLOROETHENE 1, 2-DICHLOROETHENE 1, 2-DICHLOROFROPANE CIS-1, 3-DICHLOROPROPENE TTRANS-1, 3-DICHLOROPROPENE ETHYLENE CHLORIDE 1, 1, 2, 2-TETRACHLOROETHANE TETRACHLOROETHENE 1, 1, 1-TRICHLOROETHANE 1, 1, 2-TRICHLOROETHANE TRICHLOROFLUOROMETHANE TRICHLOROFLUOROMETHANE VINYL CHLORIDE TOTAL XYLENES TRICHLOROTRIFLUOROETHANE SURROGATE PERCENT RECOVERIES	$ \begin{array}{c} < 0.5 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.5 \\ < 0.5 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ \qquad Montumber Mathematical and a general
BROMOCHLOROMETHANE (%)	81
BROMOFLUOROBENZENE (%)	85



QUALITY TEST : VOLATILE HALOCARBONS/AROMATI				.D.	:	109561	
CLIENT : EL PASO NATURAL GAS, PROJECT # : (NONE) PROJECT NAME : CHACO PLANT REF I.D. : 10999906	•	XICO	·	E MA			
COMPOUNDS			SPIKED SAMPLE		DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE TRICHLOROETHENE TETRACHLOROETHENE BENZENE BROMODICHLOROMETHANE CHLOROFORM 1,1,1-TRICHLOROETHANE TOLUENE CHLOROBENZENE M-XYLENE	<0.2 <0.2 <0.2 <0.5 <0.2 <0.2 <0.2 <0.2 <0.2 <0.5 <0.2 <0.5 <0.2	20 20 20 20 20 20 20	21 18 24 19 23 20 20 21 18	90 120 90 95 115 100 100	23 19 24 17 20 24 21 20 22 18	115 95 120 85 100 120 105 100 110 90	9 5 0 6 5 4 5 0 5 0 5 0

perfort a zo. al

RPD (Relative % Difference) = (Spiked Sample - Duplicate Spike) Result Sample Result Average of Spiked Sample



GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10956101

TEST : POLYNUCLEAR AROMATICS (EPA 610)

CLIENT : EL PASO NATURAL GAS, NEW MEXT PROJECT # : (NONE) PROJECT NAME : CHACO PLANT CLIENT I.D. : N11915 SAMPLE MATRIX : AQUEOUS	ICO DATE SAMPLED : 09/04/91 DATE RECEIVED : 09/05/91 DATE EXTRACTED : 09/06/91 DATE ANALYZED : 09/13/91 UNITS : UG/L DILUTION FACTOR : 1
COMPOUNDS	RESULTS
NAPHTHALENE ACENAPHTHYLENE ACENAPHTHENE FLUORENE PHENANTHRENE ANTHRACENE FLUORANTHENE PYRENE BENZO(A)ANTHRACENE CHRYSENE BENZO(B)FLUORANTHENE BENZO(A)PYRENE DIBENZ(a,h)ANTHRACENE BENZO(g,h,i)PERYLENE INDENO(1,2,3-CD)PYRENE	<pre><0.30 <0.30 <0.50 <0.04 <0.03 <0.01 <0.03 <0.04 <0.01 <0.02 <0.01 <0.01 <0.01 <0.01 <0.01 <0.10 <0.04 <0.03</pre>

SURROGATE PERCENT RECOVERIES

2-CHLOROANTHRACENE (%)

NA



GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

TEST : POLYNUCLEAR AROMATICS (EPA 610)

CLIENT : EL PASO NATURAL GAS, PROJECT # : (NONE) PROJECT NAME : CHACO PLANT CLIENT I.D. : REAGENT BLANK	ATI I.D. : 109561 DATE EXTRACTED : 09/06/91 DATE ANALYZED : 09/13/91 UNITS : UG/L DILUTION FACTOR : N/A
COMPOUNDS	RESULTS
NAPHTHALENE ACENAPHTHYLENE ACENAPHTHENE FLUORENE PHENANTHRENE ANTHRACENE FLUORANTHENE PYRENE BENZO(A)ANTHRACENE CHRYSENE BENZO(B)FLUORANTHENE BENZO(A)PYRENE DIBENZ(a,h)ANTHRACENE JENZO(g,h,i)PERYLENE INDENO(1,2,3-CD)PYRENE	$ \begin{array}{c} <0.30\\<0.30\\<0.50\\<0.04\\<0.03\\<0.01\\<0.03\\<0.04\\<0.01\\<0.02\\<0.01\\<0.02\\<0.01\\<0.01\\<0.01\\<0.01\\<0.01\\<0.04\\<0.03\end{array} $

SURROGATE PERCENT RECOVERIES

2-CHLOROANTHRACENE (%)

NA

Hace by an an



QUALIT TEST : POLYNUCLEAR AROMATICS (EPA	Y CONTRO 610))L DATA	ATI I	.D.	:	109561	
CLIENT : EL PASO NATURAL GAS PROJECT # : (NONE) PROJECT NAME : CHACO PLANT REF I.D. : 10999910	, NEW MI	EXICO		LE MI	LYZED : ATRIX : ;		
COMPOUNDS					DUP. SPIKED. SAMPLE	8	RPD
ACENAPHTHYLENE , PYRENE	<0.30 <0.04	300 40	180 25.0	60 62	157 22.7	52 57	14 10

Hoertahn 82-30-91

% Recovery = (Spike Sample Result - Sample Result) Spike Concentration RPD (Relative % Difference) = (Spiked Sample - Duplicate Spike)

Result Sample Result Average of Spiked Sample



GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10956101

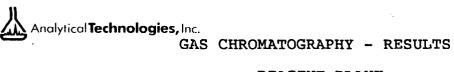
TEST : POLYCHLORINATED BIPHENYLS (EPA METHOD 608)

PROJECT # PROJECT NAM CLIENT I.D.	: EL PASO NATU : (NONE) E : CHACO PLANT : N11915 EIX : AQUEOUS	RAL GAS, NEW MI	DATE R DATE E DATE A UNITS	ECEIVED : XTRACTED : NALYZED :	09/04/91 09/05/91 09/06/91 09/11/91 UG/L 10
COMPOUNDS			RESULTS	~~~~~~~~~	
AROCLOR 101 AROCLOR 122 AROCLOR 122 AROCLOR 124 AROCLOR 124 AROCLOR 124 AROCLOR 124	21 32 42 48 54		<5.0 <5.0 <5.0 <5.0 <5.0 <5.0 <5.0 <5.0		
SUI	RROGATE PERCENT RE	COVERIES			

ISODRIN (%)

.....

57



REAGENT BLANK

COMPOUNDS RESULTS	
AROCLOR 1016 <0.5	

RROGATE PERCENT RECOVERIES

ISODRIN (%)

84

the plant - 30-9'



QUALITY	Y CONTROL DATA	ATI I.D.	: 109561
TEST : POLYCHLORINATED BIPHENYLS (F	EPA METHOD 608)		• 109301
CLIENT : EL PASO NATURAL GAS, PROJECT # : (NONE) PROJECT NAME : CHACO PLANT REF I.D. : 10999907	, NEW MEXICO	DATE ANALYZED SAMPLE MATRIX UNITS	
COMPOUNDS	SAMPLE CONC. RESULT SPIKED	DUP. SPIKED % SPIKE SAMPLE REC.SAMPL	
AROCLOR 1260	<0.5 5.0	4.7 94 4.9	98 4

for 38. 2091

% Recovery = (Spike Sample Result - Sample Result) Spike Concentration RPD (Relative % Difference) = (Spiked Sample - Duplicate Spike) Result Sample Result

X 100

Average of Spiked Sample



19-Sep-91 ANALYTICAL TECHNOLOGIES, INC. (Phoenix) 9830 S. 51st St., Ste. B13 Page: Phoenix, AZ 85044 Copy: 1 of 2 Set :

Attn: Mary Tyer Project: 109560-565

PO #:

Received: 6-Sep-91 17:22

Status: Final

1

1

Job: 911651E_____

Sample Type: Water

Sample	Ra-226 Total pCi/l		Ra-228 Total pCi/l		U Total mg/l	U Total pCi/l(1)
109560-1 109561-1 109562-1 109564-1 109565-1	0.9 1.8 1.1	±0.8 ±0.7 ±1.0 ±0.7 ±1.2	0.2 0.0 0.1	±1.2 ±1.1 ±1.1 ±1.2 ±1.2	0.0041 0.0281 0.0031 0.0010 0.0069	2.8 19 2.1 0.7 4.7

Meeting The Analytical Challenges Of A Changing World

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	ER LABORA 300 golden, co 80401 (30%					
				19	-Sep-	91
ANALYTICAL TECHNOLOG 9830 S. 51st St., St Phoenix, AZ 85044		nix)		Page: Copy: Set :	1 0	2 f 2 2
Attn: Mary Tyer Project: 109560-565	1	PO #:	Received:	6-Sep	-91 1 ⁻	7:22
Job: 911651E			Stat	us:	<u>Fina</u>	1
Abbreviations:						
Parameters:						
Ra-228 :	Radium-226 Radium-228 Uranium					
<u>Units:</u>						
2σ : mg/l :	picoCuries per Counting error milligrams per picoCuries per	at the 959 liter				nd.
Job approved by:						
Signed:	ere					

Radiochemistry Laboratory Manager

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Meeting The Analytical Challenges Of A Changing World

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BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

19-Sep-91

ANALYTICAL TECHNOLOGIES, INC. (Phoenix) 9830 S. 51st St., Ste. B13 Phoenix, AZ 85044

Page:		1
Copy:	1 of	2
Set :		1

Final

Attn: Mary Tyer Project: 109560-565

PO #:

Received: 6-Sep-91 17:22

Status:

Job: 911651E

QUALITY CONTROL REPORT

Sample Type: Water

Sample Id	Total		Ra-228 Total pCi/l		U Total mg/l	U Total pCi/l(1)
Duplicate	2.8	±1.4	1.0	±1.5	0.0045	
Duplicate	1.1	±1.0	0.7	±1.2	0.0042	
Duplicate % diff.	44		18		4.5	
Std (found value)	91	±2	27	±2	33	
Std (true value)	101		32		34	
Std % diff.	9.9		16		2.9	
Blank	0.0	±0.1	0.0	±0.8	<0.0003	
Spike % rec.					97	

Acertabiu 11 Acertabiu 11

I	ITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX		19-Sep	-91
ANALYTICAL TECHNOI 9830 S. 51st St., Phoenix, AZ 8504			Page: Copy: 1 o Set :	of :
Attn: Mary Tyer Project: 109560-56	5 PO #:	Received:	6-Sep-91 🕻	17:22
Job: 911651E			us: Fina	al
	QUALITY CONTROL R	EPORI		
Abbreviations:				
Parameters:				
D- 226	: Radium-226			
Ra-226				
Ra-228	: Radium-228			
Ra-228	: Radium-228			
Ra-228 U	: Radium-228 : Uranium : picoCuries per liter			
Ra-228 U Units:	: Radium-228 : Uranium	95% confidenc	ce level, 20	7

Job approved by:

Signed:

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Approved Quality Assurance Department

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Meeting The Analytical Challenges Of A Changing World

BAR	RINGER I	ABOR	ATORI	'ES IN	С.		
ANALYTICAL I	TH AVE., SUITE 300 GOL ECHNOLOGIES, St., Ste. B1 85044	INC. (Pho		FAX (303) 277-18	589	Page	9-Sep-91 : : : 2 of :
Attn: Mary T Project: 109	'yer 560-565		PO #:	Rec	eived:	6-Sej	p-91 17:22
<u>Job: 91165</u>	1E				Stat	us:	Final
	QUAI	QUALITY					
Received by:	gm	Via: Fe	d.Ex.				
Sample Type: Preservative	iner Type: 11 Water When Receive ab Preparatic	d: HNO3		Preser-			Date(s) c
Parameter	Method	LLD		vative		yst	Analysis
Ra-226 Ra-228 U	SM-705 Astmd2907	0.2 pCi/ 0.9 pCi/ 0.0003 m	1	HNO3 HNO3 HNO3	Seidel Howard Meyer		9/13- 9/3 9/13 9/16- 9/3
Signed: Mark Labor	Burkhardt, Phatory Directo	D. P.	• • • • • • • •		Ac	e Iv le	
					r	' JA 4 '	, 50 ⁻⁹ (
				6			
	Meeting The	Analytical Cl	allenges O	f A Chanein	g World		

The Analytical Challenges Of A Changing World



9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI 1.D. 109562

September 26, 1991

El Paso Natural Gas Company P.O. Box 4990 Farmington, NM 87499

Project Name/Number: Chaco Plant

Attention: John Lambdin

On 09/05/91, Analytical Technologies, Inc. received a request to analyze aqueous sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

Method 610 analyses were performed by ATI, Fort Collins. Uranium, Radium 226 and Radium 228 analyses were performed by Barringer Laboratories.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

Mary & Tyen

Mary Tyer Project Manager

RVW:clf Enclosure

Robert V. Woods Laboratory Manager

Corporate Offices: 5550 Morehouse Drive San Diego, CA 92121 (619) 458-9141

Analytical Technologies, Inc.

ł

LIENT ROJECT # ROJECT NA	: EL PASO : (NONE) ME : CHACO P	NATURAL GAS, NEW ME LANT ATI I.D. : 109	REPORT	RECEIVED : 09/05/91 T DATE : 09/23/91
	CLIENT DES	CRIPTION		DATE COLLECTED
	N11916 TRIP BLANK		AQUEOUS AQUEOUS	09/04/91 09/04/91
		**=====================================		
		TOTALS		
М	ATRIX	# SAMPLES		
– A	QUEOUS	2		
		ATI STANDARD DISPO	SAL PRACTICE	
date of t	his report.	project will be dis If an extended stora partment before the	ge period is requ	ired, please conta



GENERAL CHEMISTRY RESULTS

			ATI I.D. : 109562	
CLIENT : EL PASO NAT PROJECT # : (NONE)	URAL GAS, 1	NEW MEXICO	DATE RECEIVED : 09/05/91	•
PROJECT NAME : CHACO PLANT			REPORT DATE : 09/23/91	•
PARAMETER	UNITS	01		•
CHLORIDE	MG/L	2.4		,
CYANIDE, TOTAL	MG/L	<0.01		
FLUORIDE	MG/L	0.18		
NITRATE AS NITROGEN	MG/L	0.09		
PH	UNITS	8.3		
PHENOLICS, TOTAL	MG/L	<0.02		
SULFATE	MG/L	46		
TOTAL DISSOLVED SOLIDS	MG/L	160		

Analytical Technologies, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

LIENT : EL PASO N PROJECT # : (NONE) PROJECT NAME : CHACO PL		GAS, NEW	MEXICO	ATI]	E.D.	: 10956	52	
PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT F		SPIKED SAMPLE		۶ REC
CHLORIDE CYANIDE, TOTAL FLUORIDE NITRATE AS NITROGEN PH PHENOLICS, TOTAL SULFATE TOTAL DISSOLVED SOLIDS	MG/L MG/L UNITS MG/L	10957201 10951401 10962204 10957906 10887501 10964001 10962204 10954601	<0.01 0.42 1.40 8.7 0.17 11	300 <0.01 0.44 1.42 8.7 0.17 10 640	5 1 0		250 0.25 0.40 2.00 NA 0.25 10 NA	104 108 110 102 NA 100 90 NA

arthout ar

% Recovery = (Spike Sample Result - Sample Result) Spike Concentration
RPD (Relative Percent Difference) = (Sample Result - Duplicate Result) Average Result



METALS RESULTS

ATI I.D. : 109562

L.

CLIENT : EL PASO NATURAL GA PROJECT # : (NONE) PROJECT NAME : CHACO PLANT	AS, NEW MEXICO	DATE RECEIVED : 09/05/91 REPORT DATE : 09/23/91
PARAMETER UNI	TS 01	
ARSENIC MG BORON MG BARIUM MG	<pre>/L <0.10 /L 0.069 /L <0.005 /L <0.010 /L <0.010 /L 0.030 /L <0.0002 /L <0.002 /L <0.005 /L 0.0031</pre>	



CLIENT	:	EL PASO NATURAL GAS, NEW MEXICO	
PROJECT #	:	(NONE)	
PROJECT NAME	:	CHACO PLANT	P

ATI I.D. : 109562

UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT 1	RPD			% REC
MG/L			<0.010	NA	0.468	0.500	94
							102 100
-		0.069		NА 0			100
MG/L	10956201	<0.005	<0.005	NA	0.514	0.500	103
MG/L	10956201	<0.010	<0.010	NA	1.05	1.00	105
MG/L	10956201	<0.010	<0.010	NA	0.504	0.500	101
MG/L	10956201	0.030	0.030	0	1.04	1.00	101
MG/L	10962701	<0.0002	<0.0002	NA	0.0051	0.0050	102
MG/L	10956201	<0.010	<0.010	NA	1.04	1.00	104
MG/L	10956501	<0.002	<0.002	NA	0.045	0.050	90
MG/L	10956401	<0.005	<0.005	NA	0.050	0.050	100
MG/L	10999909	0.0045	0.0042	4.5	NA	NA	NA
MG/L	10956201	<0.010	<0.010	NA	0.507	0.500	101
	MG/L MG/L MG/L MG/L MG/L MG/L MG/L MG/L	MG/L 10956201 MG/L 10956401 MG/L 10956201 MG/L 10956201 MG/L 10956201 MG/L 10956201 MG/L 10956201 MG/L 10956201 MG/L 10956201 MG/L 10956501 MG/L 10956501 MG/L 10956401 MG/L 10999909	UNITS ATI I.D. RESULT MG/L 10956201 <0.010 MG/L 10956401 <0.005 MG/L 10956201 <0.10 MG/L 10956201 <0.005 MG/L 10956201 <0.005 MG/L 10956201 <0.010 MG/L 10956201 <0.010 MG/L 10956201 <0.0002 MG/L 10956501 <0.0002 MG/L 10956501 <0.002 MG/L 10956401 <0.005 MG/L 10999909 0.0045	UNITS ATI I.D. RESULT RESULT MG/L 10956201 <0.010 <0.010 MG/L 10956401 <0.005 <0.005 MG/L 10956201 <0.10 <0.10 MG/L 10956201 0.069 0.069 MG/L 10956201 <0.010 <0.010 MG/L 10956201 <0.010 <0.010 MG/L 10956201 <0.010 <0.010 MG/L 10956201 0.030 0.030 MG/L 10956201 <0.0002 <0.0002 MG/L 10956501 <0.002 <0.002 MG/L 10956501 <0.002 <0.002 MG/L 10956401 <0.005 <0.005 MG/L 10999909 0.0045 0.0042	UNITS ATI I.D. RESULT RESULT RPD MG/L 10956201 <0.010 <0.010 NA MG/L 10956401 <0.005 <0.005 NA MG/L 10956201 <0.10 <0.10 NA MG/L 10956201 0.069 0.069 0 MG/L 10956201 <0.005 <0.005 NA MG/L 10956201 <0.010 <0.010 NA MG/L 10956201 <0.010 <0.010 NA MG/L 10956201 <0.010 <0.010 NA MG/L 10956201 <0.0002 <0.0002 NA MG/L 10956201 <0.0002 <0.0002 NA MG/L 10956501 <0.002 <0.002 NA MG/L 10956501 <0.002 <0.002 NA MG/L 10956401 <0.005 <0.005 NA	UNITS ATI I.D. RESULT RESULT RPD SAMPLE MG/L 10956201 <0.010 <0.010 NA 0.468 MG/L 10956401 <0.005 <0.005 NA 0.051 MG/L 10956201 <0.10 <0.10 NA 1.00 MG/L 10956201 0.069 0.069 0 1.09 MG/L 10956201 <0.005 <0.005 NA 0.514 MG/L 10956201 <0.010 <0.010 NA 1.05 MG/L 10956201 <0.010 <0.010 NA 0.504 MG/L 10956201 <0.002 <0.0002 NA 0.0051 MG/L 10956201 <0.0002 <0.0002 NA 0.0051 MG/L 10956501 <0.002 <0.002 NA 0.045 MG/L 10956401 <0.005 <0.005 NA 0.500 MG/L 10956401 <0.005 <0.0042 4.5 NA	UNITS ATI I.D. RESULT RESULT RPD SAMPLE CONC MG/L 10956201 <0.010 <0.010 NA 0.468 0.500 MG/L 10956401 <0.005 <0.005 NA 0.051 0.050 MG/L 10956201 <0.10 <0.10 NA 1.00 1.00 MG/L 10956201 0.069 0.069 0 1.09 1.00 MG/L 10956201 <0.005 <0.005 NA 0.514 0.500 MG/L 10956201 <0.010 <0.010 NA 1.05 1.00 MG/L 10956201 <0.010 <0.010 NA 0.504 0.500 MG/L 10956201 <0.002 <0.0002 NA 0.0051 0.0050 MG/L 10956201 <0.010 <0.010 NA 1.04 1.00 MG/L 10956201 <0.002 <0.002 NA 0.045 0.050 MG/L 10956501 <0.002 <0.002 NA 0.045 0.050 MG/L 10956401 <0.005 <0.005 NA 0.050 0.050 MG/L 10999909 0.0045 0.0042 4.5 NA NA

Acceptate a c

<pre>% Recovery = (Spike Sample Result - Sample Result)</pre>		
Spike Concentration		
RPD (Relative Percent Difference) = (Sample Result - Duplicate Result)	v	10
Average Result	X	10



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GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10956201

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

SAMPLE MATRIX : AQUEOUS	TURAL GAS, NEW MEXICO DATE SAMPLED : 09/04/91 DATE RECEIVED : 09/05/91 DATE EXTRACTED : N/A DATE ANALYZED : 09/06/91 UNITS : UG/L DILUTION FACTOR : 1
COMPOUNDS	RESULTS
BENZENE BROMODICHLOROMETHANE BROMOMETHANE CARBON TETRACHLORIDE CHLOROBENZENE CHLOROETHANE DIBROMOCHLOROMETHANE 2-CHLOROETHYL VINYL ETHER 1,3-DICHLOROBENZENE 1,2 & 1,4-DICHLOROBENZENE DICHLORODIFLUOROMETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHENE 1,2-DICHLOROETHENE 1,2-DICHLOROETHENE 1,2-DICHLOROPROPANE CIS-1,3-DICHLOROPROPENE TRANS-1,3-DICHLOROPROPENE ETHYLBENZENE METHYLENE CHLORIDE 1,1,2,2-TETRACHLOROETHANE 1,1,1-TRICHLOROETHANE 1,1,2-TRICHLOROETHANE 1,1,2-TRICHLOROETHANE TRICHLOROFLUOROMETHANE VINYL CHLORIDE TOTAL XYLENES TRICHLOROTIFLUOROETHANE	$ \begin{array}{c} <0.5\\<0.2\\<0.2\\<0.2\\<0.2\\<0.2\\<0.2\\<0.2\\<0.2$
SURROGATE PERCENT	RECOVERIES
BROMOCHLOROMETHANE (%) JROMOFLUOROBENZENE (%)	97 84



GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10956202

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

CLIENT : EL PASO NATURAL GAS, N PROJECT # : (NONE) PROJECT NAME : CHACO PLANT CLIENT I.D. : TRIP BLANK SAMPLE MATRIX : AQUEOUS	EW MEXICO DATE SAMPLED : 09/04/91 DATE RECEIVED : 09/05/91 DATE EXTRACTED : N/A DATE ANALYZED : 09/06/91 UNITS : UG/L DILUTION FACTOR : 1
COMPOUNDS	RESULTS
BENZENE BROMOD I CHLOROMETHANE BROMOFORM BROMOMETHANE CARBON TETRACHLORIDE CHLOROBENZENE CHLOROETHANE CHLOROFORM CHLOROMETHANE DIBROMOCHLOROMETHANE 2-CHLOROETHYL VINYL ETHER 3.3-DICHLOROBENZENE 1.2 & 1.4-DICHLOROBENZENE DICHLORODIFLUOROMETHANE 1.2-DICHLOROETHANE 1.2-DICHLOROETHANE 1.2-DICHLOROETHENE 1.2-DICHLOROETHENE 1.2-DICHLOROETHENE 1.2-DICHLOROPROPANE CIS-1.3-DICHLOROPROPENE TRANS-1.3-DICHLOROPROPENE TRANS-1.3-DICHLOROPROPENE TTYLENE CHLORIDE 1.1.2.7ETERACHLOROETHANE 1.1.2-TRICHLOROETHANE 1.1.2-TRICHLOROETHANE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROFLUOROMETHANE VINYL CHLORIDE TOTAL XYLENES TRICHLOROTRIFLUOROETHANE SURROGATE PERCENT RECOVERIES	$ \begin{array}{c} < 0.5 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.2 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ < 0.5 \\ $
BROMOCHLOROMETHANE (%) GROMOFLUOROBENZENE (%)	94 81



GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 60CLIENT : EL PASO NATURAL GAS, NEW MEXIPROJECT # : (NONE)PROJECT NAME : CHACO PLANTCLIENT I.D. : REAGENT BLANK	ATI I.D. : 109562 CO DATE EXTRACTED : 09/09/9 DATE ANALYZED : 09/09/9 UNITS : UG/L DILUTION FACTOR : N/A
COMPOUNDS	RESULTS
BENZENE	<0.5
BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<0.2
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.2
	<0.2
CHLOROETHANE	<0.2
CHLOROFORM	
CHLOROMETHANE	<0.2
DIBROMOCHLOROMETHANE	<0.2
2-CHLOROETHYL VINYL ETHER	<0.5
1, 3-DICHLOROBENZENE	<0.5
1,2 & 1,4-DICHLOROBENZENE	<0.5
DICHLORODIFLUOROMETHANE	<0.2
1,1-DICHLOROETHANE	<0.2
1,2-DICHLOROETHANE	<0.2
1,1-DICHLOROETHENE	<0.2
1,2-DICHLOROETHENE(TOTAL)	<0.2
1,2-DICHLOROPROPANE	<0.2
CIS-1, 3-DICHLOROPROPENE	<0.2
TRANS-1, 3-DICHLOROPROPENE	<0.2
ETHYLBENZENE	<0.5
METHYLENE CHLORIDE	<2.0
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE	
	<0.2
TOLUENE	<0.5
1,1,1-TRICHLOROETHANE	<0.2
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	<0.2
TRICHLOROFLUOROMETHANE	<0.5
VINYL CHLORIDE	<0.2
TOTAL XYLENES	<0.5
TRICHLOROTRIFLUOROETHANE	<pre></pre>
SURROGATE PERCENT RECOVERI	A Me
	in the second se
BROMOCHLOROMETHANE (%) BROMOFLUOROBENZENE (%)	87 ⁴ 4



-	CONTRO			[.D.	:	109562	
TEST : VOLATILE HALOCARBONS/AROMATI	tCS (EPA	A 601/60	02)				
CLIENT : EL PASO NATURAL GAS PROJECT # : (NONE) PROJECT NAME : CHACO PLANT REF I.D. : 10999906	, NEW MI	EXICO		LE M	LYZED : ATRIX : :		
COMPOUNDS		CONC. SPIKED	SPIKED SAMPLE		DUP. SPIKED. SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE TRICHLOROETHENE TETRACHLOROETHENE BENZENE BROMODICHLOROMETHANE CHLOROFORM 1,1,1-TRICHLOROETHANE TOLUENE CHLOROBENZENE M-XYLENE	<0.2 <0.2 <0.2 <0.5 <0.2 <0.2 <0.2 <0.2 <0.2 <0.5 <0.2 <0.5	20 20 20 20 20 20 20 20 20 20 20 20 20	21 18 24 19 23 20 20 21 18	105 90 120 90 95 115 100 100 105 90	19 24 17 20 24 21	115 95 120 85 100 120 105 100 110 90	9 5 0 6 5 4 5 0 5 0

2 cc 1 2 20 41



GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10956201

TEST : POLYNUCLEAR AROMATICS (EPA 610)

- -----

CLIENT PROJECT # PROJECT NAME CLIENT I.D. SAMPLE MATRIX	: (NONE) : CHACO PLANT : N11916	DATE DATE DATE DATE DATE DATE DATE DATE	SAMPLED : 09/04/91 RECEIVED : 09/05/91 EXTRACTED : 09/06/91 ANALYZED : 09/13/91 : UG/L ION FACTOR : 1
COMPOUNDS		RESULTS	
NAPHTHALENE ACENAPHTHYLENE ACENAPHTHENE FLUORENE PHENANTHRENE ANTHRACENE FLUORANTHENE PYRENE BENZO(A)ANTHRA CHRYSENE BENZO(B)FLUORA 3ENZO(K)FLUORA BENZO(A)PYRENE DIBENZ(a,h)ANT BENZO(g,h,i)PE INDENO(1,2,3-0	CENE INTHENE INTHENE CHRACENE CRYLENE	$ \begin{array}{r} < 0.30 \\ < 0.30 \\ < 0.50 \\ < 0.04 \\ < 0.03 \\ < 0.01 \\ < 0.03 \\ < 0.04 \\ < 0.01 \\ < 0.02 \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 0.03 \end{array} $	

SURROGATE PERCENT RECOVERIES

2-CHLOROANTHRACENE (%)

T

NA



GAS CHROMATOGRAPHY - RESULTS

REAGENT BLANK

TEST : POLYNUCLEAR AROMATICS (EPA 610) ATI I.D. : EL PASO NATURAL GAS, NEW MEXICO DATE EXTRACTED : 09/06/91 CLIENT CLIENT : EL PASO NATO PROJECT # : (NONE) PROJECT NAME : CHACO PLANT DATE ANALYZED : 09/13/91 UNITS : UG/L CLIENT I.D. : REAGENT BLANK DILUTION FACTOR : N/A _____ ____

COMPOUNDS	RESULTS
NAPHTHALENE	<0.30
ACENAPHTHYLENE	<0.30
ACENAPHTHENE	<0.50
FLUORENE	<0.04
PHENANTHRENE	<0.03
ANTHRACENE	<0.01
FLUORANTHENE	<0.03
PYRENE	<0.04
BENZO (A) ANTHRACENE	<0.01
CHRYSENE	<0.02
BENZO (B) FLUORANTHENE	<0.01
BENZO (K) FLUORANTHENE	<0.01
BENZO (A) PYRENE	<0.01
DIBENZ(a, h)ANTHRACENE	<0.10
BENZO(g,h,i)PERYLENE	<0.04
INDENO(1,2,3-CD)PYRENE	<0.03

SURROGATE PERCENT RECOVERIES

2-CHLOROANTHRACENE (%)

NA

Acertoria - 20° a'

: 109562



QUALITY TEST : POLYNUCLEAR AROMATICS (EPA 6	CONTRO	OL DATA	ATI 1	.D.	:	109562	ĺ
CLIENT : EL PASO NATURAL GAS, PROJECT # : (NONE) PROJECT NAME : CHACO PLANT REF I.D. : 10999910	, NEW ME	EXICO		LE MA	ATRIX :	09/13/ AQUEOU UG/L	(
COMPOUNDS			SPIKED SAMPLE				RPD
ACENAPHTHYLENE PYRENE	<0.30 <0.04	300 40	180 25.0	60 62	157 22.7	52 57	14 10

Acct g-20-

% Recovery = (Spike Sample Result - Sample Result) Spike Concentration

Average of Spiked Sample

Analytical **Technologies,** Inc.

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10956201

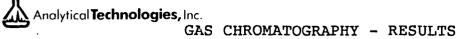
TEST : POLYCHLORINATED BIPHENYLS (EPA METHOD 608)

CLIENT PROJECT # PROJECT N CLIENT I. SAMPLE MA	# : NAME : .D. :		GAS,	NEW	MEXICO	DATE DATE DATE UNITS	SAMPLED RECEIVED EXTRACTED ANALYZED 5 FION FACTOR	::	09/04/91 09/05/91 09/06/91 09/11/91 UG/L 1
COMPOUNDS	2	 				RESULTS	ہ ہے جب کر نے کا بہ بنا کر جا ہے ہو		
	, 	 				KESULIS			
AROCLOR 1	1016					<0.5			
AROCLOR 1	1221					<0.5			
AROCLOR 1	1232					<0.5			
AROCLOR 1	1242					<0.5			
AROCLOR 1	1248					<0.5			
AROCLOR 1	1254					<0.5			
AROCLOR 1	1260					<0.5			
			7 77 7 70						

SURROGATE PERCENT RECOVERIES

ISODRIN (%)

80



REAGENT BLANK

TEST : POLYCHLORINATED BIPHENYLS (EPA ME CLIENT : EL PASO NATURAL GAS, NEW PROJECT # : (NONE) PROJECT NAME : CHACO PLANT	ATI I.D.	: 09/06/91 : 09/11/91
CLIENT I.D. : REAGENT BLANK	DILUTION FACTOR	
COMPOUNDS	RESULTS	
AROCLOR 1016 AROCLOR 1221	<0.5 <0.5	
AROCLOR 1232	<0.5	
AROCLOR 1242 AROCLOR 1248	<0.5 <0.5	
AROCLOR 1254 AROCLOR 1260	<0.5 <0.5	

SURROGATE PERCENT RECOVERIES

ISODRIN (%)

84

Acertal Su-30-al

Analytical Technologies, Inc.

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TEST : POLYCHLO	QUALITY RINATED BIPHENYLS (E				I.D.	:	10956	2
CLIENT : D PROJECT # : PROJECT NAME : (REF I.D. : D	CHACO PLANT	NEW ME	EXICO	SAMP	LE MA		09/11 AQUEO UG/L	
COMPOUNDS			CONC. SPIKED) %	RPD
AROCLOR 1260		<0.5	5.0	4.7	94	4.9	98	4
					Þ	ary of	51	
						~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	<i>,</i> )	

Average of Spiked Sample

and the second second	BARRINGER		
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19-Sep-91 ANALYTICAL TECHNOLOGIES, INC. (Phoenix) 9830 S. 51st St., Ste. B13 Phoenix, AZ 85044 Page: 1 Copy: 1 of 2 1

Attn: Mary Tyer Project: 109560-565

PO #:

Set :

Received: 6-Sep-91 17:22

Status: Final

Job: 911651E

Sample Type: Water

_Sample_	Ra-226 Total _pCi/1		Ra-228 Total <u>pCi/l</u>		U Total mg/l	U Total <u>pCi/l(1)</u>
109560-1 109561-1 109562-1 109564-1 109565-1	0.9 1.8 1.1	±0.8 ±0.7 ±1.0 ±0.7 ±1.2	0.2 0.0 0.1	±1.2 ±1.1 ±1.1 ±1.2 ±1.2	0.0041 0.0281 0.0031 0.0010 0.0069	2.8 19 2.1 0.7 4.7

	ER LABOR. E 300 GOLDEN, CO 80401						
1		19-Sep-91					
ANALYTICAL TECHNOLO 9830 S. 51st St., S Phoenix, AZ 85044		oenix)		Page: Copy: Set :	2 1 of 2 2		
Attn: Mary Tyer Project: 109560-565		PO #:	Received:	6-Sep	-91 17:22		
Job: 911651E			Stat	us:	<u>Final</u>		
Abbreviations:							
Parameters:							
	: Radium-226						
	: Radium-228 : Uranium						
-							
<u>Units:</u>							
	: picoCuries p			_			
	: Counting erre : milligrams p		% confidence	e leve	1, 2σ		
	: picoCuries p		ed upon equ	ilibri	um cond.		
Job approved by:		`					
signed: Illen A.	Puruse						

Ellen La Riviere Radiochemistry Laboratory Manager

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Meeting The Analytical Challenges Of A Changing World

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BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

19-Sep-91

ANALYTICAL TECHNOLOGIES, INC. (Phoenix) 9830 S. 51st St., Ste. B13 Phoenix, AZ 85044

Page:		1
Copy:	1 of	2
Set :		1

Attn: Mary Tyer Project: 109560-565

PO #:

Received: 6-Sep-91 17:22

Status: Final

Job: 911651E

### QUALITY CONTROL REPORT

#### Sample Type: Water

Sample Id	Total		Ra-228 Total pCi/l		U Total mg/l	U Total pCi/l(l)
Duplicate	2.8	±1.4	1.0	±1.5	0.0045	
Duplicate	1.1	±1.0	0.7	±1.2	0.0042	
Duplicate % diff.	44		18		4.5	
Std (found value)	91	±2	27	±2	33	
Std (true value)	101		32		34	
Std % diff.	9.9		16		2.9	
Blank	0.0	±0.1	0.0	±0.8	<0.0003	
Spike % rec.					97	

Aecol 2. 10-91

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Meeting The Analytical Challenges Of A Changing World

1		19	-Sep-9	L	
ANALYTICAL TECHNOLOGIES, INC. (Phoenix) 9830 S. 51st St., Ste. B13 Phoenix, AZ 85044			Page: Copy: Set :	1 of	
Attn: Mary Tyer Project: 109560-569	5 PO #:	Received:	6-Sep	91 17:	: 2
Job: 911651E			us:	<u>Final</u>	
	QUALITY CONTROL RE	EPORT			
Abbreviations:					
Parameters:					
Ra-226	: Radium-226				
Ra-228	: Radium-228				
U	: Uranium				
Jnits:					
pCi/l	: picoCuries per liter				
20	: Counting error at the 9	5% confidenc	e leve	1, 2σ	
mg/1	: milligrams per liter	and upon or	11; hw;		1
pCi/1(1)	: picoCuries per liter ba	ised upon equ	ilibri	um conc	Į.

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Signed:

Approved Quality Assurance Department

Acephille 3.

Meeting The Analytical Challenges Of A Changing World

RAR	RINGER L	AROP	άτωρι	ES IN	~			
15000 W. 61 ANALYTICAL T	TH AVE., SUITE 300 GOL ECHNOLOGIES, St., Ste. B1	DEN, CO 80401	303) 277-1687			19- Page:	Sep-91	3
Phoenix, AZ	85044					Copy:	2 of	
Attn: Mary T Project: 109			PO #:	Rec	eived:	6-Sep-	91 17:2	22
<u>Job: 91165</u>	1E	QUALITY	CONTROL.	REPORT	Stat	us:	<u>Final</u>	
	QUAI	JITY CONTR						
Received by:	gm	Via: Fe	d.Ex.					
Sample Type: Preservative	iner Type: 11 Water When Receive ab Preparatic	d: HNO3						
Parameter	Method	LLD		Preser- vative			ate(s) Analysi	
Ra-226 Ra-228	SM-705	0.2 pCi/ 0.9 pCi/		HNO3 HNO3	Seidel Howard		/13- 9/ /13	/17
U	ASTMD2907	0.0003 m	g/1	НИОЗ	Meyer		/16- 9/	/17
	Burkhardt, Phatory Directo			•••••	1×cc,	124 - 20 - E	<b>1</b>	
						, Z		
							·	
	Meeting The	, Analytical Ci	allenves O	f A Chaneine	, World			

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Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 109565

September 26, 1991

El Paso Natural Gas Company P.O. Box 4990 Farmington, NM 87499



Project Name/Number: Chaco Plant

Attention: John Lambdin

On 09/05/91, Analytical Technologies, Inc. received a request to analyze aqueous sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

Method 610 analyses were performed by ATI, Fort Collins. Uranium, Radium 226 and Radium 228 analyses were performed by Barringer Laboratories.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

Mary S. Tyer Mary Tyer

Project Manager

RVW:clf Enclosure

Robert V. Woods Laboratory Manager

Corporate Offices: 5550 Morehouse Drive San Diego, CA 92121 (619) 458-9141

Analytical **Technologies,** Inc.

	: EL PASO NATURAL GAS, NEW MEXICO	DATE RECEIVED : 09/05/91
'ROJECT # PROJECT NAME	: (NONE) : CHACO PLANT	REPORT DATE : 09/23/91
	ATI I.D. : 109565	

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	N11917	AQUEOUS	09/04/91
02	TRIP BLANK	AQUEOUS	09/04/91

	TOTALS	
--	--------	--

MATRIX _____

**#** SAMPLES -----2

AQUEOUS

### ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical **Technologies,** Inc.

#### GENERAL CHEMISTRY RESULTS

ATI I.D. : 109565 CLIENT : EL PASO NATURAL GAS, NEW MEXICO PROJECT # : (NONE) PROJECT NAME : CHACO PLANT DATE RECEIVED : 09/05/91 **REPORT DATE : 09/23/91** PARAMETER UNITS 01 MG/L 50 MG/L <0.01 MG/L 1.44 MG/L <0.06 CHLORIDE CYANIDE, TOTAL MG/L FLUORIDE MG/L NITRATE AS NITROGEN PH UNITS 8.4 MG/L MG/L MG/L PHENOLICS, TOTAL <0.02 SULFATE 760 TOTAL DISSOLVED SOLIDS 1500



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### GENERAL CHEMISTRY - QUALITY CONTROL

JLIENT: EL PASO NPROJECT #: (NONE)PROJECT NAME: CHACO PLA		GAS, NEW	MEXICO	ATI	I.D.	: 10956	5	
PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT			SPIKED SAMPLE		% REC
CYANIDE, TOTAL FLUORIDE NITRATE AS NITROGEN PH PHENOLICS, TOTAL	MG/L MG/L MG/L UNITS MG/L MG/L	10957906 10951401 10956101 10962204	<0.01 1.10 1.40 7.4 <0.04 11	<0.01 1.10 1.42 7.5 <0.04 10	NA 0 1 1 NA 10	0.24 2.03 3.43 NA 0.45	0.25	104 96 93 102 NA 90 90 NA
			Jeller .	٩)				

Ace 2- 20-21

% Recovery = (Spike Sample Result - Sample Result) Spike Concentration RPD (Relative Percent Difference) = (Sample Result - Duplicate Result) Average Result



#### METALS RESULTS

ATI I.D. : 109565

DATE	RECEIVED	:	09/05/91
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CLIENT : EL PASO NATURAL GAS, NEW MEXICO PROJECT # : (NONE) PROJECT NAME : CHACO PLANT **REPORT DATE** : 09/23/91 UNITS 01 PARAMETER MG/L <0.010 MG/L 0.006 MG/L 0.17 MG/L 0.355 MG/L <0.005 SILVER ARSENIC BORON BARIUM CADMIUM 0.016 0.067 1.22 0.0003 0.043 <0.002 <0.005 0.0069 0.093 CHROMIUM MG/L COPPER MG/L IRON MG/L MERCURY MG/L MANGANESE MG/L LEAD MG/L SELENIUM MG/L MG/L URANIUM ZINC MG/L



ZINC

LIENT PROJECT # PROJECT NAME	: EL PASO : (NONE) : CHACO PL		GAS,	NEW	MEXICO	ATI	I.D.	: 1095	55	
PARAMETER		UNITS	ATI	I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE		۶ REC
SILVER		MG/L	1095	7201	<0.010	<0.010	NA	0.441	0.500	88
ARSENIC		MG/L	1095	6501	0.006	0.006	0	0.053	0.050	94
BORON		MG/L	1095	6201	<0.10	<0.10	NA	1.00	1.00	100
BARIUM		MG/L	1095	7201	0.608	0.604	0.7	1.58	1.00	97
CADMIUM		MG/L	1095	7201	<0.005	<0.005	NA	0.495	0.500	99
CHROMIUM		MG/L	1095	7201	<0.010	<0.010	NA	0.990	1.00	99
COPPER		MG/L	1095	7201	<0.010	<0.010	NA	0.488	0.500	98
IRON		MG/L	1096	0101	<0.020	<0.020	NA	10.3	10.0	103
MERCURY		MG/L	1097	0302	0.0002	0.0002	0	0.0050	0.0050	96
MANGANESE		MG/L	1095	57201	4.02	4.00	0.5	5.06	1.00	104
LEAD		MG/L	1095	6501	<0.002	<0.002	NA	0.045	0.050	90
SELENIUM		MG/L	1095	6501	<0.005	<0.005	NA	0.036	0.050	72
URANIUM		MG/L	1099	9909	0.0045	0.0042	4.5	NA	NA	NA

10957201 0.266

MG/L

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Accordade - 20-91

0.268 0.7

0.771

0.500

101

% Recovery = (Spike Sample Result - Sample Result) X 100 -------Spike Concentration RPD (Relative Percent Difference) = (Sample Result - Duplicate Result)

----Х 10 Average Result



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### GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10956501

# TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

CLIENT : EL PASO NATURAL GAS, NE PROJECT # : (NONE) PROJECT NAME : CHACO PLANT CLIENT I.D. : N11917 SAMPLE MATRIX : AQUEOUS	W MEXICO DATE SAMPLED : 09/04/9 DATE RECEIVED : 09/05/9 DATE EXTRACTED : N/A DATE ANALYZED : 09/06/9 UNITS : UG/L DILUTION FACTOR : 1
COMPOUNDS	RESULTS
BENZENE	<0.5
BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<0.2
CARBON TETRACHLORIDE CHLOROBENZENE	<0.2 <0.5
CHLOROETHANE	<0.2
CHLOROFORM	0.2
CHLOROMETHANE	<0.2
DIBROMOCHLOROMETHANE	<0.2
2-CHLOROETHYL VINYL ETHER	<0.5
, 3-DICHLOROBENZENE	<0.5
1,2 & 1,4-DICHLOROBENZENE	<0.5
DICHLORODIFLUOROMETHANE	<0.2
1,1-DICHLOROETHANE	<0.2 <0.2
1,2-DICHLOROETHANE 1,1-DICHLOROETHENE	<0.2
1,2-DICHLOROETHENE(TOTAL)	<0.2
1,2-DICHLOROPROPANE	<0.2
CIS-1, 3-DICHLOROPROPENE	<0.2
TRANS-1, 3-DICHLOROPROPENE	<0.2
ETHYLBENZENE	<0.5
METHYLENE CHLORIDE	<2.0
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE TOLUENE	<0.2
1,1,1-TRICHLOROETHANE	<0.5 <0.2
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	<0.2
TRICHLOROFLUOROMETHANE	<0.5
VINYL CHLORIDE	<0.2
TOTAL XYLENES	<0.5
TRICHLOROTRIFLUOROETHANE	<2.0
SURROGATE PERCENT RECOVERIES	
ROMOCHLOROMETHANE (%)	91
JROMOFLUOROBENZENE (`%)	92



## GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10956502

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# TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

CLIENT : EL PASO NATURAL GAS, NEW MEXIC PROJECT # : (NONE)	CO DATE SAMPLED : 09/04/91
PROJECT # : (NONE)	DATE RECEIVED : 09/05/91 DATE EXTRACTED : N/A
PROJECT NAME : CHACO PLANT	DATE EXTRACTED : N/A
CLIENT I.D. : TRIP BLANK	DATE ANALYZED : 09/06/91 UNITS : UG/L
SAMPLE MATRIX : AQUEOUS	UNITS : UG/L
	DILUTION FACTOR : 1
	RESULTS
COMPOUNDS	
BENZENE	<0.5
BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<0.2
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.5
CHLOROETHANE	<0.2
CHLOROFORM	<0.2
CHLOROMETHANE	<0.2
DIBROMOCHLOROMETHANE	<0.2
2-CHLOROETHYL VINYL ETHER	<0.5
., 3-DICHLOROBENZENE	<0.5
1,2 & 1,4-DICHLOROBENZENE	<0.5
DICHLORODIFLUOROMETHANE	<0.2
1,1-DICHLOROETHANE	<0.2
1,2-DICHLOROETHANE	<0.2
1,1-DICHLOROETHENE	<0.2
1, 2-DICHLOROETHENE(TOTAL)	<0.2
1,2-DICHLOROPROPANE	<0.2
CIS-1, 3-DICHLOROPROPENE TRANS-1, 3-DICHLOROPROPENE	<0.2
ETHYLBENZENE	<0.2 <0.5
METHYLENE CHLORIDE	
1,1,2,2-TETRACHLOROETHANE	$ \begin{array}{c} <2.0 \\ <0.2 \\ <0.2 \\ <0.5 \\ <0.2 \end{array} $
TETRACHLOROETHENE	
TOLUENE	<0.5 cert - al
1,1,1-TRICHLOROETHANE	<0.2
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	<0.2
TRICHLOROFLUOROMETHANE	<0.5
VINYL CHLORIDE	<0.2
TOTAL XYLENES	<0.5
TRICHLOROTRIFLUOROETHANE	<2.0
SURROGATE PERCENT RECOVERIES	
BROMOCHLOROMETHANE (%)	83

BROMOCHLOROMETHANE	(%)	83
BROMOFLUOROBENZENE	(8)	83

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Analytical **Technologies,** Inc.

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GAS CHROMATOGRAPHY - RESULTS

### REAGENT BLANK

CLIENT : EL PASO NATURAL GAS, NEW MEXICO PROJECT # : (NONE) PROJECT NAME : CHACO PLANT CLIENT I.D. : REAGENT BLANK	ATI I.D. : 109565 DATE EXTRACTED : 09/09/ DATE ANALYZED : 09/09/ UNITS : UG/L DILUTION FACTOR : N/A
COMPOUNDS	RESULTS
	<0.5
BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<0.2
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.5
CHLOROETHANE	<0.2
CHLOROFORM	<0.2
CHLOROMETHANE DIBROMOCHLOROMETHANE	<0.2 <0.2
2-CHLOROETHYL VINYL ETHER	<0.2
1, 3-DICHLOROBENZENE	<0.5
1,2 & 1,4-DICHLOROBENZENE	<0.5
DICHLORODIFLUOROMETHANE	<0.2
', 1-DICHLOROETHANE	<0.2
1, 2-DICHLOROETHANE	<0.2
1,1-DICHLOROETHENE	<0.2
1, 2-DICHLOROETHENE(TOTAL)	<0.2
1,2-DICHLOROPROPANE	<0.2
CIS-1, 3-DICHLOROPROPENE	<0.2
TRANS-1, 3-DICHLOROPROPENE	<0.2
ETHYLBENZENE METHYLENE CHLORIDE	<0.5 <2.0
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE	<0.2
TOLUENE	<0.5
1,1,1-TRICHLOROETHANE	<0.2
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	<0.2
TRICHLOROFLUOROMETHANE	<0.5
VINYL CHLORIDE	<0.2
TOTAL XYLENES	<0.5 <0.2 <0.5 <2.0
	$<2.0$ $x^{0}$ $a^{2}$
TRICHLOROTRIFLUOROETHANE	

BROMOCHLOROMETHANE	(%)	87
BROMOFLUOROBENZENE	(%)	86



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QUALITY TEST : VOLATILE HALOCARBONS/AROMATI	Y CONTRO			(.D.	:	109565	
CLIENT : EL PASO NATURAL GAS PROJECT # : (NONE) PROJECT NAME : CHACO PLANT REF I.D. : 10999906	, NEW MI	EXICO		LE MA	ATRIX :	09/09/9 AQUEOUS UG/L	
COMPOUNDS			SPIKED SAMPLE			DUP. % REC.	RPD
1,1-DICHLOROETHENE TRICHLOROETHENE TETRACHLOROETHENE BENZENE BROMODICHLOROMETHANE CHLOROFORM 1,1,1-TRICHLOROETHANE TOLUENE CHLOROBENZENE M-XYLENE	<0.2 <0.2 <0.2 <0.5 <0.2 <0.2 <0.2 <0.2 <0.2 <0.5 <0.2 <0.5	20 20 20 20 20 20 20 20 20 20 20 20	21 18 24 19 23 20 20 21 18	120 90 95 115 100 100	19 24 17 20 24 21	115 95 120 85 100 120 105 100 110 90	9 5 0 6 5 4 5 0 5 0

RPD (Relative % Difference) = (Spiked Sample - Duplicate Spike) Result Sample Result Average of Spiked Sample



GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10956501

# TEST : POLYNUCLEAR AROMATICS (EPA 610)

PROJECT #	: (NONE) : CHACO PLANT : N11917	NEW MEXICO DATE SAMPLED DATE RECEIVED DATE EXTRACTED DATE ANALYZED UNITS DILUTION FACTOR	: 09/05/91 : 09/06/91 : 09/16/91 : UG/L
COMPOUNDS		RESULTS	
NAPHTHALENE		<0.30	
ACENAPHTHYLEN	Е	<0.30	
ACENAPHTHENE		<0.50	
FLUORENE		<0.04	
PHENANTHRENE		<0.03	
ANTHRACENE		<0.01	
FLUORANTHENE		<0.03	
PYRENE		<0.04	
BENZO(A)ANTHR	ACENE	<0.01	
CHRYSENE		<0.02	
BENZO(B)FLUOR	ANTHENE	<0.01	
ENZO (K) FLUOR	ANTHENE	<0.01	
BENZO(A)PYREN	Έ	<0.01	
DIBENZ(a,h)AN	THRACENE	<0.10	
BENZO(g,h,i)P	ERYLENE	<0.04	
INDENO(1,2,3-		<0.03	
CIMDO			

### SURROGATE PERCENT RECOVERIES

2-CHLOROANTHRACENE (%)

NA



GAS CHROMATOGRAPHY - RESULTS

### REAGENT BLANK

REAGENT BLANK	
TEST : POLYNUCLEAR AROMATICS (EPA 610) CLIENT : EL PASO NATURAL GAS, NEW MEXICO PROJECT # : (NONE) PROJECT NAME : CHACO PLANT CLIENT I.D. : REAGENT BLANK	ATI I.D. : 109565 DATE EXTRACTED : 09/06/91 DATE ANALYZED : 09/13/91 UNITS : UG/L DILUTION FACTOR : N/A
	RESULTS
NAPHTHALENE ACENAPHTHYLENE ACENAPHTHENE FLUORENE PHENANTHRENE ANTHRACENE FLUORANTHENE PYRENE BENZO(A)ANTHRACENE CHRYSENE BENZO(B)FLUORANTHENE BENZO(A)PYRENE DIBENZ(a,h)ANTHRACENE ENZO(g,h,i)PERYLENE INDENO(1,2,3-CD)PYRENE	<0.30 <0.30 <0.50 <0.04 <0.03 <0.01 <0.03 <0.01 <0.01 <0.02 <0.01 <0.01 <0.01 <0.01 <0.01 <0.01 <0.01 <0.03

### SURROGATE PERCENT RECOVERIES

2-CHLOROANTHRACENE (%)

NA

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QUALITY	CONTRO	DL DATA	אמד ז			100565	
TEST : POLYNUCLEAR AROMATICS (EPA 6	510)		ATI ]		÷	109565	
CLIENT : EL PASO NATURAL GAS, PROJECT # : (NONE) PROJECT NAME : CHACO PLANT REF I.D. : 10999910	NEW ME	EXICO		LE MA	ATRIX :	09/13/9 AQUEOU UG/L	
COMPOUNDS			SPIKED SAMPLE	-		•	RPD
ACENAPHTHYLENE PYRENE	<0.30 <0.04	300 40	180 25.0	60 62	157 22.7	52 57	14 10

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RPD (Relative % Difference) = (Spiked Sample - Duplicate Spike) Result Sample Result Average of Spiked Sample Analytical **Technologies**, Inc.

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GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10956501

## TEST : POLYCHLORINATED BIPHENYLS (EPA METHOD 608)

i	CLIENT PROJECT PROJECT CLIENT I SAMPLE M	# : NAME : .D. :	EL PASO (NONE) CHACO PI N11917 AQUEOUS	GAS,	NEW	MEXICO	DATE DATE DATE UNITS	SAMPLED RECEIVED EXTRACTED ANALYZED S TION FACTOR	::	09/04/91 09/05/91 09/06/91 09/11/91 UG/L 1
1	COMPOUND	)S		 			RESULTS	* ~ = = * ~ ~ = = ~ ~ = = .		
	AROCLOR AROCLOR AROCLOR AROCLOR AROCLOR AROCLOR AROCLOR	1221 1232 1242 1248 1254					<0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5			
-		a		 						

### SURROGATE PERCENT RECOVERIES

ISODRIN (%)

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58



GAS CHROMATOGRAPHY - RESULTS

### REAGENT BLANK

### TEST : POLYCHLORINATED BIPHENYLS (EPA METHOD 608)

CLIENT PROJECT # PROJECT NAME CLIENT I.D.	: EL PASO NATURAL GAS, : (NONE) : CHACO PLANT : REAGENT BLANK	ATI I.D. NEW MEXICO DATE EXTRACTED DATE ANALYZED UNITS DILUTION FACTOR	: 109565 : 09/06/91 : 09/11/91 : UG/L : N/A
COMPOUNDS		RESULTS	
AROCLOR 1016 AROCLOR 1221		<0.5 <0.5	

AROCLOR	1221		
AROCLOR	1232		
AROCLOR	1242		
AROCLOR	1248		
AROCLOR	1254		
AROCLOR	1260		

#### SURROGATE PERCENT RECOVERIES

ISODRIN (%)

84

<0.5 <0.5 <0.5 <0.5 <0.5

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Analytical <b>Technologies</b> , Inc.	
QUA TEST : POLYCHLORINATED BIPHENYI	LITY CONTROL DATA ATI I.D. : 109565 S (EPA METHOD 608)
CLIENT : EL PASO NATURAL PROJECT # : (NONE) PROJECT NAME : CHACO PLANT REF I.D. : 10999907	GAS, NEW MEXICO DATE ANALYZED : 09/11/91 SAMPLE MATRIX : AQUEOUS UNITS : UG/L
COMPOUNDS	DUP. DUP. SAMPLE CONC. SPIKED % SPIKED % RESULT SPIKED SAMPLE REC.SAMPLE REC. RPI
AROCLOR 1260	<pre>&lt;0.5 5.0 4.7 94 4.9 98 4</pre>

peopletit an



19-Sep-91

ANALYTICAL TECHNOLOGIES, INC. (Phoenix) 9830 S. 51st St., Ste. B13 Phoenix, AZ 85044

### Page: 1 Copy: 1 of 2 Set: 1

6-Sep-91 17:22

Attn: Mary Tyer Project: 109560-565

PO #:

Status: Final

Received:

Job: 911651E

					-		
	Ra-226 Total	Error	Ra-228 Total	Error	U Total	U Total	
Sample	pCi/1	2σ	_pCi/1	2σ	mg/1	<u>pCi/l(1)</u>	
109560-1	1.1	±0.8	0.4	±1.2	0.0041	2.8	
109561-1	0.9	±0.7	0.2	±1.1	0.0281	19	
109562-1	1.8	±1.0	0.0	±1.1	0.0031	2.1	
109564-1	1.1	±0.7	0.1	±1.2	0.0010	0.7	
109565-1	2.0	±1.2	0.5	±1.2	0.0069	4.7	

#### Sample Type: Water

Meeting The Analytical Challenges Of A Changing World

	GER LABOR				
				19-Sep-91	
ANALYTICAL TECHNO 9830 S. 51st St., Phoenix, AZ 850	Ste. B13	cenix)		Page: 2 Copy: 1 of 2 Set : 2	2
Attn: Mary Tyer Project: 109560-5	65	PO #:	Received:	6-Sep-91 17:22	
Job: 911651E	····		Stat	us: Final	
Abbreviations:					
Parameters:					
Ra-226 Ra-228 U	: Radium-226 : Radium-228 : Uranium				
<u>Units:</u>					
pCi/1 2σ mg/1 pCi/1(1)	: picoCuries pe : Counting erro : milligrams pe : picoCuries pe	or at the 99 er liter			
Job approved by:					

Signed:

Ellen La Riviere Radiochemistry Laboratory Manager

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Meeting The Analytical Challenges Of A Changing World



 19-Sep-91

 ANALYTICAL TECHNOLOGIES, INC. (Phoenix)

 9830 S. 51st St., Ste. B13
 Page: 1

 Phoenix, AZ
 85044

 Copy: 1 of 2

 Set: 1

Attn: Mary Tyer Project: 109560-565

### PO #:

Received: 6-Sep-91 17:22

Status:

<u>Final</u>

Job: 911651E

## QUALITY CONTROL REPORT

### Sample Type: Water

Sample Id	Total		Ra-228 Total <u>pCi/l</u>		U Total mg/l	U Total pCi/l(l)
Duplicate	2.8	±1.4	1.0	±1.5	0.0045	
Duplicate	1.1	±1.0	0.7	±1.2	0.0042	
Duplicate % diff.	44		18		4.5	
Std (found value)	91	±2	27	±2	33	
Std (true value)	101		32		34	
std 🕯 diff.	9.9		16		2.9	
Blank	0.0	±0.1	0.0	±0.8	<0.0003	
Spike % rec.					97	

	19-Sep-91
Ste. B13	Page: 2 Copy: 1 of 2 Set : 2
	ived: 6-Sep-91 17:22
	Status: Final
QUALITY CONTROL REPORT	
: Radium-226 : Radium-228 : Uranium	
: picoCuries per liter : Counting error at the 95% con : milligrams per liter : picoCuries per liter based up	
	on equilibrium cond.
	<pre>65 PO #: QUALITY CONTROL REPORT : Radium-226 : Radium-228 : Uranium : picoCuries per liter : Counting error at the 95% con : milligrams per liter</pre>

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Signed: Do the

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Approved Quality Assurance Department

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Meeting The Analytical Challenges Of A Changing World

	RINGER L H AVE., SUITE 300 GOL							
ANALYTICAL TH 9830 S. 51st Phoenix, AZ	CHNOLOGIES, St., Ste. B1	INC. (Pho		(303) 277 K		Page:	-Sep-9 2 of	3
Attn: Mary Ty Project: 1095			PO #:	Rec	eived:	6-Sep	-91 17	:22
Job: 911651	E				Stat	us:	Final	<u></u>
		QUALITY	CONTROL	REPORT				
	QUAL	ITY CONTR	OL DATA	SHEET				
Received by:	<b>G</b> w	Via: Fe	d.Ex.		·			
Sample Contai Sample Type: Preservative Additional La	Water When Receive	d: HNO3			·			·
Parameter	Method	LLD		Preser- vative			Date(s) Analys	
Ra-226 Ra-228 U	SM-705  ASTMD2907	0.2 pCi/ 0.9 pCi/ 0.0003 m	11	HNO3 HNO3 HNO3	Seidel Howard Meyer		9/13- 9 9/13 9/16- 9	•
Signed: Mark E Labora	Burkhardt, Phatory Directo							
	Maning The	Analysis		Chan !	- 117 + +			

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Meeting The Analytical Challenges Of A Changing World

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ATI I.D. 109595

September 26, 1991

El Paso Natural Gas Company P.O. Box 4990 Farmington, NM 87499



Project Name/Number: Chaco Plant

Attention: John Lambdin

On 09/06/91, Analytical Technologies, Inc. received a request to analyze aqueous sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

Method 610 analyses were performed by ATI, Fort Collins. Uranium, Radium 226 and Radium 228 analyses were performed by Barringer Laboratories.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

Mary Tyér Project Manager

RVW:clf Enclosure

what V. Word

Robert V. Woods Laboratory Manager

Corporate Offices: 5550 Morehouse Drive San Diego, CA 92121 (619) 458-9141



ROJECT # ROJECT N	E : (NONE) NAME : CHACO	O NATURAL GAS, NEW M PLANT ATI I.D. : 1(	REPOR	T DATE : 09/26/9
 TI #	CLIENT DE	SCRIPTION	MATRIX	DATE COLLECTE
01 02	N11953 TRIP BLAN	 K	AQUEOUS AQUEOUS	09/05/9 09/05/9
	MATRIX	TOTALS # SAMPLES		
	AQUEOUS	2		
		ATI STANDARD DISP	OSAL PRACTICE	



## GENERAL CHEMISTRY RESULTS

			ATI I.D. : 10	9595
CLIENT : EL PASO NATU PROJECT # : (NONE)	JRAL GAS, 1	NEW MEXICO	DATE RECEIVED	: 09/06/91
PROJECT NAME : CHACO PLANT			REPORT DATE	: 09/26/91
PARAMETER	UNITS	01		
CHLORIDE	MG/L	16		
CYANIDE, TOTAL	MG/L	<0.01		
FLUORIDE	MG/L	1.30		
NITRATE AS NITROGEN	MG/L	0.59		
PH	UNITS	8.8		
PHENOLICS, TOTAL	MG/L	<0.02		
SULFATE	MG/L	340		
TOTAL DISSOLVED SOLIDS	MG/L	740		

Analytical **Technologies**, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT		:	EL PASO NATURAL GAS, NEW MEXICO	
PROJECT	#	:	(NONE)	
PROJECT	NAME	:	CHACO PLANT	

#### ATI I.D. : 109595

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE		% REC
CHLORIDE	MG/L	10960101	260	260	0	510	250	100
CYANIDE, TOTAL	MG/L	10960101	<0.01	<0.01	NA	0.25	0.25	100
FLUORIDE	MG/L	10960201	4.46	4.46	0	8.40	4.00	98
NITRATE AS NITROGEN	MG/L	10960101	34	35	3	132	100	98
PH	UNITS	10958601	7.3	7.3	0	NA	NA	NA
PHENOLICS, TOTAL	MG/L	10964001	0.17	0.17	0	0.42	0.25	100
SULFATE	MG/L	10960101	150	140	7	280	150	87
TOTAL DISSOLVED SOLIDS	MG/L	10960101	1100	1100	0	NA	NA	NA



% Recovery = (Spike Sample Result - Sample Result) Spike Concentration RPD (Relative Percent Difference) = (Sample Result - Duplicate Result) Average Result



### METALS RESULTS

ATI I.D. : 109595

	EL PASO NATURAL GAS, (NONE) CHACO PLANT	NEW MEXICO	: 09/06/91 : 09/26/91
PARAMETER	UNITS	01	
SILVER ARSENIC BORON BARIUM CADMIUM CHROMIUM COPPER IRON MERCURY MANGANESE LEAD SELENIUM URANIUM ZINC	MG/L MG/L MG/L MG/L MG/L MG/L MG/L MG/L	<0.010 <0.005 0.26 0.019 <0.005 <0.010 0.141 3.12 <0.0002 0.106 0.004 <0.005 0.0035 <0.010	



LIENT PROJECT # PROJECT NAME	:	EL PASO NATURAL (NONE) CHACO PLANT	GAS ,	, NEW	MEXICO	ATI	I.D.	: 10959	95	
PARAMETER		UNITS	ATI	I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE		% REC
SILVER		MG/L	109	59501	<0.010	<0.010	NA	0.435	0.500	87
ARSENIC		MG/L	109	57101	<0.005	<0.005	NA	0.056	0.050	112
BORON		MG/L	109	59401	<0.10	<0.10	NA	1.00	1.00	100
BARIUM		MG/L	109	59501	0.019	0.019	0	0.975	1.00	96
CADMIUM		MG/L	109	59501	<0.005	<0.005	NA	0.498	0.500	100
CHROMIUM		MG/L		-	<0.010	<0.010	NA	0.945	1.00	94
COPPER		MG/L				0.156		0.577	0.500	87
IRON		MG/L			3.12	3.16		4.12	1.00	100
MERCURY		MG/L			<0.0002				0.0050	100
MANGANESE		MG/L	109	59501	0.106	0.110	4	1.10	1.00	99 k
LEAD		MG/L			<0.002	<0.002	NA	0.040	0.050	80′,
SELENIUM		MG/L			<0.005	<0.005	NA	0.040	0.050	80 -
URANIUM		MG/L			0.0045	0.0042		NA	NA	NA
ZINC		MG/L	109	59501	<0.010	<0.010	NA	0.522	0.500	1.04

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RPD (Relative Percent Difference) = (Sample Result - Duplicate Result) ------ X 10( Average Result



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### GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10959501

# TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

CLIENT : EL PASO NATURAL GAS, PROJECT # : (NONE) PROJECT NAME : CHACO PLANT CLIENT I.D. : N11953 SAMPLE MATRIX : AQUEOUS	NEW MEXICO DATE SAMPLED : 09/05/91 DATE RECEIVED : 09/06/91 DATE EXTRACTED : N/A DATE ANALYZED : 09/09/91 UNITS : UG/L DILUTION FACTOR : 1
COMPOUNDS	RESULTS
BENZENE BROMODICHLOROMETHANE BROMOFORM BROMOMETHANE CARBON TETRACHLORIDE CHLOROBENZENE CHLOROETHANE CHLOROFORM CHLOROMETHANE DIBROMOCHLOROMETHANE 2-CHLOROETHYL VINYL ETHER , 3-DICHLOROBENZENE 1,2 & 1,4-DICHLOROBENZENE DICHLORODIFLUOROMETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHENE (TOTAL) 1,2-DICHLOROPROPANE CIS-1,3-DICHLOROPROPENE TRANS-1,3-DICHLOROPROPENE ETHYLBENZENE METHYLENE CHLORIDE 1,1,2,2-TETRACHLOROETHANE TETRACHLOROETHENE 1,1,2-TRICHLOROETHANE 1,1,2-TRICHLOROETHANE TRICHLOROFLUOROMETHANE TRICHLOROFLUOROMETHANE TRICHLOROFLUOROMETHANE TRICHLOROFLUOROMETHANE TRICHLOROFLUOROMETHANE TRICHLOROFLUOROMETHANE TRICHLOROFLUOROMETHANE TRICHLOROTRIFLUOROETHANE	$ \begin{array}{c} <0.5\\<0.2\\<0.2\\<0.2\\<0.2\\<0.2\\<0.2\\<0.2\\<0.2$
SURROGATE PERCENT RECOVERIES	;
ROMOCHLOROMETHANE (%) SROMOFLUOROBENZENE (%)	97 82



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### GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10959502

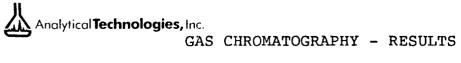
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# TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

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C P C S	LIENT ROJECT # ROJECT NAME LIENT I.D. SAMPLE MATRIX	:	EL PASO (NONE) CHACO PI TRIP BL2 AQUEOUS	NATURAL LANT LNK	GAS,	NEW	MEXICO		DATE DATE DATE DATE UNITS DILUT	SAMP RECE EXTR ANAL	PLED IVED ACTED YZED FACTOR		09/05/91 09/06/91 N/A 09/09/91 UG/L 1
С	COMPOUNDS							RES	SULTS				
	BENZENE BROMODICHLORON BROMOFORM BROMOMETHANE CARBON TETRACH CHLOROBENZENE CHLOROFORM CHLOROFORM CHLOROFORM CHLOROFORM CHLOROFORM CHLOROFORM CHLOROFORM CHLOROFORM CHLOROFTHANE DIBROMOCHLOROH CHLOROETHYL 3-DICHLOROET 1,2-DICHLOROET 1,2-DICHLOROET 1,2-DICHLOROET 1,2-DICHLOROET CIS-1,3-DICHLOROET CIS-1,3-DICHLOROET CIS-1,3-DICHLOROET CIS-1,3-DICHLOROET CIS-1,3-DICHLOROET CIS-1,3-DICHLOROET CIS-1,2-TETRACH CHLOROETHE 1,1,2-TRICHLOROETHE CHLOROFLUOT CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO CIS-1,2-TRICHLO C	HLO EVNLOTITINORL OCH OOEO ENDOTITINORL OCH OOEO	DRIDE THANE INYL ETHI ZENE OROBENZE OMETHANE ANE ENE ENE (TOTA PANE OPROPENE OROPROPE IDE LOROETHANE ETHANE ETHANE METHANE	NE L) NE				<0<0<0	·22225225552222222222502252225. · · · · · · · · · · · · · · · · · · ·		Þ	eer	thr Grad
	SURRO	GA	TE PERCE	NT RECOV	ERIES	5							
•	ROMOCHLOROME	тн	ANE (%)					93					

ROMOCHLOROMETHANE	(ዲ)	93
<b>JROMOFLUOROBENZENE</b>	(8)	83



-----

### REAGENT BLANK

CLIENT : EL PASO NATURAL GAS, NEW MEX PROJECT # : (NONE) PROJECT NAME : CHACO PLANT CLIENT I.D. : REAGENT BLANK	ATI I.D. : 109595 ICO DATE EXTRACTED : 09/09/ DATE ANALYZED : 09/09/ UNITS : UG/L DILUTION FACTOR : N/A
COMPOUNDS	RESULTS
BENZENE	<0.5
BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<0.2
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.5
CHLOROETHANE	<0.2
CHLOROFORM	<0.2
CHLOROMETHANE	<0.2
DIBROMOCHLOROMETHANE	<0.2
2-CHLOROETHYL VINYL ËTHER	<0.5
1,3-DICHLOROBENZENE	<0.5
1,2 & 1,4-DICHLOROBENZENE	<0.5
DICHLORODIFLUOROMETHANE	<0.2 <0.2
, 1-DICHLOROETHANE	
1,2-DICHLOROETHANE	<0.2 <0.2
1,1-DICHLOROETHENE	<0.2
1,2-DICHLOROETHENE(TOTAL) 1,2-DICHLOROPROPANE	<0.2
CIS-1, 3-DICHLOROPROPENE	<0.2
TRANS-1, 3-DICHLOROPROPENE	<0.2
ETHYLBENZENE	<0.2
METHYLENE CHLORIDE	<2.0
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE	<0.2
TOLUENE	<0.2
1,1,1,TRICHLOROETHANE	<0.2
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	<0.2 × 4/
TRICHLOROFLUOROMETHANE	<0.2
VINYL CHLORIDE	<0.2
TOTAL XYLENES	<0.2
TRICHLOROTRIFLUOROETHANE	<2.0
SURROGATE PERCENT RECOVERI	ES
BROMOCHLOROMETHANE (%)	87

BRUMUCHLORUMETHANE	(*)	8	
BROMOFLUOROBENZENE	(8)	8	6



QUALITY	Y CONTRO	JL DATA	3 M T -	r n		100505	
TEST : VOLATILE HALOCARBONS/AROMATI	ICS (EPA	¥ 601/60		L.D.	:	109595	
CLIENT : EL PASO NATURAL GAS, PROJECT # : (NONE) PROJECT NAME : CHACO PLANT REF I.D. : 10999907	, NEW ME	SXICO		LE MA	LYZED : ATRIX : :		
COMPOUNDS		CONC. SPIKED			DUP. SPIKED. SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE TRICHLOROETHENE TETRACHLOROETHENE BENZENE BROMODICHLOROMETHANE CHLOROFORM 1,1,1-TRICHLOROETHANE TOLUENE CHLOROBENZENE M-XYLENE	<0.2 <0.2 <0.2 <0.5 <0.2 <0.2 <0.2 <0.2 <0.2 <0.5 <0.2 <0.5 <0.2 <0.5	20 20 20 20 20 20 20 20 20 20 20 20	21 18 24 18 19 23 20 20 20 21 18	105 90 120 90 95 115 100 100 105 90	19 24 17 20 24 21 20	115 95 120 85 100 120 105 100 110 90	9 5 0 6 5 4 5 0 5 0

Acceptor a

% Recovery = (Spike Sample Result - Sample Result) ----- X 100 Spike Concentration

Average of Spiked Sample



_____

### GAS CHROMATOGRAPHY - RESULTS

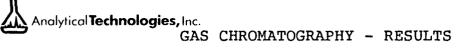
### TEST : POLYNUCLEAR AROMATICS (EPA 610)

CLIENT : EL PASO NATURAL GAS, PROJECT # : (NONE) PROJECT NAME : CHACO PLANT CLIENT I.D. : N11953 SAMPLE MATRIX : AQUEOUS	NEW MEXICO DATE SAMPLED : 09/05/91 DATE RECEIVED : 09/06/91 DATE EXTRACTED : 09/10/91 DATE ANALYZED : 09/13/91 UNITS : UG/L DILUTION FACTOR : 1
COMPOUNDS	RESULTS
NAPHTHALENE ACENAPHTHYLENE ACENAPHTHENE FLUORENE PHENANTHRENE ANTHRACENE FLUORANTHENE PYRENE BENZO(A)ANTHRACENE CHRYSENE BENZO(B)FLUORANTHENE BENZO(A)PYRENE DIBENZ(a,h)ANTHRACENE BENZO(g,h,i)PERYLENE INDENO(1,2,3-CD)PYRENE	$ \begin{array}{c} <0.30\\<0.30\\<0.50\\<0.04\\<0.03\\\\0.02\\<0.03\\<0.04\\<0.01\\<0.01\\<0.02\\<0.01\\<0.01\\<0.01\\<0.01\\<0.01\\<0.01\\<0.04\\<0.03\end{array} $

### SURROGATE PERCENT RECOVERIES

2-CHLOROANTHRACENE (%)

NA



#### REAGENT BLANK

TEST : POLYNUCLEAR AROMATICS (EPA 610)	
CLIENT : EL PASO NATURAL GAS, NEW MEXICO PROJECT # : (NONE) PROJECT NAME : CHACO PLANT	ATI I.D. : 109595 DATE EXTRACTED : 09/10/91 DATE ANALYZED : 09/13/91 UNITS : UG/L DILUTION FACTOR : N/A
COMPOUNDS RE	SULTS
NAPHTHALENE <0	.30
	.30
	.50
	.04
•	.03
	.01
	.03
	.04
	.01
•	.02
- ( )	
	.01
	. 10
	.04
	.03

SURROGATE PERCENT RECOVERIES

2-CHLOROANTHRACENE (%)

NA

Head 128-30-21



QUALITY CONTROL DATA				ATI I.D.		109595	
TEST : POLYNUCLEAR AROMATICS (EPA 610)				ALL 1.D.			
CLIENT : EL PASO NATURAL GAS PROJECT # : (NONE) PROJECT NAME : CHACO PLANT REF I.D. : 10999909	, NEW MI	EXICO		JE MA	ATRIX :	09/13/ AQUEOU UG/L	-
COMPOUNDS			SPIKED SAMPLE	-		•	RPD
ACENAPHTHYLENE PYRENE	<0.30 <0.04	300 40	180 25.0	60 63	157 22.7	52 57	14 10



% Recovery = (Spike Sample Result - Sample Result) Spike Concentration RPD (Relative % Difference) = (Spiked Sample - Duplicate Spike) Result Sample Result

Average of Spiked Sample



GAS CHROMATOGRAPHY - RESULTS

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ATI I.D. : 10959501

## TEST : POLYCHLORINATED BIPHENYLS (EPA METHOD 608)

- - - - -

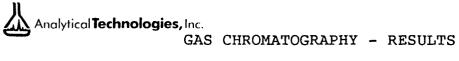
CLIENT PROJECT # PROJECT NAME CLIENT I.D. SAMPLE MATRIX	GAS, NEW MEXICO	DATE SAMPLED DATE RECEIVED DATE EXTRACTED DATE ANALYZED UNITS DILUTION FACTOR	: 09/05/91 : 09/06/91 : 09/06/91 : 09/11/91 : UG/L : 1
COMPOUNDS		RESULTS	
AROCLOR 1016 AROCLOR 1221 AROCLOR 1232 AROCLOR 1242 AROCLOR 1248 AROCLOR 1254 AROCLOR 1260		<0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5	

### SURROGATE PERCENT RECOVERIES

ISODRIN (%)

75

Hard Hold - 20-al



#### REAGENT BLANK

CLIENT PROJECT # PROJECT NAME	ORINATED BIPHENYLS (EP) : EL PASO NATURAL GAS, : (NONE) : CHACO PLANT : REAGENT BLANK	NEW MEXICO	ATI I.D. DATE EXTRACTED DATE ANALYZED UNITS DILUTION FACTOR	: 09/06/91 : 09/11/91 : UG/L
COMPOUNDS		RES	ULTS	
AROCLOR 1016 AROCLOR 1221 AROCLOR 1232 AROCLOR 1242 AROCLOR 1248 AROCLOR 1254 AROCLOR 1260		<0. <0. <0. <0. <0. <0. <0. <0. <0.	5 5 5 5 5 5	

#### SURROGATE PERCENT RECOVERIES

ISODRIN (%)

84

Acuf q- 70- "



QUALITY CONTROL DAT	ATI I.D. : 109	595
CLIENT : EL PASO NATURAL GAS, NEW MEXICO PROJECT # : (NONE) PROJECT NAME : CHACO PLANT REF I.D. : 10999907	DATE ANALYZED : 09/ SAMPLE MATRIX : AQU UNITS : UG/	EOUS
	DUP. DUP SPIKED % SPIKED % D SAMPLE REC.SAMPLE REC	
AROCLOR 1260 <0.5 5.0	4.7 94 4.9 98	4

Acepter 20, 4

% Recovery = (Spike Sample Result - Sample Result) Spike Concentration RPD (Relative % Difference) = (Spiked Sample - Duplicate Spike) Result Sample Result

Average of Spiked Sample

BARRINGER LABO			
1			19-Sep-91
ANALYTICAL TECHNOLOGIES, INC. 9830 S. 51st St., Ste. B13 Phoenix, AZ 85044	(Phoenix)		Page: 1 Copy: 1 of 2 Set: 1
Attn: Mary Tyer Project: 109594-95	PO #:	Received:	9-Sep-91 10:29
Job: 911671E		Stat	us: Final

# Sample Type: Water

Sample	Ra-226 Total pCi/l		Ra-228 Total pCi/l		U Total mg/l	U Total pCi/l(1)
109594-1 109595-1	0.2	±0.3 ±0.4	0.1	±1.1 ±1.2	0.0034	2.3

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Meeting The Analytical Challenges Of A Changing World

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	ER LABOR					
l l				19	-Sep-9	1
ANALYTICAL TECHNOLO 9830 S. 51st St., S Phoenix, AZ 85044	te. B13	enix)		Page: Copy: Set :		2 2 2
Attn: Mary Tyer Project: 109594-95		PO #:	Received:	9-Sep	-91 10	:29
Job: 911671E			Stat	us:	Final	
Abbreviations:						
Parameters:						
	: Radium-226 : Radium-228 : Uranium					
<u>Units:</u>						
pCi/l 2σ mg/l pCi/l(1)	: picoCuries pe : Counting erro : milligrams pe : picoCuries pe	or at the 95 er liter				d.
Job approved by: Signed: Ellen La Riv Radiochemist	) WULL iere ry Laboratory M	 Ianager				

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BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

 '
 19-Sep-91

 ANALYTICAL TECHNOLOGIES, INC. (Phoenix)
 9830 S. 51st St., Ste. B13

 Phoenix, AZ
 85044

 Phoenix, AZ
 85044

 Copy: 1 of 2

 Set :
 1

Attn: Mary Tyer Project: 109594-95

PO #:

Received: 9-Sep-91 10:29

Final

Status:

Job: 911671E

QUALITY CONTROL REPORT

#### Sample Type: Water

Sample Id	Ra-226 Total pCi/l		Ra-228 Total pCi/l		U Total mq/l	U Total pCi/l(1)
Duplicate	0.5	±0.4	1.0	±1.5	0.0045	
Duplicate	0.6	±0.4	0.7	±1.2	0.0042	
Duplicate % diff.	9.1		18		4.5	
Std (found value)	108	±2	27	±2	33	
Std (true value)	101		32		34	
Std % diff.	6.9		16		2.9	
Blank	0.1	±0.2	0.0	±0.8	<0.0003	
Spike % rec.					97	

BARRINGER LABORATORIES INC. 15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689 19-Sep-91 ANALYTICAL TECHNOLOGIES, INC. (Phoenix) 9830 S. 51st St., Ste. B13 Page: 3 Copy: 1 of 2 Phoenix, AZ 85044 Received: 9-Sep-91 10:29 Attn: Mary Tyer PO #: Project: 109594-95 Status: Final Job:____911671E__ QUALITY CONTROL REPORT OUALITY CONTROL DATA SHEET Received by: gr Via: Federal Express Sample Container Type: Pl L btl Sample Type: Water Preservative When Received: HNO3 Additional Lab Preparation: None Date(s) of Preser-Preser- Date(s) of vative Analyst Analysis Method LLD Parameter HNO3 Seidel HNO3 Howard Ra-226 Ra-228 SM-705 0.2 pCi/l --- 0.9 pCi/l 9/17- 9/19 9/13- 9/19 U ASTMD2907 0.0003 mg/l HNO3 Meyer 9/16- 9/17 Signed:

Mark Burkhardt, Ph.D. Laboratory Director

BARRINGER LABORATORIES INC.

15000 W. 5TH AVE., SUITE 300 GOLDEN. CO 80401 (303) 277-1667 FAX (303) 277-1689

ANALYTICAL TECHNOLOGIES, INC. (Phoenix) 9830 S. 51st St., Ste. B13 Phoenix, AZ 85044 19-Sep-91

Page: 3 Copy: 2 of 2

Final

Attn: Mary Tyer Project: 109594-95

PO #:

Received: 9-Sep-91 10:29

Status:

Job: 911671E

QUALITY CONTROL REPORT

QUALITY CONTROL DATA SHEET

Received by: gr

Via: Federal Express

Sample Container Type: Pl L btl Sample Type: Water Preservative When Received: HNO3 Additional Lab Preparation: None

Parameter	Method	LLD	Preser- vative	Analyst	Date(s) of Analysis
Ra-226	SM-705	0.2 pCi/l	HNO3	Seidel	9/17- 9/19
Ra-228		0.9 pCi/l	HNO3	Howard	9/13- 9/19
U	ASTMD2907	0.0003 mg/l	HNU3	Mêyêr	9/16- 9/17

Signed:

Mark Burkhardt, Ph.D.

Laboratory Director

Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 109658

September 26, 1991

El Paso Natural Gas Company P.O. Box 4990 Farmington, NM 87499



Project Name/Number: Chaco Plant

Attention: John Lambdin

On 09/11/91 Analytical Technologies, Inc. received a request to analyze aqueous sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

Method 610 analyses were performed by ATI, Fort Collins. Uranium, Radium 226 and Radium 228 analyses were performed by Barringer Laboratories.

Sample N11947 was received on the 7th day after sampling. Total Dissolved Solids analysis was run 5.5 hours after the 7 day holding time had expired.

Due to Iron interference it was not possible to run Nitrate analysis by EPA Method 353.2. Nitrate content was analyzed by EPA Method 300.0. The matrix interference was not discovered until after the 48 hour holding time for Method 300.0 had expired. There will be no charge for Nitrate analysis.

Due to matrix interference Silver and Chromium analyses were run at a dilution. Detection limits were raised accordingly.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

Mary & Type

Mary Tyer Project Manager

Let V. Words

Robert V. Woods Corporate Offices: 5550 Morehouse Drive San Diego, CA 92121 (619) 458-9141

RVW:clf

Analytical **Technologies**, Inc.

PROJECT	: EL PAS # : (NONE) NAME : CHACO	O NATURAL GAS, NEW M PLANT ATI I.D. : 10	REPOR	RECEIVED : 09/11/ T DATE : 09/26/
ATI #	CLIENT DE	SCRIPTION		DATE COLLECT
	N11947 TRIP BLAN		AQUEOUS AQUEOUS	09/04/
======	=============	TOTALS		
	MATRIX	# SAMPLES		
	AQUEOUS	2		
		ATI STANDARD DISP	OSAL PRACTICE	
date of	this report.	s project will be di If an extended stor epartment before the	age period is reg	uired, please cont



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GENERAL CHEMISTRY RESULTS

1

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ATI I.D. : 109658

_____

CLIENT : EL PASO NATURAL GAS, NEW MEXICO PROJECT # : (NONE) DATE RECEIVED : 09/11/91 PROJECT NAME : CHACO PLANT **REPORT DATE : 09/26/91** UNITS 01 PARAMETER _____ MG/L 6400 MG/L <0.01 MG/L 0.08 MG/L <1 CHLORIDE CYANIDE, TOTAL MG/L MG/L UNITS FLUORIDE NITRATE AS NITROGEN PH 5.5 MG/L 4.6 MG/L 410 MG/L 18000 PHENOLICS, TOTAL SULFATE TOTAL DISSOLVED SOLIDS



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GENERAL CHEMISTRY - QUALITY CONTROL

	GENERAL	CREMISIKI	- QUALI	II CONI	KOD			
CLIENT : EL PASO PROJECT # : (NONE) PROJECT NAME : CHACO PL	NATURAL ANT	GAS, NEW	MEXICO	ATI	I.D.	: 10965	8	
PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT					% REC
CYANIDE, TOTAL FLUORIDE NITRATE AS NITROGEN	MG/L MG/L MG/L UNITS MG/L	10965801 10963001 10961301	<0.01 0.08 <1 7.6 <0.04	<0.01 0.08 <1 7.6 <0.04	NA O NA O NA	0.21 0.22 3.6 NA 0.52	0.25 0.20 3.0 NA 0.50	100 84 70* 120 NA 104 92 NA
			(y	stra teren	v- Þó	ted or extern	a ( 30-	
<pre>% Recovery = (Spike Sam </pre>			ple Resu	•	100			
RPD (Relative Percent I	Differen	ce) = (Sa: 		ult - Du  Average			ult) X	10(
* Result out of limits	s due to	sample m		_				



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# METALS RESULTS

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		ATI I.D. : 109658
CLIENT : EL PASO NATURAJ PROJECT # : (NONE)	L GAS, NEW MEXICO	DATE RECEIVED : 09/11/91
PROJECT NAME : CHACO PLANT		REPORT DATE : 09/26/91
PARAMETER	UNITS 01	
SILVER ARSENIC BORON BARIUM CADMIUM CHROMIUM COPPER IRON MERCURY MANGANESE LEAD SELENIUM URANIUM ZINC	MG/L       <0.050	



METALS - QUALITY CONTROL

CLIENT	:	EL PASO NATURAL GAS, NEW MEXICO	
PROJECT #			
PROJECT NAME	:	CHACO PLANT	A

#### ATI I.D. : 109658

			SAMPLE	DUP.		SPIKED	SPIKE	 8
PARAMETER	UNITS	ATI I.D.	RESULT	RESULT	RPD	SAMPLE	CONC	REC
SILVER	MG/L	10964201	<0.010	<0.010	NA	0.091	0.100	91
ARSENIC	MG/L	10964001	<0.005	<0.005	NA	0.048	0.050	96
BORON	MG/L	10965801	<0.10	<0.10	NA	1.03	1.00	103
BARIUM	MG/L	10966201	0.218	0.219	0.4	1.17	1.00	95
CADMIUM	MG/L	10967301	<0.005	<0.005	NA	0.102	0.100	102
CHROMIUM	MG/L	10966201	<0.010	<0.010	NA	0.965	1.00	96
COPPER	MG/L	10967301	0.013	0.015	14	0.118	0.100	105
IRON	MG/L	10967301	0.024	0.024	0	1.00	1.00	98
MERCURY	MG/L	10962002	0.0174	0.0176	1	0.0419	0.0250	98
MANGANESE	MG/L	10966201	0.026	0.026	0	1.00	1.00	97
LEAD	MG/L	10966104	0.017	0.018	6	0.067	0.050	100
SELENIUM	MG/L	10964001	<0.005	<0.005	NA	0.045	0.050	90
URANIUM	MG/L	10999913	0.0045	0.0042	4.5	NA	NA	NA
ZINC	MG/L	10966201	0.094	0.092	2	0.590	0.500	99

Acceptohlut Acceptohlut G. - 20-01

% Recovery = (Spike Sample Result - Sample Result)
_____ X 100
Spike Concentration

RPD (Relative Percent Difference) = (Sample Result - Duplicate Result) ------ X 100 Average Result



_____

GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10965801

# TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

CLIENT : EL PASO NATURAL GAS, NEV PROJECT # : (NONE) PROJECT NAME : CHACO PLANT CLIENT I.D. : N11947 SAMPLE MATRIX : AQUEOUS	W MEXICO DATE SAMPLED : 09/04/9 DATE RECEIVED : 09/11/9 DATE EXTRACTED : N/A DATE ANALYZED : 09/16/9 UNITS : UG/L DILUTION FACTOR : 250
COMPOUNDS	RESULTS
BENZENE	19200 D
BROMODICHLOROMETHANE	<50
BROMOFORM	<50
BROMOMETHANE	<50
CARBON TETRACHLORIDE	<50
CHLOROBENZENE	<125
CHLOROETHANE	<50
CHLOROFORM	<50
CHLOROMETHANE	<50
DIBROMOCHLOROMETHANE	<50
2-CHLOROETHYL VINYL ETHER	<125
1, 3-DICHLOROBENZENE	<125
1,2 & 1,4-DICHLOROBENZENE	<125
DICHLORODIFLUOROMETHANE	<50
1,1-DICHLOROETHANE	<50
1,2-DICHLOROETHANE	<50
1,1-DICHLOROETHENE	<50
1,2-DICHLOROETHENE(TOTAL)	<50
1,2-DICHLOROPROPANE	<50
CIS-1, 3-DICHLOROPROPENE	<50
TRANS-1, 3-DICHLOROPROPENE	<50
ETHYLBENZENE	200
METHYLENE CHLORIDE	<500
1,1,2,2-TETRACHLOROETHANE	<50
TETRACHLOROETHENE	<50
TOLUENE	14100
1,1,1-TRICHLOROETHANE	<50
1,1,2-TRICHLOROETHANE	<50
TRICHLOROETHENE	<50
TRICHLOROFLUOROMETHANE	<125
VINYL CHLORIDE	<50
TOTAL XYLENES	1800
TRICHLOROTRIFLUOROETHANE	<500
SURROGATE PERCENT RECOVERIES	
BROMOCHLOROMETHANE (%)	84
BROMOFLUOROBENZENE (%)	88



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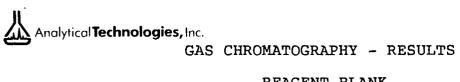
#### GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10965802

# TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

-

CLIENT : EL PASO NAT PROJECT # : (NONE) PROJECT NAME : CHACO PLANT CLIENT I.D. : TRIP BLANK SAMPLE MATRIX : AQUEOUS COMPOUNDS	r 	DATE SAMPLED : 09/04/91 DATE RECEIVED : 09/11/91 DATE EXTRACTED : N/A DATE ANALYZED : 09/16/91 UNITS : UG/L DILUTION FACTOR : 1
<pre>BENZENE BROMODICHLOROMETHANE BROMOFORM BROMOMETHANE CARBON TETRACHLORIDE CARBON TETRACHLORIDE CHLOROBENZENE CHLOROETHANE DIBROMOCHLOROMETHANE DIBROMOCHLOROMETHANE DIBROMOCHLOROMETHANE DIBROMOCHLOROMETHANE 2CHLOROETHYL VINYL ETHER .3-DICHLOROBENZENE 1.2 &amp; 1.4-DICHLOROBENZENE DICHLORODIFLUOROMETHANE 1.2-DICHLOROETHANE 1.2-DICHLOROETHANE (IS-1.3-DICHLOROPROPENE TRANS-1.3-DICHLOROPROPENE CIS-1.3-DICHLOROPROPENE TRANS-1.3-DICHLOROPROPENE TRANS-1.3-DICHLOROPROPENE ETHYLBENZENE METHYLENE CHLORIDE 1.1.2.TETRACHLOROETHANE TETRACHLOROETHENE DILUENE 1.1.2.TETRACHLOROETHANE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE TICHLOROETHENE</pre>	<pre>&lt;0 &lt;0 pre>	$ \begin{array}{c} 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\ 2 \\$
3ROMOCHLOROMETHANE (%) BROMOFLUOROBENZENE (%)	85 94	



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#### REAGENT BLANK

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/CLIENT : EL PASO NATURAL GAS, NEW MEXICOPROJECT # : (NONE)PROJECT NAME : CHACO PLANTCLIENT I.D. : REAGENT BLANK	ATI I.D. : 109658
COMPOUNDS	RESULTS
BENZENE BROMODICHLOROMETHANE BROMOMETHANE CARBON TETRACHLORIDE CHLOROBENZENE CHLOROBENZENE CHLOROFORM CHLOROMETHANE DIBROMOCHLOROMETHANE 2-CHLOROETHYL VINYL ETHER 1,3-DICHLOROBENZENE 1,2 & 1,4-DICHLOROBENZENE DICHLORODIFLUOROMETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHENE 1,2-DICHLOROETHENE 1,2-DICHLOROPROPANE CIS-1,3-DICHLOROPROPENE TRANS-1,3-DICHLOROPROPENE ETHYLBENZENE METHYLENE CHLORIDE 1,1,2,2-TETRACHLOROETHANE TETRACHLOROETHENE 1,1,2-TRICHLOROETHANE 1,1,2-TRICHLOROETHANE TRICHLOROFLUGNETHANE TRICHLOROFLUGNETHANE VINYL CHLORIDE TOTAL XYLENES TRICHLOROT IFLUOROETHANE	$ \begin{array}{c}                                     $
SURROGATE PERCENT RECOVERIES	
BROMOCHLOROMETHANE (%) BROMOFLUOROBENZENE (%)	89 95



# QUALITY CONTROL DATA

ATI I.D. : 109658

2)
?)

CLIENT : EL PASO NATURAL GAS PROJECT # : (NONE) PROJECT NAME : CHACO PLANT REF I.D. : 10999913	, NEW MI	EXICO		LE MA	LYZED : ATRIX : :		
COMPOUNDS		CONC. SPIKED		-	DUP. SPIKED. SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE TRICHLOROETHENE TETRACHLOROETHENE BENZENE BROMODICHLOROMETHANE CHLOROFORM 1,1,1-TRICHLOROETHANE TOLUENE CHLOROBENZENE M-XYLENE	<0.2 <0.2 <0.2 <0.5 <0.2 <0.2 <0.2 <0.2 <0.2 <0.5 <0.5 <0.5 <0.5	20 20 20 20 20 20 20 20 20 20 20 20	19 20 22 20 20 22 22 22 20 22 20 22 18	95 100 110 100 100 110 110 110 110 90	21 20 19 22 22 20	100 100 105 100 95 110 110 100 105 85	5 0 5 0 5 0 0 5 6

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RPD (Relative % Difference) = (Spiked Sample - Duplicate Spike) Result Sample Result ------ X 100 Average of Spiked Sample



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# GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10965801

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# TEST : POLYNUCLEAR AROMATICS (EPA 610)

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CLIENT : EL PASO NATURAL GAS PROJECT # : (NONE) PROJECT NAME : CHACO PLANT CLIENT I.D. : N11947 SAMPLE MATRIX : AQUEOUS	S, NEW MEXICO DATE SAMPLED : DATE RECEIVED : DATE EXTRACTED : DATE ANALYZED : UNITS : DILUTION FACTOR :	09/11/91 09/11/91 09/16/91 UG/L
COMPOUNDS	RESULTS	
NAPHTHALENE ACENAPHTHYLENE ACENAPHTHENE FLUORENE PHENANTHRENE ANTHRACENE FLUORANTHENE PYRENE BENZO(A)ANTHRACENE CHRYSENE BENZO(B)FLUORANTHENE JENZO(K)FLUORANTHENE BENZO(A)PYRENE DIBENZ(a,h)ANTHRACENE BENZO(g,h,i)PERYLENE INDENO(1,2,3-CD)PYRENE	7.0 $<0.30$ $<0.50$ $0.09$ $0.13$ $<0.01$ $0.14$ $<0.04$ $<0.01$ $<0.02$ $<0.01$ $<0.01$ $<0.01$ $<0.01$ $<0.01$ $<0.01$ $<0.01$ $<0.01$ $<0.03$	
	20	

# SURROGATE PERCENT RECOVERIES

2-CHLOROANTHRACENE (%)

NA



GAS CHROMATOGRAPHY - RESULTS

#### REAGENT BLANK

TEST : POLYNUCLEAR AROMATICS (EPA 610)CLIENT : EL PASO NATURAL GAS, NEW MEXICOPROJECT # : (NONE)PROJECT NAME : CHACO PLANTCLIENT I.D. : REAGENT BLANK	ATI I.D. : 109658 DATE EXTRACTED : 09/11/91 DATE ANALYZED : 09/16/91 UNITS : UG/L DILUTION FACTOR : N/A
COMPOUNDS	RESULTS
NAPHTHALENE ACENAPHTHYLENE ACENAPHTHENE FLUORENE PHENANTHRENE ANTHRACENE FLUORANTHENE PYRENE BENZO(A)ANTHRACENE CHRYSENE BENZO(B)FLUORANTHENE BENZO(A)PYRENE DIBENZ(a,h)ANTHRACENE 3ENZO(g,h,i)PERYLENE INDENO(1,2,3-CD)PYRENE	<pre>&lt;0.30 &lt;0.30 &lt;0.50 &lt;0.04 &lt;0.03 &lt;0.01 &lt;0.03 &lt;0.04 &lt;0.03 &lt;0.04 &lt;0.01 &lt;0.02 &lt;0.01 &lt;0.01 &lt;0.01 &lt;0.01 &lt;0.01 &lt;0.01 &lt;0.01 &lt;0.03</pre>

# SURROGATE PERCENT RECOVERIES

2-CHLOROANTHRACENE (%)

NA

tell & 10-41



QUALITY CONTROL DATA ATI I.D. : 109658 TEST : POLYNUCLEAR AROMATICS (EPA 610) CLIENT : EL PASO NATURAL GAS, NEW MEXICO DATE ANALYZED : 09/16/91 PROJECT # : (NONE) PROJECT NAME : CHACO PLANT SAMPLE MATRIX : AQUEOUS REF I.D. : 10999912 UNITS : UG/L DUP. DUP. SAMPLE CONC. SPIKED % SPIKED % COMPOUNDS RESULT SPIKED SAMPLE REC. SAMPLE REC. RPD <0.30 67 86 ACENAPHTHYLENE 150 101 57 16 PYRENE <0.04 20 8.7 44 8.1 41 7 A ech 20-91 % Recovery = (Spike Sample Result - Sample Result) Х -------100 Spike Concentration RPD (Relative % Difference) = (Spiked Sample - Duplicate Spike) Result Sample Result ____ 100 Х

Average of Spiked Sample



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# GAS CHROMATOGRAPHY - RESULTS

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ATI I.D. : 10965801

# TEST : POLYCHLORINATED BIPHENYLS (EPA METHOD 608)

CLIENT PROJECT # PROJECT NAME CLIENT I.D. SAMPLE MATRIX	: (NONE) : CHACO PLANT : N11947	DATE F DATE F DATE A UNITS	SAMPLED       : 09/04/91         RECEIVED       : 09/11/91         EXTRACTED       : 09/11/91         ANALYZED       : 09/24/91         : UG/L         ION FACTOR       : 10
COMPOUNDS		RESULTS	
AROCLOR 1016 AROCLOR 1221 AROCLOR 1232 AROCLOR 1242 AROCLOR 1248 AROCLOR 1254 AROCLOR 1260		<5.0 <5.0 <5.0 <5.0 <5.0 <5.0 <5.0 <5.0	
SUBBO		TPC	

#### SURROGATE PERCENT RECOVERIES

ISODRIN (%)

60



# GAS CHROMATOGRAPHY - RESULTS

# REAGENT BLANK

	CLIENT PROJECT # PROJECT NAME	LORINATED BIPHENYLS (EPA METHOD 6 : EL PASO NATURAL GAS, NEW MEXIC : (NONE) : CHACO PLANT : REAGENT BLANK	ATI I.D. : 109658 DATE EXTRACTED : 09/11/91 DATE ANALYZED : 09/13/91
	COMPOUNDS		RESULTS
	AROCLOR 1016 AROCLOR 1221 AROCLOR 1232 AROCLOR 1242 AROCLOR 1248 AROCLOR 1254 AROCLOR 1260		<0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5
I		SURROGATE PERCENT RECOVERIES	

ISODRIN (%)

92

tool & ro al



QUALIT	Y CONTRO	DL DATA	ATI I	n n	•	109658	
TEST : POLYCHLORINATED BIPHENYLS (	EPA METH	HOD 608			•	109050	
CLIENT : EL PASO NATURAL GAS PROJECT # : (NONE) PROJECT NAME : CHACO PLANT REF I.D. : 10961701	, NEW MI	EXICO		LE MA	YZED : ATRIX : ;		
COMPOUNDS		CONC. SPIKED				90 90	RPD
AROCLOR 1260	<0.5	5.0	4.7	94	5.0	100	6

porta -2

% Recovery = (Spike Sample Result - Sample Result) Spike Concentration RPD (Relative % Difference) = (Spiked Sample - Duplicate Spike) Result Sample Result

Average of Spiked Sample

BARRINGER	R LABOR	ATOR	IES INC.
15000 W. 6TH AVE., SUITE 300			

24-Sep-91

ANALYTICAL TECHNOLOGIES, INC. (Phoenix) 9830 S. 51st St., Ste. B13 Phoenix, AZ 85044

# Page: 1 Copy: 1 of 2 Set: 1

Final

Attn: Project: 109658

PO #:

Received: 12-Sep-91 17:41

Status:

Job: 911705E

Sample Type: Wat	er
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	Ra-226	Error	Ra-228	Error	U	U
_	Total		Total		Total	Total
<u>Sample</u>	_pCi/1	2σ	<u>_pCi/l</u>	2σ	mg/1	<u>pCi/l(1)</u>
109658 <b>-1</b>	0.7	±0.5	1.4	±1.8	0.0034	2.3

	<b>GER LABORA</b> SUITE 300 GOLDEN, CO 80401 (30	•••	-		
		• 、		24	-Sep-91
ANALYTICAL TECHNOLOGIES, INC. (Pho 9830 S. 51st St., Ste. B13 Phoenix, AZ 85044		:nix)		Page: Copy: Set :	1 of 2
Attn: Project: 109658		PO #:	Received:	12-Sep	-91 17:41
Job: 911705E			Sta	tus:	Final
Abbreviations:					
Parameters:					
Ra-226 Ra-228 U	: Radium-226 : Radium-228 : Uranium				
Units:					
pCi/l 2σ mg/l pCi/l(1)	: picoCuries per : Counting error : milligrams per : picoCuries per	at the 9 1 liter			-
Job approved by: Signed: Mu. Ellen La Radiochem	Furthere Riviere istry Laboratory Ma	anager	•		

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ANALYTICAL TECHNOLOGIES, INC. (Phoenix)       24-Sep-91         ANALYTICAL TECHNOLOGIES, INC. (Phoenix)       Page: 2         9830 S. 51st St., Ste. B13       Page: 2         Set: 2       2         Attn:       Received: 12-Sep-91 17:41         Project: 109658       PO #:         Job: 911705E       Status: Final         QUALITY CONTROL REPORT         Abbreviations:         Parameters:         Ra-226       : Radium-226         Ra-228       : Radium-228         U       : Uranium         Units:       pCi/l         pCi/l       : picoCuries per liter         20       : Counting error at the 95% confidence level, 20         mg/l       : milligrams per liter         Job approved by:       Signed:         Job approved		GER LABORA			
9830 S. 51st St., Ste. B13       Page: 2         Phoenix, AZ       85044         Phoenix, AZ       85044         Project: 109658       PO #:         Job:       911705E         QUALITY CONTROL REPORT         Abbreviations:         Parameters:         Ra-226       : Radium-226         Ra-228       : Radium-228         U       : Uranium         Units:       pCi/1         pCi/1       : picoCuries per liter         20       : milligrams per liter         Job approved by:       Signed:		COTEC THO (Dhee			24-Sep-91
Project: 109658 PO #: Job: 911705E Status: Final QUALITY CONTROL REPORT Abbreviations: Parameters: Ra-226 : Radium-226 Ra-228 : Radium-228 U : Uranium Units: pCi/l : picoCuries per liter 20 : Counting error at the 95% confidence level, 20 mg/l : milligrams per liter Job approved by: Signed: D. D	9830 S. 51st St., Ste. B13		enix)		Copy: 1 of 2
QUALITY CONTROL REPORT         Abbreviations:         Parameters:         Ra-226       : Radium-226         Ra-228       : Radium-228         U       : Uranium         Units:       pCi/1       : picoCuries per liter         20       : Counting error at the 95% confidence level, 20         mg/1       : milligrams per liter         Job approved by:       Signed: D. D. D.			PO #:	Received:	12-Sep-91 17:41
QUALITY CONTROL REPORT         Abbreviations:         Parameters:         Ra-226       : Radium-226         Ra-228       : Radium-228         U       : Uranium         Units:       pCi/l       : picoCuries per liter         20       : Counting error at the 95% confidence level, 20         mg/l       : milligrams per liter         Job approved by:       Signed: D. D. D. D.	Job: 911705E			Sta	tus:Final
Parameters:         Ra-226       : Radium-226         Ra-228       : Radium-228         U       : Uranium         Units:       pCi/l       : picoCuries per liter         2σ       : Counting error at the 95% confidence level, 2σ         mg/l       : milligrams per liter         Job approved by:       Signed:		QUALITY C	CONTROL REP		
Ra-226 : Radium-226 Ra-228 : Radium-228 U : Uranium Units: pCi/l : picoCuries per liter 20 : Counting error at the 95% confidence level, 20 mg/l : milligrams per liter Job approved by: Signed: D: D.L.	Abbreviations:				
Ra-228 : Radium-228 U : Uranium Units: pCi/l : picoCuries per liter 20 : Counting error at the 95% confidence level, 20 mg/l : milligrams per liter Job approved by: Signed: D. D. J.	Parameters:				
U : Uranium Units: pCi/l : picoCuries per liter 2 $\sigma$ : Counting error at the 95% confidence level, 2 $\sigma$ mg/l : milligrams per liter Job approved by: Signed: D. D.L.					
Units:         pCi/l       : picoCuries per liter         2σ       : Counting error at the 95% confidence level, 2σ         mg/l       : milligrams per liter					
<pre>pCi/l : picoCuries per liter 2σ : Counting error at the 95% confidence level, 2σ mg/l : milligrams per liter Job approved by: Signed: D. D. J.</pre>		: Uranium			
<pre>2σ : Counting error at the 95% confidence level, 2σ mg/l : milligrams per liter Job approved by: Signed: D. D. J.</pre>	<u>Units:</u>				
<pre>2σ : Counting error at the 95% confidence level, 2σ mg/l : milligrams per liter</pre> Job approved by: Signed: D. D. D.	pCi/l	: picoCuries per	c liter		
Job approved by: Signed: D. Qul		: Counting error	at the 95	% confiden	ce level, 2ơ
signed: D. Qul	mg/l	: milligrams per	r liter		
D. Gruber	Job approved by:				
Approved	- Q. Q.	•••••			
Quality Assurance Department		surance Denartment	-		



ANALYTICAL TECHNOLOGIES, INC. (Phoenix) 9830 S. 51st St., Ste. B13 Phoenix, AZ 85044 24-Sep-91

Page: 3 Copy: 1 of 2

Final

Attn: Project: 109658

# PO #:

Received: 12-Sep-91 17:41

Status:

Job: 911705E

QUALITY CONTROL REPORT

QUALITY CONTROL DATA SHEET

Received by: gr

Via: Federal Expess

Sample Container Type: 3 Pl L btl Sample Type: Water Preservative When Received: HNO3 Additional Lab Preparation: None

Parameter	Method	LLD	Preser- vative	Analyst	Date(s) of Analysis
Ra-226	SM-705	0.2 pCi/l	HNO3	Seidel	9/19- 9/24
Ra-228	904.0	0.9 pCi/l	HNO3	Howard	9/16- 9/20
U	ASTMD2907	0.0003 mg/l	HNO3	Meyer	9/18- 9/19

Signed:

Mark Burkhardt, Ph.D. Laboratory Director

Analytical **Technologies**, Inc.

9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 109640

September 26, 1991

El Paso Natural Gas Company P.O. Box 4990 Farmington, NM 87499



Project Name/Number: Chaco Plant

Attention: John Lambdin

On 09/10/91, Analytical Technologies, Inc. received a request to analyze aqueous sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

Method 610 analyses were performed by ATI, Fort Collins. Uranium, Radium 226 and Radium 228 analyses were performed by Barringer Laboratories.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

Mary Tyer Project Manager

Maineklans

Lorraine Davis QA Coordinator

RVW:clf Enclosure

Robert V. Woods Laboratory Manager

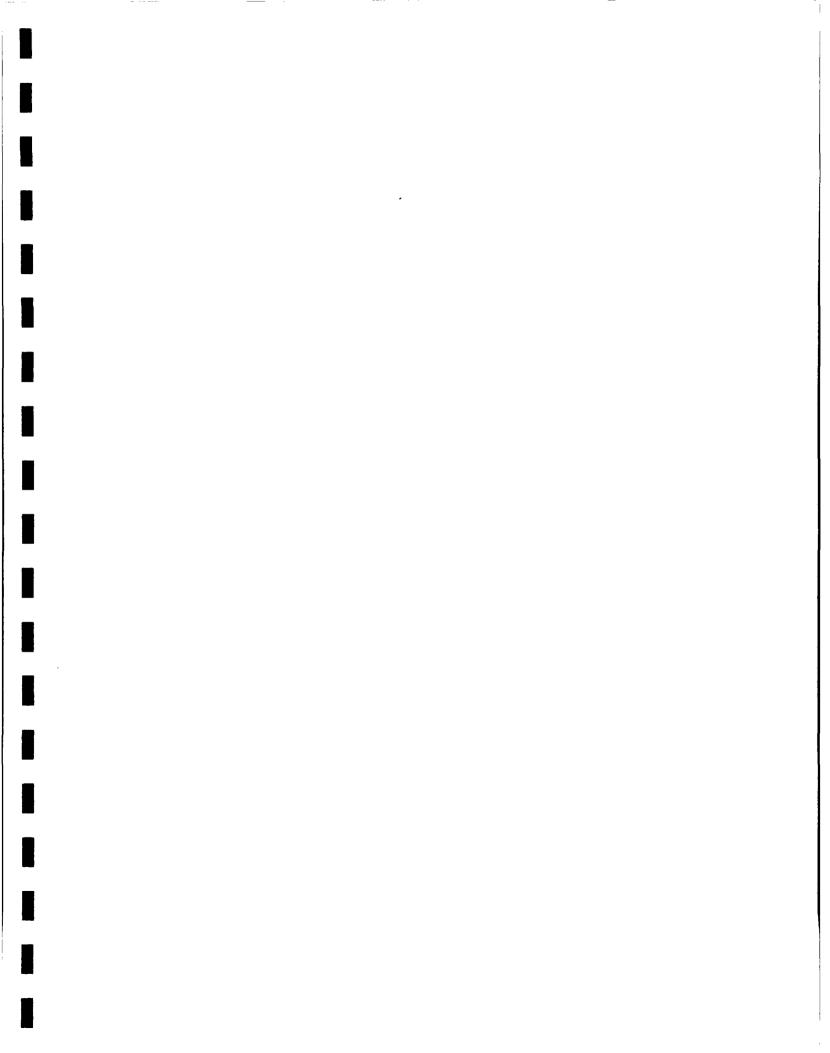
Corporate Offices: 5550 Morehouse Drive San Diego, CA 92121 (619) 458-9141 4

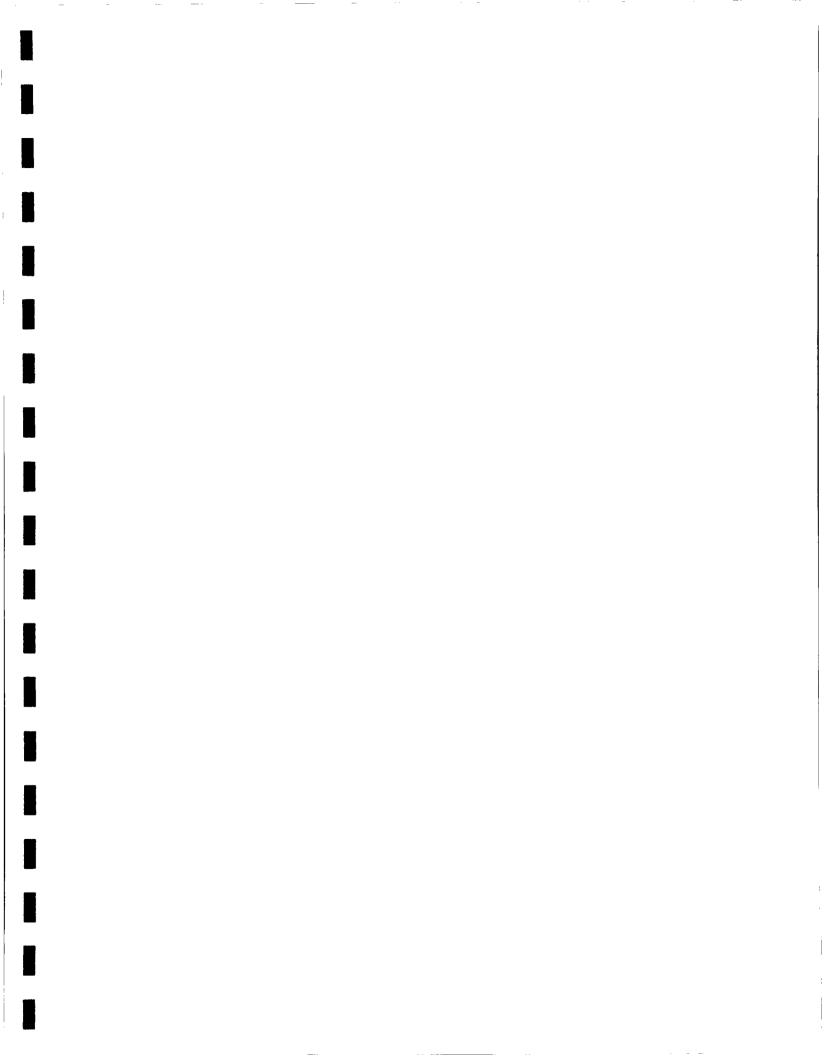
# Analytical **Technologies**, Inc.

 TI #	CLIENT D	DESCRIPTION	MATRIX	DATE COLLECTE
01 02	N11939 TRIP BLA	лк	AQUEOUS AQUEOUS	09/08/9 09/08/9
======	=================			
		TOTAL	S	
	MATRIX  AQUEOUS	# SAMPLES 2 2		
		4		
		AT'I STANDARD DIS	POSAL PRACTICE	

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## GENERAL CHEMISTRY RESULTS

ATI I.D. : 109640

CLIENT : EL PASO NATURA PROJECT # : (NONE) PROJECT NAME : CHACO PLANT	AL GAS, N	IEW MEXICO	DATE RECEIVED : 09/10/91 REPORT DATE : 09/26/91
PARAMETER	UNITS	01	
CHLORIDE CYANIDE, TOTAL FLUORIDE NITRATE AS NITROGEN PH PHENOLICS, TOTAL SULFATE TOTAL DISSOLVED SOLIDS	MG/L MG/L MG/L MG/L UNITS MG/L MG/L MG/L	<0.5 <0.01 <0.05 <0.06 5.8 0.17 1.6 10	

Jacoptalur Jacoptalur g. 70° a'



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# GENERAL CHEMISTRY - QUALITY CONTROL

PROJECT #	: EL PASO NATURAL GAS, N : (NONE) : CHACO PLANT	EW MEXICO	ATI I.D.	: 109640
		SAMPLE	DUP.	SPIKED SPIKE

PARAMETER	UNITS	ATI I.D.	RESULT	RESULT	RPD	SAMPLE	CONC	REC
CHLORIDE CYANIDE, TOTAL FLUORIDE NITRATE AS NITROGEN	MG/L MG/L MG/L MG/L	10964201 10964201 10960101 10964201	<0.01 0.22	14 <0.01 0.22 3.7	0 NA 0 0	34 0.24 0.41 13.8	20 0.25 0.20 10.0	100 96 95 101
PH PHENOLICS, TOTAL SULFATE TOTAL DISSOLVED SOLIDS	MG/L MG/L MG/L MG/L	10964201 10963001 10964001 10964001 10966503	7.6 0.17 1.6	7.6 0.17 1.6 530	0 0 0	NA 0.42 3.4 NA	NA 0.25 2.0 NA	NA 100 90 NA

porplet 1 g- 20 91

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Average Result

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% Recovery = (Spike Sample Result - Sample Result) Spike ConcentrationX 100
RPD (Relative Percent Difference) = (Sample Result - Duplicate Result)



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# METALS RESULTS

ATI I.D. : 109640

CLIENT : EL P PROJECT # : (NON PROJECT NAME : CHAC	•	DATE RECEIVED : 09/10/91 REPORT DATE : 09/26/91
PARAMETER	UNITS 01	
SILVER	MG/L <0.010	
ARSENIC	MG/L <0.005	
BORON	MG/L <0.10	
BARIUM	MG/L 0.077	
CADMIUM	MG/L <0.005	
CHROMIUM	MG/L 0.017	
COPPER	MG/L <0.010	
IRON	MG/L 0.653	
MERCURY	MG/L 0.0003	
MANGANESE	MG/L 0.020	
LEAD	MG/L <0.002	
SELENIUM	MG/L <0.005	
URANIUM	MG/L 0.0044	
ZINC	MG/L 0.022	



# METALS - QUALITY CONTROL

CLIENT	:	EL PASO NATURAL GAS, NEW MEXICO
PROJECT #	:	(NONE)
PROJECT NAME	:	CHACO PLANT

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# ATI I.D. : 109640

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PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE		% REC
SILVER	MG/L	10961701		<0.010	NA	0.543	0.500	109
ARSENIC	MG/L	10964001	<0.005	<0.005	NA	0.048	0.050	96
BORON	MG/L	10999910		<0.10	NA	1.02	1.00	102
BARIUM	MG/L	10964201	0.014	0.014	0	0.109	0.100	95
CADMIUM	MG/L	10964201	<0.005	<0.005	NA	0.100	0.100	100
CHROMIUM	MG/L	10964201	0.026	0.027	4	0.134	0.100	108
COPPER	MG/L	10964201	<0.010	<0.010	NA	0.098	0.100	98
IRON	MG/L	10961701	0.198	0.200	1	1.12	1.00	92
MERCURY	MG/L	10970302	0.0002	0.0002	0	0.0050	0.0050	96
MANGANESE	MG/L	10964201	<0.010	<0.010	NA	0.099	0.100	99
LEAD	MG/L	10964001	<0.002	<0.002	NA	0.051	0.050	102
SELENIUM	MG/L	10964001	<0.005	<0.005	NA	0.045	0.050	90
URANIUM	MG/L	10999913	0.0045	0.0042	4.5	NA	NA	NA
ZINC	MG/L	10964201	<0.010	<0.010	NA	0.108	0.100	108

% Recovery = (Spike Sample Result - Sample Result) ----------- X 100 Spike Concentration

RPD (Relative Percent Difference) = (Sample Result - Duplicate Result) Х -----

Average Result

100



# GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10964001

# TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

CLIENT : EL PASO NATURA PROJECT # : (NONE) PROJECT NAME : CHACO PLANT CLIENT I.D. : N11939 SAMPLE MATRIX : AQUEOUS	AL GAS, NEW MEXICO DATE SAMPLED : 09/08/91 DATE RECEIVED : 09/10/91 DATE EXTRACTED : N/A DATE ANALYZED : 09/16/91 UNITS : UG/L DILUTION FACTOR : 25
COMPOUNDS	RESULTS
BENZENE BROMODICHLOROMETHANE BROMOFORM BROMOMETHANE CARBON TETRACHLORIDE CHLOROBENZENE CHLOROETHANE CHLOROFORM CHLOROFORM CHLOROMETHANE DIBROMOCHLOROMETHANE ?-CHLOROETHYL VINYL ETHER .,3-DICHLOROBENZENE 1,2 & 1,4-DICHLOROBENZENE DICHLORODIFLUOROMETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHENE (1,2-DICHLOROETHENE (1,2-DICHLOROPROPANE CIS-1,3-DICHLOROPROPENE TRANS-1,3-DICHLOROPROPENE TRANS-1,3-DICHLOROPROPENE TRANS-1,3-DICHLOROPROPENE TRANS-1,3-DICHLOROPROPENE THYLBENZENE METHYLENE CHLORIDE 1,1,2,2-TETRACHLOROETHANE TETRACHLOROETHENE TOLUENE 1,1,1-TRICHLOROETHANE TRICHLOROFLUOROMETHANE VINYL CHLORIDE TOTAL XYLENES TRICHLOROTIFLUOROETHANE	710 $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<12.5$ $<5.0$ $<5.0$ $<12.5$ $<12.5$ $<12.5$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0$ $<5.0 <5.0 <5.0 <5.0 <5.0 <5.0 <5.0 <5.0 <5.0 <5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0$
ROMOCHLOROMETHANE (%) BROMOFLUOROBENZENE (%)	95 104



#### GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10964002

### TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

	,
	00/08/91 • 00/08/91
CLIENT : EL PASO NATURAL GAS, NEW MEXICO PROJECT # : (NONE)	DATE SAMPLED . 09/00/91
$\frac{PROJECI}{T} = \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T} + \frac{PROJECI}{T$	DATE RECEIVED : 09/10/91 DATE EXTRACTED : N/A
PROJECT NAME : CHACO PLANT	DATE EXTRACTED : $N/A$
CLIENT I.D. : TRIP BLANK	DATE ANALYZED : 09/16/91
SAMPLE MATRIX : AQUEOUS	UNITS : UG/L
	DILUTION FACTOR : 1
COMPOUNDS	RESULTS
	<0.5
	<0.2
	<0.2
	<0.2
CARBON TETRACHLORIDE	<0.2
	<0.5
	<0.2
	<0.2
	<0.2
	<0.2
	<0.5
	<0.5
1,2 & 1,4-DICHLOROBENZENE	<0.5
DICHLORODIFLUOROMETHANE	<0.2
1,1-DICHLOROETHANE	<0.2
1,2-DICHLOROETHANE	<0.2
1,1-DICHLOROETHENE	<0.2
1,2-DICHLOROETHENE(TOTAL)	<0.2
1,2-DICHLOROPROPANE	<0.2
CIS-1, 3-DICHLOROPROPENE	<0.2
TRANS-1, 3-DICHLOROPROPENE	<0.2
ETHYLBENZENE	<0.5
METHYLENE CHLORIDE	<2.0
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE	<0.2
TOLUENE	<0.5
1,1,1-TRICHLOROETHANE	<0.2 30 5 10
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	<0.2
TRICHLOROFLUOROMETHANE	<0.5
VINYL CHLORIDE	<0.2
TOTAL XYLENES	<0.5
TRICHLOROTRIFLUOROETHANE	<2.0
SURROGATE PERCENT RECOVERIES	
3ROMOCHLOROMETHANE (%)	92
BROMOFLUOROBENZENE (%)	106



### GAS CHROMATOGRAPHY - RESULTS

#### REAGENT BLANK

PROJECT NAME : CHACO PLANT	ATI I.D. : 109640
COMPOUNDS	RESULTS
BENZENE BROMODICHLOROMETHANE BROMOMETHANE CARBON TETRACHLORIDE CHLOROBENZENE CHLOROBENZENE CHLOROFORM CHLOROFTHANE DIBROMOCHLOROMETHANE 2-CHLOROBENZENE 1,2 & 1,4-DICHLOROBENZENE 1,2 & 1,4-DICHLOROBENZENE 1,2 & 1,4-DICHLOROBENZENE 1,2-DICHLOROETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHENE 1,2-DICHLOROETHENE 1,2-DICHLOROFTHENE 1,2-DICHLOROPTOPANE CIS-1,3-DICHLOROPROPENE TRANS-1,3-DICHLOROPROPENE TRANS-1,3-DICHLOROPENE TRANS-1,3-DICHLOROPENE TRANS-1,3-DICHLOROPENE TTTRACHLOROETHENE 1,1,2,2-TETRACHLOROETHANE 1,1,1-TRICHLOROETHANE 1,2-TRICHLOROETHENE TCLUENE 1,1,2-TRICHLOROETHANE 1,2-TRICHLOROETHANE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE TRICHLOROFTHENE T	$ \begin{array}{c}  < 0.5 \\  < 0.2 \\  < 0.2 \\  < 0.2 \\  < 0.2 \\  < 0.2 \\  < 0.2 \\  < 0.2 \\  < 0.2 \\  < 0.2 \\  < 0.2 \\  < 0.2 \\  < 0.2 \\  < 0.2 \\  < 0.2 \\  < 0.2 \\  < 0.2 \\  < 0.2 \\  < 0.2 \\  < 0.2 \\  < 0.2 \\  < 0.2 \\  < 0.2 \\  < 0.2 \\  < 0.2 \\  < 0.2 \\  < 0.2 \\  < 0.2 \\  < 0.2 \\  < 0.2 \\  < 0.2 \\  < 0.2 \\  < 0.2 \\  < 0.2 \\  < 0.2 \\  < 0.5 \\  < 0.2 \\  < 0.5 \\  < 0.2 \\  < 0.5 \\  < 0.2 \\  < 0.5 \\  < 0.2 \\  < 0.5 \\  < 0.2 \\  < 0.5 \\  < 0.2 \\  < 0.5 \\  < 0.2 \\  < 0.5 \\  < 0.2 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.2 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0.5 \\  < 0$
BROMOCHLOROMETHANE (%) BROMOFLUOROBENZENE (%)	89 95



QUALITY	CONTRO	L DATA	ATI I	. п		109640	
TEST : VOLATILE HALOCARBONS/AROMATI			·	109040			
CLIENT : EL PASO NATURAL GAS, PROJECT # : (NONE) PROJECT NAME : CHACO PLANT REF I.D. : 10999912	NEW ME	CXICO		E MZ	ATRIX :	09/16/9 AQUEOU9 UG/L	
COMPOUNDS		CONC. SPIKED				ક	RPD
1,1-DICHLOROETHENE TRICHLOROETHENE TETRACHLOROETHENE BENZENE BROMODICHLOROMETHANE CHLOROFORM 1,1,1-TRICHLOROETHANE TOLUENE CHLOROBENZENE M-XYLENE	<0.2 <0.2 <0.2 <0.5 <0.2 <0.2 <0.2 <0.2 <0.2 <0.5 <0.5 <0.5	20 20 20 20 20 20 20 20 20 20 20 20 20	19 20 22 20 22 22 22 22 20 22 18	100 110 100 100 110 110 100		100 100 105 100 95 110 110 100 105 85	5 0 5 0 5 0 0 5 0 0 5 6

Her fold as

% Recovery = (Spike Sample Result - Sample Result) ----- X 100 Spike Concentration

RPD (Relative % Difference) = (Spiked Sample - Duplicate Spike) Result Sample Result Average of Spiked Sample



#### GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10964001

### TEST : POLYNUCLEAR AROMATICS (EPA 610)

PRC PRC CLI	ENT DJECT # DJECT NAME ENT I.D. IPLE MATRIX	: (NONE) : CHACO PI : N11939	GAS,	NEW	MEXICO		DATE DATE DATE UNITS	RECEIVED EXTRACTED	: ) : : :	09/10/91 09/13/91 09/16/91 UG/L
COM	IPOUNDS		 			RES	ULTS			
ACE ACE FLU PHE ANJ FLU PYF BEN CHF BEN 3EN BEN DIE BEN	PHTHALENE NAPHTHYLENE NAPHTHENE NORENE NANTHRENE CHRACENE NORANTHENE RENE NZO(A)ANTHRA NZO(B)FLUORA NZO(B)FLUORA NZO(A)PYRENA SENZ(a,h)ANT NZO(g,h,i)PH DENO(1,2,3-0	ACENE ANTHENE ANTHENE S CHRACENE ERYLENE				100 <3 <5 28 27 <0. 23 <0. <0. <0. <0. <0. <0. <0. <0. <0. <0.	40 10 20 10 10 10			
		,								

#### SURROGATE PERCENT RECOVERIES

2-CHLOROANTHRACENE (%)

NA



GAS CHROMATOGRAPHY - RESULTS

#### REAGENT BLANK

TEST : POLYNUCLEAR AROMATICS (EPA 610)CLIENT : EL PASO NATURAL GAS, NEW MEXICOPROJECT # : (NONE)PROJECT NAME : CHACO PLANTCLIENT I.D. : REAGENT BLANK	ATI I.D. : 109640 DATE EXTRACTED : 09/13/91 DATE ANALYZED : 09/16/91 UNITS : UG/L DILUTION FACTOR : N/A
COMPOUNDS	RESULTS
NAPHTHALENE ACENAPHTHYLENE ACENAPHTHENE FLUORENE PHENANTHRENE ANTHRACENE FLUORANTHENE PYRENE BENZO(A)ANTHRACENE CHRYSENE BENZO(B)FLUORANTHENE BENZO(A)PYRENE DIBENZ(a,h)ANTHRACENE 3ENZO(g,h,i)PERYLENE INDENO(1,2,3-CD)PYRENE	<pre>&lt;0.30 &lt;0.30 &lt;0.50 &lt;0.04 &lt;0.03 &lt;0.01 &lt;0.03 &lt;0.01 &lt;0.03 &lt;0.04 &lt;0.01 &lt;0.02 &lt;0.01 &lt;0.01 &lt;0.01 &lt;0.01 &lt;0.01 &lt;0.01 &lt;0.01 &lt;0.01 &lt;0.01 &lt;0.03</pre>

#### SURROGATE PERCENT RECOVERIES

2-CHLOROANTHRACENE (%)

NA





QUALITY	CONTRO	DL DATA	ልጥተ ገ	Г. <b>П</b> .	:	109640	
TEST : POLYNUCLEAR AROMATICS (EPA 6	510)				•	109010	
CLIENT : EL PASO NATURAL GAS, PROJECT # : (NONE) PROJECT NAME : CHACO PLANT REF I.D. : 10964001	. NEW MI	EXICO		LE M	ATRIX :	09/16/9 AQUEOUS UG/L	
COMPOUNDS			SPIKED SAMPLE	-		8	RPD
ACENAPHTHYLENE PYRENE	<3.0 <0.4	150 20	90 14.1	60 71	84 13	56 65	7 8

Acceptable Acceptable q-7-ar

% Recovery = (Spike Sample Result - Sample Result) ----- X 100 Spike Concentration RPD (Relative % Difference) = (Spiked Sample - Duplicate Spike) Result Sample Result

Average of Spiked Sample

.



#### GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10964001

## TEST : POLYCHLORINATED BIPHENYLS (EPA METHOD 608)

CLIENT PROJECT # PROJECT N. CLIENT I.1 SAMPLE MA	AME : D. :	(NONE) CHACO PLA N11939		GAS,	NEW	MEXICO	DATE DATE DATE UNITS	SAMPLED RECEIVED EXTRACTED ANALYZED FION FACTOR	::	09/08/91 09/10/91 09/11/91 09/24/91 UG/L 10
COMPOUNDS	;						RESULTS			
AROCLOR 1 AROCLOR 1 AROCLOR 1 AROCLOR 1 AROCLOR 1 AROCLOR 1 AROCLOR 1	221 232 242 248 254						<5.0 <5.0 <5.0 <5.0 <5.0 <5.0 <5.0 <5.0			
S	URROGA	re percent	T RECOVI	ERIES						

ISODRIN (%)



## GAS CHROMATOGRAPHY - RESULTS

#### REAGENT BLANK

# TEST : POLYCHLORINATED BIPHENYLS (EPA METHOD 608)

	CLIENT PROJECT # PROJECT NAME CLIENT I.D.	: EL PASO NATURAL GAS, NEW MEXIC : (NONE) : CHACO PLANT : REAGENT BLANK	ATI I.D. : 109640 DATE EXTRACTED : 09/11/91 DATE ANALYZED : 09/13/91 UNITS : UG/L DILUTION FACTOR : N/A	
	COMPOUNDS		RESULTS	
	AROCLOR 1016 AROCLOR 1221		<0.5	:
	AROCLOR 1232 AROCLOR 1242		<0.5 <0.5	
1	AROCLOR 1242 AROCLOR 1248 AROCLOR 1254		<0.5 <0.5	
	AROCLOR 1254 AROCLOR 1260		<0.5 <0.5	
)		SURROGATE PERCENT RECOVERIES		

#### SURROGATE PERCENT RECOVERIES

ISODRIN (%)

Acceptable al

Analytical Technologies, In	ıc.
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TEST : POLYCHLORINATED E	QUALITY CONTR			.D. :	109640	
CLIENT : EL PASO N PROJECT # : (NONE) PROJECT NAME : CHACO PLA REF I.D. : 10961701	ATURAL GAS, NEW M	EXICO		ANALYZED : E MATRIX : :		
Compounds				DUP. % SPIKED REC.SAMPLE	- <del>8</del>	RPD
AROCLOR 1260	<0.5	5.0	4.7	94 5.0	100	6

Kcceptedle 30.91

% Recovery = (Spike Sample Result - Sample Result) ------ X 100 Spike Concentration RPD (Relative % Difference) = (Spiked Sample - Duplicate Spike) Result Sample Result

Average of Spiked Sample

BARRINGER LABO					
I			24-	-Sep-91	-
ANALYTICAL TECHNOLOGIES, INC. 9830 S. 51st St., Ste. B13 Phoenix, AZ 85044	(Phoenix)		Page: Copy: Set :	l of	1 2 1
Attn: Project: 109640	PO #:	Received: 1	ll-Sep-	-91 16:	00
Job: 911684E		Statu	15:	Final	<u></u>

## Sample Type: Water

_Sample_	Total		Ra-228 Total pCi/l		U Total mg/1	U Total pCi/l(1)
109640-1	0.2	±0.3	0.0	±1.1	0.0044	3.0

Meeting The Analytical Challenges Of A Changing World

BARRINGER LAB	O 80401 (303) 277-1687 FAX (303) 277-1689	
I		24-Sep-91
ANALYTICAL TECHNOLOGIES, INC. 9830 S. 51st St., Ste. B13 Phoenix, AZ 85044	Page	y: 1 of 2
Attn: Project: 109640	Received: 11-Se PO #:	≥p-91 16:00
Job: 911684E	Status:	Final
Abbreviations:		
Parameters:		
Ra-226 : Radium-2 Ra-228 : Radium-2 U : Uranium		
<u>Units:</u>		
2σ : Counting mg/l : milligra	ies per liter g error at the 95% confidence le ams per liter ies per liter based upon equilib:	
Job approved by:		
Signed: Man Sur Ruvise Ellen La Riviere Radiochemistry Laborat	tory Manager	

BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

24-Sep-91

ANALYTICAL TECHNOLOGIES, INC. (Phoenix) 9830 S. 51st St., Ste. B13 Phoenix, AZ 85044

Page:		1
Copy:	1 of	2
Set :		1

Attn: Project: 109640

PO #:

Received: 11-Sep-91 16:00

Status: Final

Job: 911684E

#### QUALITY CONTROL REPORT

### Sample Type: Water

Sample_Id	Ra-226 Total pCi/l		Ra-228 Total <u>pCi/l</u>		U Total mg/l
Duplicate Duplicate Duplicate % diff. Std (found value) Std (true value) Std % diff. Blank Spike % rec.	1.1 48 109 101 7.9	±1.8 ±1.3 ±4 ±0.2	0.0 100 29 32 9.4	±1:1 ±1.1 ±2  ±0.8	0.0045 0.0042 4.5 34 34 0.0 <0.0003 97

	NOLOGIES, INC. (Phoen	iv)		24	-Sep-91	•
9830 S. 51st St Phoenix, AZ 8	., Ste. B13			Page: Copy: Set :	l of	
Attn: Project: 109640	P	°O #:	Received:	11-Sep	-91 16:	00
Job: 911684E		·····		cus:	Final	·
	QUALITY CC	NTROL REP	ORT			
Abbreviations:						
Parameters:						
Ra-226 Ra-228 U	: Radium-226 : Radium-228 : Uranium	<i>.</i> .				
<u>Units:</u>						
pCi/l 2ơ mg/l	: picoCuries per : Counting error : milligrams per	at the 95	% confiden	ce leve	1, 2σ	
Job approved by	7 <b>:</b>					
Signed:						

BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

ANALYTICAL TECHNOLOGIES, INC. (Phoenix) 9830 S. 51st St., Ste. B13 Phoenix, AZ 85044 24-Sep-91

Page: 3 Copy: 1 of 2

Final

Received: 11-Sep-91 16:00

Status:

Attn: Project: 109640

PO #:

Job: 911684E

QUALITY CONTROL REPORT

QUALITY CONTROL DATA SHEET

Received by: gr

Via: Fed Express

Sample Container Type: L pl bottles Sample Type: Water Preservative When Received: HNO3 Additional Lab Preparation: none

Parameter	Method	LLD	Preser- vative	Analyst	Date(s) of Analysis
Ra-226	SM-705	0.2 pCi/l	HNO3	Seidel	9/19- 9/24
Ra-228	904.0	0.9 pCi/l	HNO3	Howard	9/13- 9/18
U	ASTMD2907	0.0003 mg/l	HNO3	Meyer	9/16- 9/17

Signed:

Mark Burkhardt, Ph.D. Laboratory Director

Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 109618

September 26, 1991

El Paso Natural Gas Company P.O. Box 4990 Farmington, NM 87499

Project Name/Number: Chaco Plant

Attention: John Lambdin

On 09/07/91, Analytical Technologies, Inc. received a request to analyze aqueous sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

Method 610 analyses were performed by ATI, Fort Collins. Uranium, Radium 226 and Radium 228 analyses were performed by Barringer Laboratories.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

Mary Tyer Project Manager

RVW:clf Enclosure

ber V. Wool.

Robert V. Woods Laboratory Manager

Corporate Offices: 5550 Morehouse Drive San Diego, CA 92121 (619) 458-9141

CLIENT	: EL PASO NATURAL GAS, NEW MEXICO	DATE RECEIVED : 09/07/91
°ROJECT <b>#</b> ∠ROJECT NAME	: (NONE) : CHACO PLANT ATI I.D. : 109618	REPORT DATE : 09/26/91

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTED
01	N11937	AQUEOUS	09/06/91
02	TRIP BLANK	AQUEOUS	09/06/91

	TOTALS	
--	--------	--

MATRIX	
AQUEOUS	

**#** SAMPLES -----2

#### ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

## GENERAL CHEMISTRY RESULTS

		ATI I.D. : 109618
CLIENT : EL PASO NATU PROJECT # : (NONE)	RAL GAS, NEW MEXICO	DATE RECEIVED : 09/07/91
PROJECT NAME : CHACO PLANT		REPORT DATE : 09/26/91
PARAMETER	UNITS 01	
CHLORIDE CYANIDE, TOTAL FLUORIDE NITRATE AS NITROGEN PH	MG/L 440 MG/L <0.01 MG/L 0.46 MG/L 0.33 UNITS 7.4	
PHENOLICS, TOTAL SULFATE TOTAL DISSOLVED SOLIDS	MG/L <0.02 MG/L 190 MG/L 1100	

9

#### GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : EL PASO	NATURAL	GAS, NEW	MEXICO					
PROJECT # : (NONE) PROJECT NAME : CHACO PL	ANT			ATI	I.D.	: 1096	18	
PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE		% REC
CHLORIDE	MG/L	10964904	470	470	0	970	500	100
CYANIDE, TOTAL	MG/L	10960101	<0.01	<0.01	NA	0.25	0.25	100
FLUORIDE	MG/L	10960101	0.22	0.22	0	0.41	0.20	95
NITRATE AS NITROGEN	MG/L	10964201	3.7	3.7	0	13.8	10.0	101
PH	UNITS	10960204	7.6	7.6	0	NA	NA	NA
PHENOLICS, TOTAL	MG/L	10964201	<0.02	<0.02	NA	0.23	0.25	92
SULFATE	MG/L	10964001	1.6	1.6	0	3.4	2.0	90
TOTAL DISSOLVED SOLIDS	MG/L	10957201	860	860	0	NA	NA	NA



% Recovery = (Spike Sample Result - Sample Result)
----- X 100
Spike Concentration

RPD (Relative Percent Difference) = (Sample Result - Duplicate Result) ------ X 10( Average Result

### METALS RESULTS

## ATI I.D. : 109618

	EL PASO NATURAL GAS, (NONE) CHACO PLANT	NEW MEXICO	DATE RECEIVED REPORT DATE	
PARAMETER	UNITS	01		
SILVER ARSENIC BORON BARIUM CADMIUM CHROMIUM COPPER IRON MERCURY MANGANESE LEAD SELENIUM URANIUM ZINC	MG/L MG/L MG/L MG/L MG/L MG/L MG/L MG/L	<0.005 <0.10 0.158 <0.005 <0.010 0.174 0.974 <0.0002 0.219 0.004 <0.005		

Analytical **Technologies**, Inc.

METALS - QUALITY CONTROL

CLIENT	:	EL PASO NATURAL GAS, NEW MEXIC	20
PROJECT # PROJECT NAME			

### ATI I.D. : 109618

SAMPLE DUP. SPIKED SP PARAMETER UNITS ATI I.D. RESULT RESULT RPD SAMPLE CO	
	.500 109
	.050 106 .00 101
	.00 90
	.500 95
	.00 94 .500 95
IRON MG/L 10961701 0.198 0.200 1 1.12 1.	.00 92
	.0050 104 .00 94
	.050 110
na second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second s	.050 80-*
URANIUMMG/L109999130.00450.00424.5NANAZINCMG/L10961701<0.010	A NA .500 98

Accuptedur St-70-91

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Average Result

% Recovery = (Spike Sample Result - Sample Result)
_____ X 100
Spike Concentration

RPD (Relative Percent Difference) = (Sample Result - Duplicate Result)

X 10(



GAS CHROMATOGRAPHY - RESULTS

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### TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

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	· ·
CLIENT : EL PASO NATURAL GAS, I	$\frac{1}{10000000000000000000000000000000000$
PROJECT # : (NONE)	DATE RECEIVED : 09/0//91
PROJECT NAME : CHACO PLANT	DATE EXTRACTED : N/A
CLIENT I.D. : N11937	DATE ANALYZED : 09/09/91
SAMPLE MATRIX : AQUEOUS	NEW MEXICO DATE SAMPLED : 09/06/91 DATE RECEIVED : 09/07/91 DATE EXTRACTED : N/A DATE ANALYZED : 09/09/91 UNITS : UG/L
	DILUTION FACTOR : 1
COMPOUNDS	RESULTS
BENZENE	<0.5
BROMODICHLOROMETHANE	2.3
BROMOFORM	<0.2
BROMOMETHANE	<0.2
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.5
CHLOROETHANE	<0.2
CHLOROFORM	21.5
CHLOROMETHANE	<0.2
DIBROMOCHLOROMETHANE	<0.2
2-CHLOROETHYL VINYL ETHER	<0.5
1,3-DICHLOROBENZENE	<0.5
•	<0.5
1,2 & 1,4-DICHLOROBENZENE	
DICHLORODIFLUOROMETHANE	<0.2
1,1-DICHLOROETHANE	<0.2
1,2-DICHLOROETHANE	<0.2
1,1-DICHLOROETHENE	<0.2
1,2-DICHLOROETHENE(TOTAL)	<0.2
1,2-DICHLOROPROPANE	<0.2
CIS-1, 3-DICHLOROPROPENE	<0.2
TRANS-1, 3-DICHLOROPROPENE	<0.2
ETHYLBENZENE	<0.5
METHYLENE CHLORIDE	<2.0
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE	<0.2
TOLUENE	<0.5
1,1,1-TRICHLOROETHANE	<0.2
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	<0.2
TRICHLOROFLUOROMETHANE	<0.5
VINYL CHLORIDE	<0.2
TOTAL XYLENES	<0.5
TRICHLOROTRIFLUOROETHANE	<2.0
SURROGATE PERCENT RECOVERIES	
BROMOCHLOROMETHANE (%)	108
ROMOFLUOROBENZENE (%)	82
	02



GAS CHROMATOGRAPHY - RESULTS

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ATI I.D. : 10961802

### TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

CLIENT : EL PASO NATURAL GAS, NEW MEXICO PROJECT # : (NONE)	DATE SAMPLED : 09/06/91
PROJECT NAME : CHACO PLANT	DATE RECEIVED : 09/07/91 DATE EXTRACTED : N/A
CLIENT I.D. : TRIP BLANK	DATE ANALYZED : 09/09/91
SAMPLE MATRIX : AQUEOUS	UNITS : UG/L
	DILUTION FACTOR : 1
COMPOUNDS	RESULTS
BENZENE	<0.5
BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<0.2
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.5
CHLOROETHANE	<0.2
CHLOROFORM	<0.2 <0.2
CHLOROMETHANE DIBROMOCHLOROMETHÄNE	<0.2
2-CHLOROETHYL VINYL ETHER	<0.2
1, 3-DICHLOROBENZENE	<0.5
1,2 & 1,4-DICHLOROBENZENE	<0.5
DICHLORODIFLUOROMETHANE	<0.2
1,1-DICHLOROETHANE	<0.2
1,2-DICHLOROETHANE	<0.2
1,1-DICHLOROETHENE	<0.2
1,2-DICHLOROETHENE(TOTAL)	<0.2
1,2-DICHLOROPROPANE	<0.2
CIS-1, 3-DICHLOROPROPENE	<0.2
TRANS-1, 3-DICHLOROPROPENE	<0.2
ETHYLBENZENE METHYLBENZENE	<0.5
METHYLENE CHLORIDE	<2.0
1,1,2,2-TETRACHLOROETHANE TETRACHLOROETHENE	<0.2 <0.2
TOLUENE	<0.2
1,1,1-TRICHLOROETHANE	
1,1,2-TRICHLOROETHANE	<0.2 <0.2
TRICHLOROETHENE	16
TRICHLOROFLUOROMETHANE	
VINYL CHLORIDE	<0.2 2 ⁰ 2 al
TOTAL XYLENES	<0.5 × 0,0
TRICHLOROTRIFLUOROETHANE	<2.0 Q [']
SURROGATE PERCENT RECOVERIES	
BROMOCHLOROMETHANE (%)	95
3ROMOFLUOROBENZENE (%)	86

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Analytical Technologies, Inc. GAS CHROMATOGRAPHY - RESULTS

### REAGENT BLANK

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 60CLIENT : EL PASO NATURAL GAS, NEW MEXIPROJECT # : (NONE)PROJECT NAME : CHACO PLANTCLIENT I.D. : REAGENT BLANK	DATE ANALYZED : 09/09 UNITS : UG/L DILUTION FACTOR : N/A
COMPOUNDS	PFCIILTC
BENZENE	<0.5
BROMODICHLOROMETHANE	<0.2
BROMOFORM	<0.2
BROMOMETHANE	<0.2
CARBON TETRACHLORIDE	<0.2
CHLOROBENZENE	<0.5
CHLOROETHANE	<0.2
CHLOROFORM	<0.2
CHLOROMETHANE	<0.2
DIBROMOCHLOROMETHANE	<0.2
2-CHLOROETHYL VINYL ETHER	<0.5
1, 3-DICHLOROBENZENE	<0.5
1,2 & 1,4-DICHLOROBENZENE	<0.5
DICHLORODIFLUOROMETHANE	<0.2
',1-DICHLOROETHANE	<0.2
1,2-DICHLOROETHANE	<0.2
1,1-DICHLOROETHENE	<0.2
1, 2-DICHLOROETHENE(TOTAL)	<0.2
1,2-DICHLOROPROPANE	<0.2
CIS-1, 3-DICHLOROPROPENE	<0.2
TRANS-1, 3-DICHLOROPROPENE	<0.2
ETHYLBENZENE	<0.5
METHYLENE CHLORIDE	<2.0
1,1,2,2-TETRACHLOROETHANE	<0.2
TETRACHLOROETHENE	<0.2
TOLUENE	<0.5
1,1,1-TRICHLOROETHANE	<0.2
1,1,2-TRICHLOROETHANE	<0.2
TRICHLOROETHENE	<0.2
TRICHLOROFLUOROMETHANE	<0.5
VINYL CHLORIDE	<0.2
TOTAL XYLENES	<0.5
TRICHLOROTRIFLUOROETHANE	<2.0 PC 3 at
SURROGATE PERCENT RECOVERI	$\begin{array}{c} <0.2 \\ <0.5 \\ <2.0 \end{array} \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad $
BROMOCHLOROMETHANE (%)	87
BROMOFLUOROBENZENE (%)	



ATI I.D. : 109618

### TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

CLIENT :	EL PASO NATURAL GAS, NEW MEXICO	
PROJECT # :	(NONE)	DATE ANALYZED : 09/09/91
PROJECT NAME :	CHACO PLANT	SAMPLE MATRIX : AQUEOUS
REF I.D. :	: 10999907	UNITS : UG/L

COMPOUNDS	SAMPLE RESULT		SPIKED SAMPLE	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE	<0.2	20	21	105	23	115	9
TRICHLOROETHENE	<0.2	20	18	90	19	95	5
TETRACHLOROETHENE	<0.2	20	24	120	24	120	0
BENZENE	<0.5	20	18	90	17	85	6
BROMODICHLOROMETHANE	<0.2	20	19	95	20	100	5
CHLOROFORM	<0.2	20	23	115	24	120	4
1,1,1-TRICHLOROETHANE	<0.2	20	20	100	21	105	5
TOLUENE	<0.5	20	20	100	20	100	0
CHLOROBENZENE	<0.2	20	21	105	22	110	5
M-XYLENE	<0.5	20	18	90	18	90	0

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#### GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10961801

### TEST : POLYNUCLEAR AROMATICS (EPA 610)

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CLIENT : EL PASO NATURAL GAS, NEW MEXIC PROJECT # : (NONE) PROJECT NAME : CHACO PLANT CLIENT I.D. : N11937 SAMPLE MATRIX : AQUEOUS	O DATE SAMPLED : 09/06/91 DATE RECEIVED : 09/07/91 DATE EXTRACTED : 09/10/91 DATE ANALYZED : 09/13/91 UNITS : UG/L DILUTION FACTOR : 1
COMPOUNDS	RESULTS
NAPHTHALENE ACENAPHTHYLENE ACENAPHTHENE FLUORENE PHENANTHRENE ANTHRACENE FLUORANTHENE PYRENE BENZO(A)ANTHRACENE CHRYSENE BENZO(B)FLUORANTHENE ENZO(K)FLUORANTHENE BENZO(A)PYRENE DIBENZ(a,h)ANTHRACENE BENZO(g,h,i)PERYLENE INDENO(1,2,3-CD)PYRENE	<pre>&lt;0.30 &lt;0.30 &lt;0.50 &lt;0.04 0.14 &lt;0.01 0.13 &lt;0.04 &lt;0.01 &lt;0.02 0.09 &lt;0.01 &lt;0.01 &lt;0.01 &lt;0.01 &lt;0.01 &lt;0.01 &lt;0.01 &lt;0.10 &lt;0.04 &lt;0.03</pre>

### SURROGATE PERCENT RECOVERIES

2-CHLOROANTHRACENE (%)

NA

Analytical Technologies, GAS CHROMATOGRAPHY - RESULTS

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#### REAGENT BLANK

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### TEST : POLYNUCLEAR AROMATICS (EPA 610)

CLIENT PROJECT # PROJECT NAME	: EL PASO NATURAL G : (NONE) : CHACO PLANT : REAGENT BLANK	GAS, NEW MEXICO	ATI I.D. DATE EXTRACTED DATE ANALYZED UNITS DILUTION FACTOR	: 09/10/91 : 09/13/91 : UG/L
COMPOUNDS			RESULTS	
NAPHTHALENE ACENAPHTHYLEN ACENAPHTHENE FLUORENE PHENANTHRENE ANTHRACENE FLUORANTHENE PYRENE BENZO(A)ANTHR CHRYSENE BENZO(B)FLUOR BENZO(B)FLUOR BENZO(K)FLUOR BENZO(A)PYREN DIBENZ(a,h)AN BENZO(g,h,i)P INDENO(1,2,3-	ACENE ANTHENE ANTHENE E THRACENE ERYLENE		<0.30 <0.30 <0.50 <0.04 <0.03 <0.01 <0.03 <0.04 <0.01 <0.02 <0.01 <0.01 <0.01 <0.01 <0.01 <0.01 <0.04 <0.03	

# SURROGATE PERCENT RECOVERIES

2-CHLOROANTHRACENE (%)

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NA

free tothe g. 33 ar



QUALITY CONTROL DATA

FEST : POLYNUCLEAR AROMATICS (EP)	A 610)	ATI I.D.	: 10961	В
CLIENT : EL PASO NATURAL G PROJECT # : (NONE) PROJECT NAME : CHACO PLANT REF I.D. : 10961701	AS, NEW MEXICO	DATE ANALYZE SAMPLE MATRI UNITS		
COMPOUNDS		DUP SPIKED % SPI D SAMPLE REC.SAM		RPD
ACENAPHTHYLENE PYRENE	<0.30 300 <0.04 40	$\begin{array}{cccccccccccccccccccccccccccccccccccc$		14 10

Hoertent J. al

### Average of Spiked Sample



## GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10961801

# TEST : POLYCHLORINATED BIPHENYLS (EPA METHOD 608)

CLIENT PROJECT # PROJECT NAME CLIENT I.D. SAMPLE MATRIX	: EL PASO NATURAL GA : (NONE) : CHACO PLANT : N11937 X : AQUEOUS	DATE DATE DATE UNIT	SAMPLED       : 09/06/91         RECEIVED       : 09/07/91         EXTRACTED       : 09/09/91         ANALYZED       : 09/14/91         S       : UG/L         TION FACTOR       : 1
COMPOUNDS		RESULTS	
AROCLOR 1016 AROCLOR 1221 AROCLOR 1232 AROCLOR 1242 AROCLOR 1248 AROCLOR 1254 AROCLOR 1260		<0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5	
SURRC	GATE PERCENT RECOVERI	IES	

ISODRIN (%)

Analytical Technologies, CAS CHROMATOGRAPHY - RESULTS

#### REAGENT BLANK

#### TEST : POLYCHLORINATED BIPHENYLS (EPA METHOD 608)

CLIENT PROJECT # PROJECT NAME CLIENT I.D.	: EL PASO NATURAL GAS, NEW MEXICO : (NONE) : CHACO PLANT : REAGENT BLANK	ATI I.D. : 109618 DATE EXTRACTED : 09/09/91 DATE ANALYZED : 09/13/91 UNITS : UG/L DILUTION FACTOR : N/A	
COMPOUNDS		RESULTS	-
AROCLOR 1016 AROCLOR 1221		<0.5 <0.5	-

AROCLOR 1232 AROCLOR 1242 AROCLOR 1248 AROCLOR 1254 AROCLOR 1260

## SURROGATE PERCENT RECOVERIES

ISODRIN (%)

88

<0.5

<0.5

<0.5

<0.5

<0.5

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QUALITY CON TEST : POLYCHLORINATED BIPHENYLS (EPA 1			ATI I	.D.	:	109618	
CLIENT : EL PASO NATURAL GAS, NEU PROJECT # : (NONE) PROJECT NAME : CHACO PLANT REF I.D. : 10961701	CW MEX	XICO		E MA	TRIX :	09/14/9 AQUEOUS UG/L	
		CONC. SPIKED	••••••••••••••••••••••••••••••••••••••	୫		8	RPD
AROCLOR 1260 <0.	5 !	5.0	4.7	94	5.0	100	6

% Recovery = (Spike Sample Result - Sample Result) Spike Concentration RPD (Relative % Difference) = (Spiked Sample - Duplicate Spike) Result Sample Result Average of Spiked Sample BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

ANALYTICAL TECHNOLOGIES, INC. (Phoenix) 9830 S. 51st St., Ste. B13 Phoenix, AZ 85044 24-Sep-91 Page: 1 Copy: 1 of 2 Set: 1

Attn: Mary Tyer Project: 109617-18

PO #:

Received: 10-Sep-91 13:53

Job: 911679E

Status: Final

### Sample Type: Water

Sample	Total		Ra-228 Total <u>pCi/l</u>		U Total _mg/l	U Total pCi/l(1)
109617-1 109618-1	• • • -	±0.4 ±0.4		±1.2 ±1.2	0.0050 0.0105	3.4 7.1

1 3 4 A	<b>SER LABORATORI</b> TE 300 GOLDEN, CO 80401 (303) 277-1687		
			24-Sep-91
ANALYTICAL TECHNOLO 9830 S. 51st St., 9 Phoenix, AZ 85044			Page: 2 Copy: 1 of 2 Set: 2
Attn: Mary Tyer Project: 109617-18	PO #:	Received: 1	10-Sep-91 13:53
Job: 911679E		Statu	us: Final
Abbreviations:			
Parameters:			
Ra-226 Ra-228 U	: Radium-226 : Radium-228 : Uranium		
<u>Units:</u>			
pCi/l 2ơ mg/l pCi/l(1)	: picoCuries per liter : Counting error at th : milligrams per liter : picoCuries per liter	e 95% confidence	
Job approved by: Signed: Ellen La Riv Radiochemis	yuuuu yuuuu viere try Laboratory Manager	••••	

Meeting The Analytical Challenges Of A Changing World

BARRINGER LABORATORIES INC.

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24-Sep-91

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#### Page: 1 Copy: 1 of 2 Set: 1

Final

Attn: Mary Tyer Project: 109617-18

PO #:

Received: 10-Sep-91 13:53

<u>Status:</u>

Job: 911679E

QUALITY CONTROL REPORT

### Sample Type: Water

	Total		Ra-228 Total		U Total
Sample Id	_pCi/l	2σ	_pCi/l	2σ	_mg/1
Duplicate Duplicate Duplicate % diff. Std (found value) Std (true value) Std % diff. Blank Spike % rec.	1.1 48 109 101 7.9	±1.8 ±1.3 ±4  ±0.2	0.7 100 29 32 9.4	±1.1 ±1.1 ±2 ±0.8	0.0045 0.0042 4.5 33 34 0.0 <0.0003 97

	UITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX	
ANALVUTCAL TECHNO	LOGIES, INC. (Phoenix)	24-Sep-91
9830 S. 51st St.,	Page:	
Phoenix, AZ 8504		Copy: 1 of
		Set :
Attn: Mary Tyer		Received: 10-Sep-91 13:
Project: 109617-1	B PO #:	-
Job: 911679E		Status: Final
	QUALITY CONTROL RI	EPORT
Abbreviations:		
Parameters:		
rarameters.		
Ra-226	: Radium-226	
Ra-228 U	: Radium-228 : Uranium	
U .	: Oranium	
Units:		
pCi/l	: picoCuries per liter	
$2\sigma$	: Counting error at the 9	95% confidence level, $2\sigma$
mg/l	: milligrams per liter	

Approved Quality Assurance Department

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BARRINGER LABORATORIES INC.

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24-Sep-91 ANALYTICAL TECHNOLOGIES, INC. (Phoenix) Page: 9830 S. 51st St., Ste. B13 Phoenix, AZ 85044 Copy: 1 of 2

Attn: Mary Tyer Project: 109617-18

PO #:

Received: 10-Sep-91 13:53

Status:

3

Final

Job: 911679E

QUALITY CONTROL REPORT

QUALITY CONTROL DATA SHEET

Received by: gr

Via: Federal Express

Sample Container Type: 3 Pl L btl Sample Type: Water Preservative When Received: HNO3 Additional Lab Preparation: None

Parameter	Method	LLD	Preser- vative	Analyst	Date(s) of Analysis
Ra-226	SM-705	0.2 pCi/l	HNO3	Seidel	9/19- 9/24
Ra-228	904.0	0.9 pCi/l	HNO3	Howard	9/13- 9/19
U	ASTMD2907	0.0003 mg/l	HNO3	Meyer	9/16- 9/17

Signed:

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Mark Burkhardt, Ph.D. Laboratory Director

Analytical Technologies, Inc. 9830 S. 51st Street Suite B-113 Phoenix, AZ 85044 (602) 496-4400

ATI I.D. 109617

September 26, 1991

El Paso Natural Gas Company P.O. Box 4990 Farmington, NM 87499

Project Name/Number: Chaco Plant

Attention: John Lambdin

On 09/07/91, Analytical Technologies, Inc. received a request to analyze aqueous sample(s). The sample(s) were analyzed with EPA methodology or equivalent methods. The results of these analyses and the quality control data, which follow each set of analyses, are enclosed.

Method 610 analyses were performed by ATI, Fort Collins. Uranium, Radium 226 and Radium 228 analyses were performed by Barringer Laboratories.

If you have any questions or comments, please do not hesitate to contact us at (602) 496-4400.

Mary Týer Project Manager

RVW:clf Enclosure

scober U. Woor

Robert V. Woods Laboratory Manager

Corporate Offices: 5550 Morehouse Drive San Diego, CA 92121 (619) 458-9141

Analytical Technologies, Ir	nc.
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LIENT ROJECT # ROJECT NA	: (1 ME : CH	NONE) HACO TANK ATI I.D. : 109	REPO	RECEIVED : 09/07/9 RT DATE : 09/26/9
		ATT 1.5 105		
TI #	CLIEN	NT DESCRIPTION		DATE COLLECTE
01	N1193		AQUEOUS	09/06/9
		-		
*******	======			
		TOTALS		
М	ATRIX	# SAMPLES		
– A	QUEOUS	1		
		ATI STANDARD DISPO	SAL PRACTICE	
late of t	his rep	this project will be dis ort. If an extended stora ol department before the	ge period is rec	uired, please conta



#### GENERAL CHEMISTRY RESULTS

ATI I.D. : 109617

CLIENT : EL PASO NATURAL GAS, NEW MEXICO PROJECT # : (NONE) DATE RECEIVED : 09/07/91 PROJECT NAME : CHACO TANK **REPORT DATE : 09/26/91** UNITS 01 PARAMETER ______ MG/L 2200 MG/L <0.01 CHLORIDE CYANIDE, TOTAL MG/L FLUORIDE 1.83 MG/L 0.79 UNITS 7.4 MG/L <0.02 MG/L 490 NITRATE AS NITROGEN PH PHENOLICS, TOTAL SULFATE TOTAL DISSOLVED SOLIDS MG/L 5100



GENERAL CHEMISTRY - QUALITY CONTROL

LIENT : EL PASO PROJECT # : (NONE) PROJECT NAME : CHACO TA		GAS, NEW	MEXICO	ATI ]	[.D.	: 10961	.7	
PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT F	RPD	SPIKED SAMPLE		% REC
CHLORIDE CYANIDE, TOTAL FLUORIDE NITRATE AS NITROGEN PH PHENOLICS, TOTAL SULFATE TOTAL DISSOLVED SOLIDS	MG/L MG/L MG/L MG/L UNITS MG/L MG/L MG/L	10964904 10960101 10960201 10964201 10960204 10964201 10964201 10964001 10960101	<0.01 4.46 3.7 7.6 <0.02 1.6	470 <0.01 4.46 3.7 7.6 <0.02 1.6 1100	0 0 NA	970 0.25 8.40 13.8 NA 0.23 3.4 NA	500 0.25 4.00 10.0 NA 0.25 2.0 NA	100 100 98 101 NA 92 90 NA

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% Recovery = (Spike Sample Result - Sample Result) ------ X 100 Spike Concentration RPD (Relative Percent Difference) = (Sample Result - Duplicate Result)

Arb (Neracive Fercent Difference) - (Sample Result - Duplicate Result) ----- X 10 Average Result Analytical **Technologies**, Inc.

____

## METALS RESULTS

ATI I.D. : 109617

CLIENT PROJECT # PROJECT NAME	: EL PASO NATURAL GAS, NEW MEXICO : (NONE) : CHACO TANK	DATE RECEIVED : 09/07/91 REPORT DATE : 09/26/91
PARAMETER	UNITS 01	
SILVER	MG/L <0.010	
ARSENIC	MG/L 0.009	
BORON	MG/L 0.22	
BARIUM	MG/L 0.600	
CADMIUM	MG/L <0.005	
CHROMIUM	MG/L 0.014	
COPPER	MG/L <0.010	
IRON	MG/L 0.198	
MERCURY	MG/L <0.0002	
MANGANESE	MG/L 0.012	
LEAD	MG/L 0.003	
SELENIUM	MG/L <0.005	
URANIUM	MG/L 0.0050	
ZINC	MG/L <0.010	



LIENT PROJECI PROJECI	' #	:	(NONE)	) NATURAL FANK	GAS,	NEW	MEXICO		ATI	I.D.	:	10961	17	
							SAMPLE	DUF	, ,		SF	IKED	SPIKE	- 9

	PARAMETER	UNITS	ATI I.D.	RESULT	RESULT	RPD	SAMPLE	CONC	REC
	SILVER	MG/L	10961701	<0.010	<0.010	NA	0.543	0.500	109
_	ARSENIC	MG/L	10960101	0.008	0.008	0	0.061	0.050	106
	BORON	MG/L	10960101	0.32	0.35	9	1.33	1.00	101
	BARIUM	MG/L	10961701	0.600	0.604	0.7	1.50	1.00	90
	CADMIUM	MG/L	10961701	<0.005	<0.005	NA	0.475	0.500	95
	CHROMIUM	MG/L	10961701	0.014	0.012	15	0.950	1.00	94
	COPPER	MG/L	10961701	<0.010	<0.010	NA	0.476	0.500	95
	IRON	MG/L	10961701	0.198	0.200	1	1.12	1.00	92
	MERCURY	MG/L	10970302	0.0002	0.0002	0	0.0050	0.0050	96
	MANGANESE	MG/L	10961701	0.012	0.012	0	0.954	1.00	94
	LEAD	MG/L	10960101	<0.002	<0.002	NA	0.055	0.050	110
	SELENIUM	MG/L	10960101	<0.005	<0.005	NA	0.040	0.050	80
	URANIUM .	MG/L	10999913	0.0045		4.5	NA	NA	NA
	ZINC	MG/L	10961701		<0.010	NA	0.492	0.500	98

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% Recovery = (Spike Sample Result - Sample Result) ----- X 100 Spike Concentration RPD (Relative Percent Difference) = (Sample Result - Duplicate Result)

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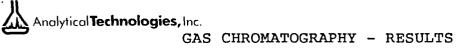


## GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10961701

## TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)

CLIENT : EL PASO NATURAL GAS, PROJECT # : (NONE) PROJECT NAME : CHACO TANK CLIENT I.D. : N11936 SAMPLE MATRIX : AQUEOUS	NEW MEXICO DATE SAMPLED : 09/06/91 DATE RECEIVED : 09/07/91 DATE EXTRACTED : N/A DATE ANALYZED : 09/09/91 UNITS : UG/L DILUTION FACTOR : 1
COMPOUNDS	RESULTS
BENZENE BROMODICHLOROMETHANE BROMOFORM BROMOMETHANE CARBON TETRACHLORIDE CHLOROBENZENE CHLOROETHANE CHLOROFORM CHLOROFORM CHLOROMETHANE DIBROMOCHLOROMETHANE 2-CHLOROETHYL VINYL ETHER ,3-DICHLOROBENZENE 1,2 & 1,4-DICHLOROBENZENE DICHLORODIFLUOROMETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHENE (IS-1,3-DICHLOROPROPENE TRANS-1,3-DICHLOROPROPENE ETHYLBENZENE METHYLENE CHLORIDE 1,1,2,2-TETRACHLOROETHANE TICHLOROETHENE NLUENE 1,1,2-TRICHLOROETHANE 1,1,2-TRICHLOROETHANE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE TRICHLOROETHENE	< 0.5 1.1 $< 0.2$ $< 0.2$ $< 0.2$ $< 0.2$ $< 0.2$ $< 0.2$ $< 0.2$ $< 0.2$ $< 0.2$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.2$ $< 0.2$ $< 0.2$ $< 0.2$ $< 0.2$ $< 0.2$ $< 0.2$ $< 0.2$ $< 0.2$ $< 0.2$ $< 0.2$ $< 0.2$ $< 0.2$ $< 0.2$ $< 0.2$ $< 0.2$ $< 0.2$ $< 0.2$ $< 0.2$ $< 0.2$ $< 0.2$ $< 0.2$ $< 0.2$ $< 0.2$ $< 0.2$ $< 0.2$ $< 0.2$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.2$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$ $< 0.5$
ROMOCHLOROMETHANE (%) ROMOFLUOROBENZENE (%)	95 85



-

## REAGENT BLANK

TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601, CLIENT : EL PASO NATURAL GAS, NEW MEXICO PROJECT # : (NONE) PROJECT NAME : CHACO TANK CLIENT I.D. : REAGENT BLANK	ATI I.D. : 109617
COMPOUNDS	RESULTS
BENZENE BROMODICHLOROMETHANE BROMOFORM BROMOMETHANE CARBON TETRACHLORIDE CHLOROBENZENE CHLOROFTHANE CHLOROFTHANE CHLOROFTHANE CHLOROMETHANE 2-CHLOROETHANE 2-CHLOROETHYL VINYL ETHER 1,3-DICHLOROBENZENE 1,2 & 1,4-DICHLOROBENZENE DICHLORODIFLUOROMETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHANE 1,2-DICHLOROETHENE 1,2-DICHLOROETHENE 1,2-DICHLOROFTHENE (IS-1,3-DICHLOROPROPENE TRANS-1,3-DICHLOROPROPENE TTANS-1,3-DICHLOROPENE TTAXS-1,3-DICHLOROPENE TTAXS-1,3-DICHLOROPENE TTAXS-1,2-TETRACHLOROETHANE TETRACHLOROETHENE TOLUENE 1,1,2-TRICHLOROETHANE 1,1,2-TRICHLOROETHANE TRICHLOROFLUOROMETHANE TRICHLOROFLUOROMETHANE TRICHLOROFLUOROMETHANE TOLUENE TOAL XYLENES TRICHLOROTRIFLUOROETHANE	< 0.5 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.5 < 2.0 < 0.2 < 0.5 < 2.0 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.5 < 0.2 < 0.5 < 0.2 < 0.5 < 0.5 < 0.2 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.
SURROGATE PERCENT RECOVERIES	5

BROMOCHLOROMETHANE	(%)	87
BROMOFLUOROBENZENE	(8)	86



QUALITY	CONTRO	L DATA	ATI ]	[.D.	:	109617	
TEST : VOLATILE HALOCARBONS/AROMATICS (EPA 601/602)							
CLIENT : EL PASO NATURAL GAS, PROJECT # : (NONE) PROJECT NAME : CHACO TANK REF I.D. : 10999907	, NEW ME	EXICO		LE MA	ATRIX :	09/09/9 AQUEOUS UG/L	
COMPOUNDS		CONC. SPIKED			DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE TRICHLOROETHENE TETRACHLOROETHENE BENZENE BROMODICHLOROMETHANE CHLOROFORM 1,1,1-TRICHLOROETHANE TOLUENE CHLOROBENZENE M-XYLENE	<0.2 <0.2 <0.2 <0.5 <0.2 <0.2 <0.2 <0.2 <0.2 <0.5 <0.2 <0.5 <0.2 <0.5	20 20 20 20 20 20 20 20 20 20 20 20 20	21 18 24 19 23 20 20 21 18	90 120 90 95 115 100 100	24 21	115 95 120 85 100 120 105 100 110 90	9 5 6 5 4 5 0 5 0 5 0

Xaught 20. a.

% Recovery = (Spike Sample Result - Sample Result) Spike Concentration RPD (Relative % Difference) = (Spiked Sample - Duplicate Spike) Result Sample Result Average of Spiked Sample



## GAS CHROMATOGRAPHY - RESULTS

ATI I.D. : 10961701

## TEST : POLYNUCLEAR AROMATICS (EPA 610)

CLIENT : EL PASO NATURA PROJECT # : (NONE) PROJECT NAME : CHACO TANK CLIENT I.D. : N11936 SAMPLE MATRIX : AQUEOUS	L GAS, NEW MEXICO	DATE SAMPLED DATE RECEIVED DATE EXTRACTED DATE ANALYZED UNITS DILUTION FACTOR	: 09/07/91 : 09/10/91 : 09/13/91 : UG/L
COMPOUNDS		RESULTS	
NAPHTHALENE ACENAPHTHYLENE ACENAPHTHENE FLUORENE PHENANTHRENE ANTHRACENE FLUORANTHENE PYRENE BENZO(A)ANTHRACENE CHRYSENE BENZO(B)FLUORANTHENE ENZO(K)FLUORANTHENE BENZO(A)PYRENE DIBENZ(a,h)ANTHRACENE BENZO(g,h,i)PERYLENE INDENO(1,2,3-CD)PYRENE		<0.30 <0.30 <0.50 <0.04 <0.03 <0.01 <0.03 <0.04 <0.01 <0.02 <0.01 <0.01 <0.01 <0.01 <0.01 <0.01 <0.04 <0.03	

## SURROGATE PERCENT RECOVERIES

2-CHLOROANTHRACENE (%)

NA



## GAS CHROMATOGRAPHY - RESULTS

### REAGENT BLANK

TEST : POLYNUCLEAR AROMATICS (EPA 610)CLIENT : EL PASO NATURAL GAS, NEW MEXICOPROJECT # : (NONE)PROJECT NAME : CHACO TANKCLIENT I.D. : REAGENT BLANK	ATI I.D. : 109617 DATE EXTRACTED : 09/10/91 DATE ANALYZED : 09/13/91 UNITS : UG/L DILUTION FACTOR : N/A
COMPOUNDS	RESULTS
NAPHTHALENE ACENAPHTHYLENE ACENAPHTHENE FLUORENE PHENANTHRENE ANTHRACENE FLUORANTHENE PYRENE BENZO(A)ANTHRACENE CHRYSENE BENZO(B)FLUORANTHENE BENZO(A)PYRENE DIBENZ(a,h)ANTHRACENE SENZO(g,h,i)PERYLENE INDENO(1,2,3-CD)PYRENE	<0.30 <0.30 <0.50 <0.04 <0.03 <0.01 <0.03 <0.04 <0.01 <0.02 <0.01 <0.01 <0.01 <0.01 <0.01 <0.01 <0.01 <0.01 <0.01 <0.03

### SURROGATE PERCENT RECOVERIES

2-CHLOROANTHRACENE (%)

NA

fors Janoa



TEST : POLYNUCLEAN	QUALITY CONTRO R AROMATICS (EPA 610)	L DATA	ATI I	.D.	:	109617	
PROJECT # : (NO PROJECT NAME : CH	, PASO NATURAL GAS, NEW ME IONE) IACO TANK 1961701	XICO		E MA	TRIX :	09/13/9 AQUEOUS UG/L	
COMPOUNDS		CONC. SPIKED S		8		DUP. % REC.	RPD
ACENAPHTHYLENE PYRENE	<0.30 <0.04				157 22.7	52 57	14 10

tail a 30 %

% Recovery = (Spike Sample Result - Sample Result) ------ X 100 Spike Concentration RPD (Relative & Difference) = (Spiked Sample - Duplicate Spike)



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## GAS CHROMATOGRAPHY - RESULTS

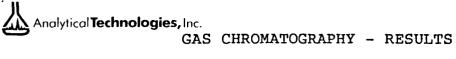
- -----

ATI I.D. : 10961701

## TEST : POLYCHLORINATED BIPHENYLS (EPA METHOD 608)

	PROJECT	# : NAME : .D. :	(NONE) CHACO TA N11936		GAS,	NEW	MEXICO	DATE DATE DATE UNITS	SAMPLED RECEIVED EXTRACTED ANALYZED S FION FACTOR	::	09/06/91 09/07/91 09/09/91 09/14/91 UG/L 1
	COMPOUND	S						RESULTS			
     	AROCLOR AROCLOR AROCLOR AROCLOR AROCLOR AROCLOR AROCLOR	1221 1232 1242 1248 1254						<0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5			
-		SURROGA	TE PERCEI	NT RECOV	ERIES						

ISODRIN (%)



_

#### REAGENT BLANK

	CLIENT PROJECT # PROJECT NAME	LORINATED BIPHENYLS (EPA METHOD 608)ATI I.D. : 109617: EL PASO NATURAL GAS, NEW MEXICODATE EXTRACTED : 09/09/91: (NONE)DATE ANALYZED : 09/13/91: CHACO TANKUNITS : UG/L: REAGENT BLANKDILUTION FACTOR : N/A	
	COMPOUNDS	RESULTS	
ſ	AROCLOR 1016 AROCLOR 1221 AROCLOR 1232 AROCLOR 1242 AROCLOR 1248 AROCLOR 1254 AROCLOR 1254	<0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5	

#### SURROGATE PERCENT RECOVERIES

ISODRIN (%)

harter l'ar you as



	QUALITY	CONTRO	DL DATA	አጥፕ ኘ	n n	•	109617	
ľ	EST : POLYCHLORINATED BIPHENYLS (F	EPA METH	10D 608)			•	109017	
F	LIENT : EL PASO NATURAL GAS, PROJECT # : (NONE) PROJECT NAME : CHACO TANK REF I.D. : 10961701	, NEW ME	EXICO		LE MAJ	TRIX :	09/14/9 AQUEOUS UG/L	
	OMPOUNDS		CONC. SPIKED		-8 Ξ	SPIKED	DUP. % REC.	RPD
A	ROCLOR 1260	<0.5	5.0	4.7	94 5	5.0	100	6

perfation of

% Recovery = (Spike Sample Result - Sample Result) Х -----100 _____ Spike Concentration RPD (Relative % Difference) = (Spiked Sample - Duplicate Spike) Result Sample Result ____ X 100 Average of Spiked Sample

BARRINGER LABORATORIES INC. 15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689		
ANALYTICAL TECHNOLOGIES, INC. (Phoenix)	24-	Sep-91
9830 S. 51st St., Ste. B13 Phoenix, AZ 85044	Page: Copy: Set :	l of

Attn: Mary Tyer Project: 109617-18

Received: 10-Sep-91 13:53

PO #:

Job: 911679E

Status: Final

1 2 1

## Sample Type: Water

Sample	Total		Ra-228 Total <u>pCi/l</u>	U Total _mg/l	U Total <u>pCi/l(1)</u>
109617-1 109618-1		±0.4 ±0.4		 0.0050 0.0105	3.4 7.1

Meeting The Analytical Challenges Of A Changing World

	15000 W. 6TH AVE., SUITE 300			24	-Sep-91	
	ANALYTICAL TECHNOLOGIES 9830 S. 51st St., Ste. Phoenix, AZ 85044			Page: Copy: Set :	l of	2 2 2
	Attn: Mary Tyer Project: 109617-18	PO #:	Received:	10-Sep	-91 13:	53
	Job: 911679E		Sta	tus:	Final	
	Abbreviations:					
	Parameters:					
	Ra-228 : Ra	dium-226 dium-228 anium				
	<u>Units:</u>					
1	2σ : Co mg/l : mi	coCuries per liter ounting error at the lligrams per liter coCuries per liter				1.
	Job approved by: Signed: Ellen La Riviere Radiochemistry I	Y.C. Laboratory Manager				

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Meeting The Analytical Challenges Of A Changing World

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15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

24-Sep-91

ANALYTICAL TECHNOLOGIES, INC. (Phoenix) 9830 S. 51st St., Ste. B13 Phoenix, AZ 85044

Page: 1 Copy: 1 of 2 Set: 1

Attn: Mary Tyer Project: 109617-18

PO #:

Received: 10-Sep-91 13:53

Status: Final

Job: 911679E

QUALITY CONTROL REPORT

#### Sample Type: Water

Sample Id	Ra-226 Total pCi/l		Ra-228 Total pCi/l		U Total _mq/l
Duplicate Duplicate Duplicate % diff. Std (found value) Std (true value) Std % diff. Blank Spike % rec.	3.1 1.1 48 109 101 7.9	±1.8 ±1.3	0.0 0.7 100 29 32 9.4	±1.1 ±1.1	0.0045 0.0042 4.5 33 34 0.0 <0.0003 97

.

ANALYTICAL TECHNOL		hoenix)			-Sep-91	
9830 S. 51st St., Phoenix, AZ 8504				Page: Copy: Set :	1 of	
Attn: Mary Tyer Project: 109617-18		PO #:	Received:	10-Sep-	-91 13:	53
Job: 911679E		Y CONTROL R		tus:	Final	
	QUALIT	Y CONTROL R.	EPORT			
<u>Abbreviations:</u>						
Parameters:						
Ra-226	: Radium-226					
Ra-228 U	: Radium-228 : Uranium					
<u>Units:</u>						
pCi/l 2ơ mg/l	: picoCuries : Counting er : milligrams	ror at the	95% confiden	ce leve	1, 2σ	
Job approved by:						
Signed: D. Q. ( Approved						
Quality Ass	urance Departm	nent				

h

BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

ANALYTICAL TECHNOLOGIES, INC. (Phoenix) 9830 S. 51st St., Ste. B13 Phoenix, AZ 85044 24-Sep-91

Page: 3 Copy: 1 of 2

Received: 10-Sep-91 13:53

Project: 109617-18

PO #:

Status: Final

Job: 911679E

Attn: Mary Tyer

QUALITY CONTROL REPORT

QUALITY CONTROL DATA SHEET

Received by: gr

Via: Federal Express

Sample Container Type: 3 Pl L btl Sample Type: Water Preservative When Received: HNO3 Additional Lab Preparation: None

9/13- 9/19	9/19- 9/24 9/13- 9/19 9/16- 9/17	Seidel Howard	HNO3 HNO3	0.2 pCi/l 0.9 pCi/l	SM-705 904.0	Ra-226 Ra-228
					904.0 ASTMD2907	Ra-228 U

Signed:

Mark Burkhardt, Ph.D.

Laboratory Director

APPENDIX B MATERIAL DATA SAFETY SHEETS

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1105 Liters @ 1000PSI6,Cylinderi Instr./Elect. Shop in Warehouse in Warehouse Tark (3) A & B Compressors, Boiler Tank/East of Warehouse Building Tanks /Cooling Towers (A, B,C) Chemical Building Barrel-Chemical Building A,B,C Cooling Towers Tank (Gas Plant Area) **Chemical Building** Chemical Building Chemical Building **Chemical Building** Karehouse Karehouse Harehouse Harehouse Harehouse 2-6410 Gallon/1-6100 Tank 110 Gallons (2 Barrels) 110 Galions (2 Barrels) 3-8250 gal.1-8150 gal. 6 - 14 02. Cans 36 - 12 02. Cans 6 - 16 oz. Bottles 24 - 10 oz. Tubes 55 Gallon Barrel 24 - 12 Oz. Cans 2500 Gallons 750 Gallons 900 Gallons 55 Gallons Corporate Research & Development Continental Products of Texas Continental Products of Texas Imperial Oil & Brease Company Andesite of California Inc. Corporate Research & Developm Uniches International Scott Specialty Gases (hiches Internationa) Unichen International Unichen International Unichem International Uhichem International Phillips Petroleum Unichem International Unichem International Unichem International Unichem International Unichen International [hichen International Morton Thiokol, Inc. Taylor instrument Taylor Instrument Dow Chemical USA Magnaf l ux Formulabs Devon Crain N/A i Propane/Air 1.1 PCT, Test Bas 11/18/851 Quick-Dry Recorder Ink(Red/Blue) Tribol 890 (Light, Med., Heavy) Tristhylene Blycol-Technical **Zine Urganic Phosphonate** Regular Recorder Ink Sodium Hydroxide Spotcheck Spray Paint Hater Tracing Dye 490 Holub Gear Dil Safestep Sorbent Silicone Sealant Inleaded Basoline Vinegar (Bottles) Sodium Chloride SS-Concentrate Unichem 2310 Unichem 3030 Unichem 7227 Unichem 9035 Unichem 1000 Sulfuric Aid Uhichen 1300 Unichem 1700 Unichem 1705 Uhichen 2100 Unichem 3140 Unichem 3270 Unichem 4000 Varsol 1 Soda Ash 9 9 07/06/871 07/14/891 02/10/911 05/22/061 06/10/30 02/10/911 02/10/911 01/07/861 02/06/911 08/15/88/ 11/18/021 05/72 1 N/A 11/20/851 12/18/881 106/00/30 05/22/861 168/22/60 05/22/861 05/82 11/15/901 06/08/771 N/A B/N N/B A/A N/A 11/60 N/N E N **R**N

INVENTORY CONDUCTED BY 1

DATEs

TELEPHONE NUMBER: 611-3828

CHOCO PLANT INVENTORY SHEET FOR HAZARDOUS CHEMICALS

11/11/91

1. Framington division/Japod Area 2. Location: Cardo Alant 3. Demicri, type – plant/Marehouse Caemicrus

Image: Image in the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the s	DATE	CHENICH	MANUFACTURER	ICHEOK IF ICHEOK IF I	MAX ANDLINE OF	GENERAL LOCATION
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000         Memory Total (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1)         Second (0.1) <td>N/A I</td> <td>1 00/00</td> <td></td> <td></td> <td>55 Gallons</td> <td>Barrel-Chemical Building</td>	N/A I	1 00/00			55 Gallons	Barrel-Chemical Building
According         Recording         Recording         Recording         Recording         Record           Allow Siles         Allow Siles         Allow Siles         Allow Siles         Allow Siles         Allow Siles           Allow Siles         Allow Siles         Allow Siles         Allow Siles         Allow Siles         Allow Siles           Allow Siles         Allow Siles         Allow Siles         Allow Siles         Allow Siles         Allow Siles           Allow Siles         Allow Siles         Allow Siles         Allow Siles         Allow Siles         Allow Siles           Allow Siles         Allow Siles         Allow Siles         Allow Siles         Allow Siles         Allow Siles           Allow Siles         Allow Siles         Allow Siles         Allow Siles         Allow Siles         Allow Siles           Allow Siles         Allow Siles         Allow Siles         Allow Siles         Allow Siles         Allow Siles           Allow Siles         Allow Siles         Allow Siles         Allow Siles         Allow Siles         Allow Siles           Allow Siles         Allow Siles         Allow Siles         Allow Siles         Allow Siles         Allow Siles           Allow Siles         Allow Siles         Allow Siles         Allow Siles	N/A I	690 Heavy Tribol Oil			55 Gallons	Barrel-Chemical Building
Retricted Damase         Disconsey Obserts is, inc.         Disconsey Obserts is inc.         Disconsey Obserts is inc.         Disconsey Obserts is inc.         Disconsey Obserts is inc.         Disconsey Obserts is inc.         Disconsey Obserts is inc.         Disconsey Obserts is inc.         Disconsey Obserts is inc.         Disconsey Obserts is inc.         Disconsey Cases         Disconse         Disconse <thdisconse< th=""></thdisconse<>	N/A I	Absorption Dil		- * -	15,000 Gallons 1	Tank-Plant Area
Retivened Cachon         Continental Products of Tenas         1         1         2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2         0.0.2 <th0.0.2< th=""> <th0< td=""><td>N/B</td><td>Activated Alumina</td><td>Discovery Chemicals, Inc.</td><td>- ·</td><td></td><td></td></th0<></th0.0.2<>	N/B	Activated Alumina	Discovery Chemicals, Inc.	- ·		
Quast Multi-olities         Current (Marken)         Current (Marken)         Current (Marken)         Current (Marken)         Current (Marke	/22/821	Activated Carbon 1	Continental Products of Texas	 ,		
0 (Jab 512)         0 (Jab 512)         0 (Jab 512)         0 (Jab 512)           0 (Jab 512)         0 (Jab 512)         0 (Jab 512)         0 (Jab 512)           0 (Jab 512)         0 (Jab 512)         0 (Jab 512)         0 (Jab 512)           0 (Jab 512)         0 (Jab 512)         0 (Jab 512)         0 (Jab 512)           0 (Jab 512)         0 (Jab 512)         0 (Jab 512)         0 (Jab 512)           0 (Jab 512)         0 (Jab 512)         0 (Jab 512)         0 (Jab 512)           0 (Jab 512)         0 (Jab 512)         0 (Jab 512)         0 (Jab 512)           0 (Jab 512)         0 (Jab 512)         0 (Jab 512)         0 (Jab 512)           0 (Jab 512)         0 (Jab 512)         0 (Jab 512)         0 (Jab 512)           0 (Jab 512)         0 (Jab 512)         0 (Jab 512)         0 (Jab 512)           0 (Jab 512)         0 (Jab 512)         0 (Jab 512)         0 (Jab 512)           0 (Jab 512)         0 (Jab 512)         0 (Jab 512)         0 (Jab 512)           0 (Jab 512)         0 (Jab 512)         0 (Jab 512)         0 (Jab 512)           0 (Jab 512)         0 (Jab 512)         0 (Jab 512)         0 (Jab 512)           0 (Jab 512)         0 (Jab 512)         0 (Jab 512)         0 (Jab 512) <t< td=""><td>E E</td><td>Ajax 1</td><td></td><td>- ·</td><td>12 - 21 oz. Cans</td><td>Navehouse</td></t<>	E E	Ajax 1		- ·	12 - 21 oz. Cans	Navehouse
Addition (1) F. (Contarts         Distribution         Distrestend from the stend the stend the stend the stend the	15/871	Alpha 512 1	Unichem International		110 Gallons (2 Barrels)	Chemical Building
Abit Joints         Des Obseitoit         Des Obseitoit         Not Abit Joints         S is Joints         S is Joints         S is Joints         S is Joints         S is Joints         S is Joints         S is Joints         S is Joints         S is Joints         S is Joints         S is Joints         S is Joints         S is Joints         S is Joints         S is Joints         S is Joints         S is Joints         S is Joints         S is Joints         S is Joints         S is Joints         S is Joints         S is Joints         S is Joints         S is Joints         S is Joints         S is Joints         S is Joints         S is Joints         S is Joints         S is Joints         S is Joints         S is Joints         S is Joints         S is Joints	722/861	Alpha 570 H	Unichem International	-	110 Gallons (2 Barrels) 1	Chemical Building
Meil-Seits         F.B. PR0         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I	10/061	Ambitrol (R) FL Coolant I	Dow Chemical	-	2000 Gallons	Tank (Turbine Area)
Heil-Shize Showy Can         F.B. ORD         X         I         6         -16. ct. Cans.           Buttan         Buttan         Buttan         Statem         5 allons         -1 qt. Bottles           Buttan         Current Dioxids         Nutween Statem         Bittan         5 allons         -1 qt. Bottles           Current Dioxids         Nutween Statem         Browne         Browne         Statem         5 allons           Carent Dioxids         Nutween Statem         Browne         Browne         Browne         5 allons           Carent Dioxids         Nutween Statem         Browne         Browne         1 allons         5 allons           Carent Dioxids         Dioxids         Carent Research & Lewen         Browne         1 allons         5 allons           Carent Dioxids         Dioxids         Browne         1 allons         5 allons         5 allons           Carent Dioxids         Browne         Browne         1 allons         5 allons         5 allons           Dioxids         Browne         Browne         Browne         1 allons         5 allons         5 allons           Dioxids         Browne         Browne         Browne         1 allons         5 allons         5 allons           Dioxid	<u>اه</u> ا	Anti-Seize I	FEL. PHO	- - × -	12 - 10 oz. Cans I	Harehouse
Device Leaver         Big Join         It         It <td></td> <td>Anti-Seize Spray Can</td> <td>FEL PRO</td> <td>- x -</td> <td>6 - 16 oz. Cans 1</td> <td>Narehouse</td>		Anti-Seize Spray Can	FEL PRO	- x -	6 - 16 oz. Cans 1	Narehouse
Butane         Butane         Chronics         Chronics         Chronics         Consolidation         Consol	<u>ه</u>	Bowl Cleaner f	Big John		6 - 1 qt. Bottles 1	Marehouse
Carbon Direction         Matheeon Gas Products         Image: Constraint Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signal Signa Signal Signa Signal Signal Signal Signal Signal Signal Signal Si	31/801	Butane	Graves Butane	-	5 Gallons	Evaporation Ponds
Catastic Solaris Solution Sol,         Den Densical ISA         Image: Solution Sol,         Den Densical ISA         Image: Solution Sol,         Den Densical ISA           Claster/Baser         Distribution         Electronic Image: Solution Sol,         Electronic Image: Solution Solution Solution Solution         Electronic Image: Solution Solution         Electronic Image: Solution Solution         Electronic Image: Solution Solution         Electronic Image: Solution Solution         Electronic Image: Solution Solution         Electronic Image: Solution Solution         Electronic Image: Solution Solution         Electronic Image: Solution Solution         Electronic Image: Solution Solution         Electronic Image: Solution Solution         Electronic Image: Solution Solution         Electronic Image: Solution Solution         Electronic Image: Solution Solution         Electronic Image: Solution Solution         Electronic Image: Solution Solution         Electronic Image: Solution Solution         Electronic Image: Solution Solution         Electronic Image: Solution Solution         Electronic Image: Solution Solution         Electronic Image: Solution Solution         Electronic Image: Solution         Electronic Image: Solution         Electronic Image: Solution         Electronic Image: Solution         Electronic Image: Solution         Electronic Image: Solution         Electronic Image: Solution         Electronic Image: Solution         Electronic Image: Solution         Electronic Image: Solution         Electronic Image: Solution         Electronic Image: Solution         Electroni	/82	Carbon Dioxide	Natheson Gas Products	-	-	
Classies         Composite Reserved & Development         I         6         1504 Cylinders           Classer/Resource Preservant         Nagnef Just         X         6         -1504 Cylinders           Contact Comment         Instrument         Nagnef Just         X         6         -14.02. Canes           Contact Comment         Nagnef Just         Nagnef Just         1         6         -14.02. Canes           Devolutions         Uniches Interviewal         Nagnef Just         1         6         -2.804 Cylinders           Devolutions         Uniches Interviewal         Uniches Interviewal         1         6         -14.02. Canes           Diseal Fault         Uniches Interviewal         Uniches Interviewal         1         6         -14.02. Canes           Diseal Fault         Uniches Interviewal         Uniches Interviewal         1         1         6         -14.02. Canes           Diseal Fault         Uniches Interviewal         Uniches Interviewal         Instrument         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1	14/901	Caustic Soda Solution 50%, I	Dow Chemical USA	-	2100 Gallons	Tank/South Side Water Treater
Classer/Memore Perservent         Regner/Lux         X         6 - 14 0b. Cans           Connercial Instrument         Nation         Nation         Nation         Nation           Connercial Instrument         Nation         Nation         Nation         Nation           Developer         Heriolog         Nation         Nation         Nation         Nation           Disel Facil &         Distent Facil         Unithent Instrument         N         F         S Gallon Surveil           Disel Facil &         Distent Facil &         Distent Facil &         Distent Facil &         Distent Facil &         Distent Facil &         Distent Facil &         Distent Facil &         Distent Facil &         Distent Facil &         Distent Facil &         Distent Facil &         Distent Facil &         Distent Facil &         Distent Facil &         Distent Facil &         Distent Facil &         Distent Facil &         Distent Facil &         Distent Facil &         Distent Facil &         Distent Facil &         Distent Facil &         Distent Facil &         Distent Facil &         Distent Facil &         Distent Facil &         Distent Facil &         Distent Facil &         Distent Facil &         Distent Facil &         Distent Facil &         Distent Facil &         Distent Facil &         Distent Facil &         Distent Facil &         Distent Facil &	- 2	Chlorine I	Corporate Research & Development	-	6 - 150# Cylinders	Outside/South Side of Water Treater
Connected Instrument (M (Mod)         Taylor Instrument         I         Folder         Instrument         Major (Incl)         Taylor Instrument         6 - 2 or. Cans         Context Cannon         Major (Incl)         Taylor Instrument         6 - 2 or. Cans         Solidon Barrel           Devoliding         Barrfactant         Unichem Internantional         I         I         6 - 16 or. Cans         Solidon Barrel           Devoliding         Barrfactant         Unichem Internantional         I         I         6 - 16 or. Cans           Devoliding         Barrfactant         Unichem Internantional         I         I         6 - 16 or. Cans           Electic Contact Clasmer         Electic Contact Clasmer         Terribae Division         I         I         6 - 16 or. Cans           Electic Martheon         Electic Martheon         I diston         Barrel         I         I diston           Blass Clasmer         Electic Martheon         Electic Martheon         Electic Martheon         Electic Martheon         Electic Martheon           Hyphorohiloric Reid, Marilatic Reid         Data Instrument         I diston         Electic Martheon         Electic Martheon         Electic Martheon           Hyphorohiloric Reid, Marilatic Reid         Data Instrument         I diston         Electic Martheon         Electic Mart		Cleaner/Remover Penetrant I	Magnaf ] ux		6 - 14 Dz. Cans 1	Warehouse
Context Density         Withold         I         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H	_	Commercial Instrument Ink (Red) 1	Taylor Instrument	-	-	
Devolution         Devolution         Regretium         I         6         16.0. Class           Devoluting Startacted         Unichen International	۹ ۱	Contact Cement i	Wilhold		6 - 32 oz. Cans	Harrehouse
Deciling Serfactant         Unidem International         Image Interest         Station Barrel           Dister Ford         Giant Refining Company         X         5 - 16 co. Cans           Electic Context Cleaner         Terr-Tube Division         X         6 - 16 co. Cans           Ethane         Riverson Bas Products         X         6 - 16 co. Cans           Ethane-Program Nix         Citeres Force 011 & Gas Con.         X         6 - 16 co. Cans           Ethane-Program Nix         Citeres Force 011 & Gas Con.         X         12 - 19 or. Cans           Foutboro 1800 Jak/appeous Int         Harding Glass Con.         X         12 - 19 or. Cans           High Terrecture Int (Rei)         Taylor Instrument         12 - 19 or. Cans         500 Gallons           Hydrenotic Acid, Muriatic Reide         National Sanitary Supply Con.         X         12 - 19 or. Cans           Hydrenotic Acid, Muriatic Reide         National Sanitary Supply Con.         X         12 - 19 or. Cans           Hydrenotic Reide         National Sanitary Supply Con.         X         12 - 20 cr. Cans           Hydrenotic Reide         National Sanitary Supply Con.         X         12 - 20 cr. Cans           Hydrenotic Reide         National Sanitary Supply Con.         X         12 - 20 cr. Cans           Noncter Loone	٩ -	Developer I	Magnaflux	- x -	6 - 14 Oz. Cans 1	Marrehouse
Utreal Feel RC         Giant Berfining Company         1         150 Gallons           Electic Contact Cleaner         Desterson         1         1         6         6 o. Cans           Electic Contact Cleaner         Desterson         1         1         6         6 o. Cans           Electic Contact Cleaner         Christic         Desterson         1         1         6         6 o. Cans           Ethane         Nathenon Bix         Cities Service 0:1 4 Bas Corp.         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1	2/861	De-oiling Surfactant I	Unichem International	-	55 Gallon Barrel	Mest Side of B Compressor
Electic Context Cleaner         Desterson         X         6 - 16 co. Cans           ENAme Program Nix         Ethaner Program Nix         Cities Service 011 4 6as Corp.         1           Ethaner Program Nix         Ethaner Program Nix         Cities Service 011 4 6as Corp.         1           Foutoro 100 Ink/Ngamons Ink         Retexon 6an party         1 as Cities Service 011 4 6as Corp.         1           High Tagenestives Ink         Retronting Ellans Co.         X         1         12 - 19 or. Cans           High Tagenestives Ink (Red)         Involue Ellan Cons         Involue 10 1 (Red)         1         12 - 19 or. Cans           High Tagenestives Ink (Red)         Involue 10 1 (Red)         Doe Ormical         1         12 - 19 or. Cans           Hydrochloric Acid, Nuriatic Acide         Doe Ormical         1         1         12 - 19 or. Cans           Hydrochloric Acid, Nuriatic Acide         Doe Ormical         Nurvel San tary Supply Co.         1         12 - 2 0r. Cans           Hydrochloric Acid, Nuriatic Acide         Doe Ormical San tary Supply Co.         X         12 - 2 0r. Botties           Hydrochloric Acide         Doe Ormical San tary Supply Co.         X         12 - 2 0r. Botties           Hydrochloric Acide         Name San tary Supply Co.         X         12 - 2 0r. Botties           Mine	178/61	Diesel Fuel #2	Giant Refining Company	-	150 Gallons	A Compressor Area/North Side
EMD Pipe         Ten-Tube Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the Division         Image of the	<u>م</u>	Electic Contact Cleaner 4	Chesterson	- × -	6 - 16 oz. Cans	Marehouse
Ethane         Nutheson Bas Products         Iteration	8	ERN Pipe	Tex-Tube Division	·	<b>-</b>	
Followor 1800     Interfactore under and component with the forder company     Iter Forder to an interfactore in the forder company       High Temperature Ink (Reci)     Tar Forder Company     Iter Forder Company     Iter Forder Company       High Temperature Ink (Reci)     Tarylor Instrument     Isylor Instrument     Isolo Saltons       Hydrochloric Acid, Muriatic Acids     Dow Omenical     Isylor Instrument     Isolo Saltons       Hydrochloric Acid, Muriatic Acids     Dow Omenical     Isylor Instrument     Isolo Saltons       Hydrochloric Acid, Muriatic Acids     Dow Omenical     Isylor Instrument     Isolo Saltons       Hydrochloric Acids     Mutiany Supply Co.     Isolo Saltons     Isolo Saltons       Hydrochloric Acids     Mutiany Supply Co.     Isolo Saltons     Isolo Saltons       Liquid Dome     Mutiant Spirity Same     Kethane     Isolo Saltons       Muthane     Muthane     Kethane     Solo Saltons       Muthane     Muthane     Kethane     Solo Saltons       Muthane     Muthane     Solo Saltons     Saltons       Muthane     Nobil Oli Corporation     Kethane     Solo Saltons       Muthane     Kethane     Nobil Oli Corporation     Kethane       Muthane     Kethane     Nobil Oli Corporation     Kethane       Mobil Oli Segars 490     Nobil Oli Corporation	8		Natheson Gas Products			
Protocol Low Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations     Intervations </td <td></td> <td>Ethane-Propane Mix</td> <td>Lities Service Uil &amp; 645 Corp.</td> <td></td> <td></td> <td></td>		Ethane-Propane Mix	Lities Service Uil & 645 Corp.			
Hurst Losen       Harling       Faronal Stantary Supply Co.       Itelementation (apple)         Hydrochloric Exid, Muristic Acid       Dow Omerical       Itelementation       1500 Ballons         Hydrochloric Exid, Muristic Acid       Dow Omerical       Itelementation       1500 Ballons         Hydrochloric Exid, Muristic Acid       Dow Omerical       Itelementation       2500 Ballons         Knocker Loose       Knocker Loose       Karsh Bas, Nutural Gas       X       12 - 9 0s. Cans         Methame       Methame       Marsh Bas, Nutural Gas       X       12 - 9 0s. Cans         Methame       Methame       Marsh Bas, Nutural Gas       X       12 - 9 0s. Cans         Methame       Methame       Marsh Bas, Nutural Gas       X       12 - 9 0s. Cans         Methame       Methame       Acot Specialty Gases       X       12 - 9 0s. Cans         Methame       Methame       Acot Specialty Gases       X       15 - 3 0s. Cans         Methame/life 2.054 Test Bas       Notif Gase       Acot Chemical       Down Special       1 - 1 5 0s. Cans         Methame/life 2.051 Test Bas       Notif Gase       Acot Chemical       Down Special       1 - 1 5 0s. Cans         Mobil DE 797 Dil       Mobil DE 797 Dil       Mobil Dil Corporation       X       2 0s. Cans		Foxboro 1600 1mk/mgueous 1mk	Ine Foxboro Company			11
Mydrochloric Reid, Nuriatic Reide     Dow Onemical     3500 Gallons       Hydrochloric Reid, Nuriatic Reide     Dow Onemical     Not Onemical     12 - 9 0s. Cans       Hydrochloric Reid     Nuriatic Reide     National Sanitary Supply Co.     1     12 - 9 0s. Cans       Liquid Drain Rawy     Narsh Easy Natural Gas     X     1     12 - 9 0s. Cans       Liquid Drain Rawy     Narsh Easy Natural Gas     X     1     12 - 9 0s. Cans       Liquid Drain Rawy     Narsh Easy Natural Gas     X     1     12 - 9 0s. Cans       Nethane/Rin 2.55K Test Bas     Scott Specialty Eases     X     1     16 - 22 os. Bottles       Nethanol     Nethanol     Nervo Chesical Company     1     1     6 - 22 os. Bottles       Nethanol     Nethanol     Nethanol     Nervo Chesical Company     1     1     6 - 22 os. Bottles       Notil Eos     Nethanol     Nervolut     Nervolut     1     1     1     1       Notil Eos     Nethanol     Nervolut     Nervolut     Nervolut     1     1     1       Notil Eos     Nethanol     Nervolut     Nervolut     Nervolut     1     1     1       Notil Eos     Netheoli Oil Corporation     Nervolut     Netheol     1     1     1       Notil Eos     Neth <td></td> <td>Ulass (Jeaner (spray)</td> <td>Harvoling blass Lo.</td> <td></td> <td>1 &lt; 13 02. Lans</td> <td>ashouse</td>		Ulass (Jeaner (spray)	Harvoling blass Lo.		1 < 13 02. Lans	ashouse
Worker Loose     Water Arrow mutator and anitary Supply Co.     X     12 - 9 0 Cars       Upper Arrow mutator and anitary Supply Co.     K     12 - 9 0 Cars       Upper Arrow mutator and anitary Supply Co.     K     12 - 9 0 Cars       Upper Arrow mutator and anitary Supply Co.     K     12 - 9 0 Cars       Upper Arrow mutator and anitary Supply Co.     K     12 - 9 0 Cars       Matham     Markham     Kersh Eas     Scott Specialty Sases     X     12 - 9 0 Cars       Matham     Matham     Scott Specialty Sases     X     130 Gallons     Bottles       Methame/Rin 2.55% Test Eas     Scott Specialty Sases     X     150 Gallons     150 Gallons       Mobil 001 Corporate Research & Development     Nobil 011 Corporation     1     150 Gallons     150 Gallons       Mobil 101 Corporation     Nobil 011 Corporation     1     1     24 Quart Bottles       Mobil 101 Corporation     1     1     1     1     1       Mobil 101 Corporation     1     1     1     1     1       Mobil 101 Corporation     1     1     1     1     1       Mobil 102 NH. 40 0H.     Mobil 011 Corporation     1     1     1       Mobil 103 NH. 40 0H.     Matheson Eas Products     1     1     1       Mobil 103 NH. 4		High lemperature ink (Med)   Accortania Acid Accidation Acida 1	laylor Instrument			Tank (Carthe Cide Vetamore)
With the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second seco		NUMBER OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION OF A DESCRIPTION	Notional Caritorne Construction			
Liquid Drein Amay       Narch Bas, Natural Gas       X       6 - 2 or. bottles         Nethane/Air 2.557 Test Bas       Narch Sas       Natural Gas       X       5 Ballom Bottles         Nethano/I       Rethano/I       Arco Chemical Company       1       5 Gallom Bottles         Nethano/I       Rethano/I       Arco Chemical Company       1       150 Galloms         Nobil 600 & Cylinder Oil       Arco Chemical Company       1       150 Galloms         Nobil 600 & Cylinder Oil       Nobil Oil Corporation       1       1       150 Galloms         Nobil 901 100 V Cylinder Oil       Nobil Oil Corporation       1       1       150 Galloms         Nobil 901 200 M Cylinder Oil       Nobil Oil Corporation       1       1       150 Galloms         Nobil 901 500 M Cylinder Oil       Nobil Oil Corporation       1       1       150 Galloms         Nobil 901 500 M Cylinger HD 80050       Nobil Oil Corporation       1       1       26 Galloms         Notor Oil 3000 M Cylinger HD 80050       Nobil Oil Corporation       1       1       26 Galloms         Notor Oil 3000 M Cylinger M Samo       Notor 1       1       24 Gart Bottles         Notor Oil 300 M Cylinger M Samo       1       1       1       1         Notor Oil 300 M Samo			w Andre Aussung mantan			and the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second sec
Mathema     Markhame     Markhame     Markhame     Markhame     Markhame     Markhame     Markhame     Markhame     Markhame     Solid		Innumer Lucker		 	1 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -	
Methane/Alir 2.55% Test Eas         Scott Specialty Eases         X         5 Ballow Bottles           Wethane/Alir 2.55% Test Eas         Arco Chemical Company         1         150 Gallows           Wobil 600 W Cylinder Oil         Arco Chemical Company         1         150 Gallows           Wobil 600 W Cylinder Oil         Mobil 0il Corporation         1         1         150 Gallows           Wobil 901 0il         Nobil 0il Corporation         1         1         1         150 Gallows           Wobil 901 0il         Nobil 0il Corporation         1         1         1         1         150 Gallows           Wobil 901 0il         Nobil 0il Corporation         1         1         1         1         150 Gallows           Wobil 99900         Nobil 0il Corporation         1         1         1         1         55 Gallows           Wobil 99900         Nuk 4 do Nt.         Nobil 0il Corporation         1         1         24 Quart Bottles           Wotor 0il 30 Wt. 4 do Nt.         Matheson Gas Products         1         1         1         1           Wotor 0il 30 Wt. 4 do Nt.         Matheson Gas Products         1         1         1         1         1         1           Notor 0il 30 Wt. 4 do Nt.         Matheson Gas Products </td <td></td> <td></td> <td>Manch Rae, Matural Rae</td> <td></td> <td></td> <td></td>			Manch Rae, Matural Rae			
Withmol     Arco Chemical Company     I     150 Gallons       Mobil 600 W Cylinder Oil     Robil Oil Corporation     I     I     150 Gallons       Mobil 600 W Cylinder Oil     Robil Oil Corporation     I     I     150 Gallons       Mobil 600 W Cylinder Oil     I     Robil Oil Corporation     I     I       Mobil 988us 490     I     Mobil Oil Corporation     I     I       Mobil 988us 490     Mobil Oil Corporation     I     I     I       Mobil 988us 490     Mobil Oil Corporation     I     I     I       Mobil 988us 490     Mobil Oil Corporation     I     I     I       Mobil 981 01     Corporation     I     I     I     I       Motor Oil 30 W. 4 40 W.     Matheson Gas Products     I     I     I       Mitrogen     Matheson Gas Products     I     I     I     I       Mattrogen     Matheson Gas Products     I     I     I     I       Paint Remover<(Spray)	 1 g	Methane/Air 2.55% Test Gas 1	Scott Specialty Gases	 	5 Gallon Bottles	Instr/Electric Shop in Warehouse
Mineral Spirits, Type I       Corporate Research & Development       1       1         Mobil 600 W Cylinder Oil       Nobil Oil Corporation       1       1       Nobil Oil Corporation       1         Wobil 600 W Cylinder Oil       1       Nobil Oil Corporation       1       1       1       1         Wobil 99gaus 490       1       Nobil Oil Corporation       1       1       1       1         Wobil 99gaus 490       1       Nobil Oil Corporation       1       1       1       1         Wobil 99gaus 490       1       Nobil Oil Corporation       1       1       1       1       1         Notor Oil 30 Wr. 4 A0 Wr.       Natheson 6as Products       1       1       1       26 Guart Bottles       1         Nitrogen       Natheson 6as Products       1       1       1       1       25 Gallons         Paint Remover<(Spray)	1/061	Methanol	Arco Chemical Company	-	150 Gallons	(1) Tank/A Compressor Area
Mobil 660 W Cylinder Gil       Mobil DTE 797 Gil       Mobil DTE 797 Gil       Mobil DTE 797 Gil       Mobil DTE 797 Gil       Mobil DTE 797 Gil       Mobil DTE 797 Gil       Mobil DTE 797 Gil       Mobil DTE 797 Gil       Mobil Gil       Corporation       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I	11/841	Mimeral Spirits, Type I /	Corporate Research & Development		. –	-
Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mobil DTE 797 0il       Mo	5/841	Nobil 600 N Cylinder Oil 1	Mobil Oil Corporation		-	
Wohil Pegasus 490       Nohil Oil Corporation       1       1       55 Gallons         Modoilgear HD 80490       Nohil Oil Corporation       1       1       55 Gallons       1         Motor Oil 30 Wt. 4 40 Wt.       Natheson Eas Products       1       1       1       24 Quart Bottles       1         Nitrogen       1       Natheson Eas Products       1       1       1       24 Quart Bottles       1         Nate       1       1       1       1       1       1       1       1         Paint       1       1       1       1       1       1       1       1       1       1       1         Paint Remover<(Spray)	7/841	Mobil DTE 797 Dil	Mobil Oil Corporation	-	-	
Mobilger HD 80490       I       Mobil Dil Corporation       I       I       55 Gallons       I         Motor Dil 30 Ut. 4 40 Ut.       Natheson Eas Products       I       X       I       I       24 Quart Bottles       I         Nitrogen       I       Natheson Eas Products       I       I       I       I       24 Quart Bottles       I         Nitrogen       I       Natheson Eas Products       I       I       I       I       I         Paint       I       I       I       I       I       I       I       I         Paint Remover       Spenvin Williams       I       X       I       I       6 - 15 oz. Cans       I         Paint Thinner       I       I       I       I       I       I       I       I	6/621	Mobil Pegasus 490	Mobil Oil Corporation	-	-	
I       Motor Oil 30 Wt. 4 40 Wt.       I       X       I       I       24 Quark Bottles       I         I       Nitrogen       I       Natheson Gas Products       I       I       I       I       I         I       N-Butane       I       Natheson Gas Products       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       <	128/6	Mobilgear HD 80M90 F	Mobil Bil Corporation	-	55 Gallons	Barrels - Chemical Building
I     Nitrogen     I     Natheson Gas Products     I     I       I     N-Butane     I     Natheson Gas Products     I     I       I     Paint     I     I     I     I       I     Paint Remover (Spray)     I     Sherwin Williams     I     X     I       I     Paint Remover (Spray)     I     Sherwin Williams     I     X     I     I	÷	Notor Dil 30 kt. 4 40 kt. –			24 Quart Bottles	Karehouse
N-Butane     Natheson Gas Products     1     1     1       Paint     Paint Remover (Spray)     1     X     1     1     41     1     61     1       Paint Remover (Spray)     1     X     1     1     1     6     15     02. Cans       Paint Remover     1     X     1     1     1     1     1	- 59	Nitrogen	Matheson Gas Products	·		
Paint Remover (Spray)   Sherwin Williams   X     4 = 1 Ballon Lans   Paint Remover (Spray)   Sherwin Williams   X     6 = 15 oz. Cans   Paint Thimmer   Paint Thimmer   X     1 2 = 1 Gallon Cans	<b>1</b> 8	A But are	Matheson Sas Products	 ,		
I Paint Remover (Spray) I Sherwin Williams I K I I 6 - 15 02. Lans I Paint Thimmer I Paint Thimmer I 2 - 1 Gallon Cans I		Paint			41 - 1 ballon Cans 1	Warrehouse 
		Paint Remover (Spray)	Sherwin Williams		6 - 15 oz. Cans	Warrehouse
	۹. ۱	Paint Thimmer			12 - 1 Gallon Cans	karehouse

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DISCOVERY CHEMICALS, INC. MATERIAL SAFETY DATA SHEET Emergency Phone 504 389-9945

## **PRODUCT IDENTIFICATION:**

TRADE NAME:	Activated Alumina
CHÉMICAL FAMILY:	Aluminum Oxide
CHEMICAL FORMULA:	A1 20 3
CAS NOT:	1344-28-1

## SUMMARY OF HAZARDS:

Mild irritant to the eyes and respiratory system.

## CHEMICAL AND PHYSICAL PROPERTIES:

APPEARANCE/ODOR:	White crystalline/no odor.
MELTING POINT:	>3000°F
SOLUBILITY IN WATER:	Insoluble.

FIRE AND EXPLOSION HAZARDS:

FLASH POINT (METHOD):Nonflammable.EXTINGUISHING MEDIA:None required.HAZARDOUS THERMAL DECOMPOSITION PRODUCTS:<br/>NoneNoneSPECIAL FIRE FIGHTING PROCEDURES:<br/>NoneNone

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

## **REACTIVITY DATA:**

STABILITY:	Stable.
CONDITIONS TO AVOID:	None
MATERIALS TO AVOID:	None '
HAZARDOUS POLYMERIZATION:	Will not occur.

Continental Produ	ects of T	'exas		tivated Carbon	
100 Industrial • P.O. Box 3627 •	-		<b></b>		<u></u>
Telephone No. (915) 33	7-4681			NFPA Designation 704	
MATERIAL SAFETY DA	TA SHEE	Ţ	HAZARD RATING 4 - EXTREME 3 - HIGH 2 - MODERATE 1 - SLIGHT 0 - ENSIGNIFICANT	MEALTH O O	REACTIVIT
SECTION 1 - IDENTITY				SPECIFIC MAZARD	
Common Name: (used on label) (Trade Name & Synonyms)	fben		-		
Chemical Activated Carbon		Formula	NA		
Chemical Carbon					
Cas No. NA					
SECTION 2 - HAZARDOUS INGRED	IENTS				
Plazardous Component(s)	•		Threshold Limit Value	(units)	
NA					
SECTION 3 - PHYSICIAL & CHEMIC	AL CHARACTE	RISTICS (Fi	re & Explosive D	ata)	· · · · ·
oiling NA bint NA	Specific Gravity (H ₂ O = 1)	NA	Vapor Pressure (mm Hg)	NA	
Percent Volatile by Volume (%) NA	Vapor Density (Air = 1)	NA	Evaporation Rate (= 1)	NA	
plubility					
Water NA	Reactivity in Water	NA			
Appearance od Odor NA	Water	NA	· · ·		
Water NA		na Na	Extinguisher Media N	Auto-Imition	NA
Appearance and Odor NA	Water Flammable Limits		Extinguisher	Auto-Ignition	NA
Water NA Appearance of Odor NA Pash Point NA (Decial Fire	Water Flammable Limits in Air % by Volume		Extinguisher	Auto-Ignition	NA
Water NA Appearance od Odor NA Pash Point NA Special Fire shting Procedures NA Unusual Fire and	Water Flammable Limits in Air % by Volume		Extinguisher	Auto-Ignition	NA
Water NA Appearance NA ash Point NA Secial Fire shting Procedures NA Unusual Fire and Explosion Hazards NA SECTION 4 - PHYSICAL HAZARDS	Water Flammable Limits in Air % by Volume	NA 	Extinguisher	Auto-Ignition	NA
Water NA Appearance NA ash Point NA Special Fire shting Procedures NA Unusual Fire and Explosion Hazards NA SECTION 4 - PHYSICAL HAZARDS	Water Flammable Limits in Air % by Volume Lower Upper	NA 	Extinguisher	Auto-Ignition	NA
Water NA Appearance NA ash Point NA Secial Fire ghting Procedures NA Unusual Fire and Explosion Hazards NA SECTION 4 - PHYSICAL HAZARDS THE UNSTABLE	Water Flammable Limits in Air % by Volume Lower Upper	NA 	Extinguisher	Auto-Ignition	

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Threshold N Limit Value	IA								,	
Signs and Symptom	s of Exposure			•						
1. Acute	-									
Overexposure	NA									
Chronic Overexposure	NA									
Medical Conditions Aggravated by Expo		NA				· ·				
Chemical Listed as or Potential Carcing		UN				ology Program	1.A.R.C. Yes	Monographs	OSHA Yes	No
OSHA Permissible Exposure Limit	NA				CGIH Thresh mit Value	oid NA		Other Exposur Limit Used	ne NA	
Emergency and First Aid Procedure	<b>:</b>					•.				
1. Inhalation	NA									
		` <i>+</i>								
2. Eyes	NA									
	2									
kin	NA									
	NA									
_										
4. Ingestion	NA									
CTION 6 -	SPECIAL	PROTE	CTION	INFOR	MATION	·····			<del></del>	<u> </u>
Respiratory Protection (Specify Type)	Nuisar	ice Mas)	t for j	possibl	le dusk Mecha	nical	Special		Other	<u>(</u>
Respiratory Protection (Specify Type) Ventilation Y Protective	Nuisar	ice Mas) Lo Ex	t for		le dusk Mecha (Gener Eye	nical al) Yes	·		Other	<u>'</u>
Respiratory Protection (Specify Type) Ventilation Y Protective	Nuisar	ice Mas) Lo Ex	t for j	possibl	le dusk Mecha (Gener	nical al) Yes	Special 7 goggles		Other	<u>`</u>
Respiratory Protection (Specify Type) Ventilation Y Protective	Nuisar Yes ot necessa	ice Mas) Lo Ex	t for j	possibl	le dusk Mecha (Gener Eye	nical al) Yes			Other	<u>'~</u> _
Respiratory Protection (Specify Type) Ventillation Protective Gloves NO Other Protective	Nuisar Yes ot necessa	ice Mas) Lo Ex	t for j	possibl	le dusk Mecha (Gener Eye	nical al) Yes			Other	<u>'</u>
Respiratory Protection (Specify Type) Ventilation Y Protective Cloves NO Other Protective Clothing or Equipment	Nuisar Yes ot necessa n None	ice Mas) Lo Ex	t for the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second	possib) Yes	le dusk Mecha (Gener Eye Protec	nical Yes al) Yes lion Safety	y goggles		Other	<u>'</u>
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INTERNATIONAL	أأحداث فالمحدد والمحي والمحاد المحاد والمحاد المحاد والمحاد	Previous Sheet	
	I. PRODUCT IDENT		
Unichem International	707 N. Leech/P. 0. EMERGENCY TELE	EPHONE NUMBER	505) 393-7751
Trade Name ALPHA 512			
'Chemical Description	Proprietary Microbiocide		
۰ ج	II. HAZARDOUS ING	SREDIENTS	
Material — Potassium (Dimethyldithe Methanol CAS# 000-067-56) — Neither this product nor	iocarbamate CAS# 128-03-0 1 its ingredients are list	None Established 200 ppm (Skin) 8	Hour TWA or 260 mg/m ³
1910.1200 sources as card			an ta <b>ba san</b> a si na pari ta si si si si sana si
	III. PHYSICAL	DATA	
Boiling Point, 760 mm H	Hg 150°F (Initial) Free	zing Point	-35°F
Specific Gravity (H ₂ O=		pility in Water	Complete
Appearance and Odor	Brown Clear Liquid; Alco	holic - Sulfur Odo	innerstregetz in inn over die staten van die eine E
IV.	FIRE AND EXPLOSIO	N HAZARD DATA	n an an an an an an an an an an an an an
Flash Point (Test Metho	Dd) _{69°F TCC}		·····
Extinguishing Media , water spray to cool fire-	Carbon Dioxide, Dry Chemi -exposed containers.	cal, Water Spray,o	r:Fog, Foam Use a
Special Fire Fighting I apparatus and full protect nature of this chemical.	Procedures Firefighter ctive clothing. Firefigh	s should wear self ters should be mad	-contained breathing a ware of the corrosiv
Unusual Fire and Explose dangerous fire hazard whe oxidizing agents.			losion hazarð and a an react vigorously wi

Page 2 of 2 Product ALPHA 512
V. HEALTH HAZARD DATA
Threshold Limit Value Not Determined
Effects of Overexposure Contact will cause burns to the skin and severe damage to the eyes. Inhalation of vapors or mists will irritate the entire respiratory tract. Ingestion will cause irritation and burning of the digestive tract. Harmful or fatal if swallowed. Symptoms of overexposure to liquid or vapor include dizziness visual impairment, nausea, and narcosis.
Emergency and First Aid ProceduresEyes: Flush promptly with copious quantities of water for at least fifteen minutes. Seek medical attention. Skin: Flush area with water. Wash with soap and remove contaminated clothing. Inhalation: Remove to fresh air. Apply artifical respiration if ncessary. Ingestion: Call a physician. Induce vomiting, if con- scious. Give patient water or milk.
VI. REACTIVITY DATA
Stability Stable X Conditions to Avoid None
Incompatibility (Materials to Avoid) Stongly Acidic Materials, Oxidizers
Hazardous Decomposition of Products Oxides of Carbon, Nitrogen, and Sulfur Carbon Disulfide, Dimethylamine
Hazardous Polymerization May Occur Conditions to Avoid Will Not Occur x None
VII. SPILL OR LEAK PROCEDURES
Steps to be Taken if Material is Released or Spilled Provide adequate ventilat n. Remove sources of ignition. Contain and absorb spill. This material is toxic to fish.
Waste Disposal Method Dispose via a licensed waste disposal company. Follow local,
VIII. SPECIAL PROTECTION INFORMATION
Respiratory Protection (Specify Type) Use air-supplied or self-contained breathing apparatus if exposure levels exceeds TLV for this product or its ingredients.
Ventilation : Local Exhaust As needed to prevent Special None
Mechanical (General) vapors above Other None
Protective Gloves Rubber Eye Protection Safety Glasses, Goggles, and/or Face Shield
Other Protective Equipment Overalls, Rubber Boots, Eyewash Stations, Safety Showers
IX. SPECIAL PRECAUTIONS
Precautions to be Taken in Handling and Storing store in cool, well-ventilated, low fire-risk area away from ignition sources and incompatable materials. Keep containers clos when not in use.
Other Precautions Avoid prolonged or repeated breathing of vapors or contact with skin. Do not ingest.

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## INGREDIENTS

**ALPHA 570** 

Active Ingredients:         Alkyl ( $C_{12}$ , 61%; $C_{14}$ , 23%; $C_{16}$ , 11%; $C_{8}$ & $C_{10}$ , 2.5%; $C_{18}$ , 2.5%) dimethyl         Benzyl Ammonium Chloride       9.0%         Tributyltin neodecanoate       5.0%         Alkyl ( $C_{14}$ , 58%; $C_{16}$ , 28%; $C_{12}$ , 14%) dimethyl benzyl ammonium chloride       4.5%         Alkyl ( $C_{14}$ , 90%; $C_{16}$ , 5%; $C_{12}$ , 5%) dimethyl ethyl ammonium bromide       1.5%
Inert Ingredients:80.0%Total Ingredients:100.0%

#### **DESCRIPTION**

ALPHA 570 is a product formulated to provide control of the growth of algae in recirculating water cooling towers and evaporative condensers.

#### USE

If heavy algae slime growths are present, clean the system before initial treatment. If algae growth is absent or just noticeable, proceed with the initial dose. Add all treatments directly to the sump.

INITIAL DOSE: When the system is fouled, apply a dose of four fluid ounces per 100 gallons of water in the system. Repeat daily until control is achieved.

SUBSEQUENT DOSE: When algae control is evident, add two fluid ounces per 100 gallons of water in the system every seven days (weekly), or as needed to maintain control. Badly fouled systems may be manually or chemically cleaned before treatment is begun.

#### HANDLING

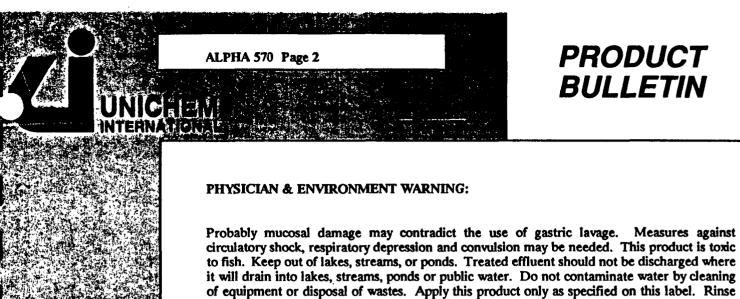
Do not allow water that contains this algicide to come in contact with grass or plants. Do not use in drinking water or in swimming pools. KEEP OUT OF REACH OF CHILDREN. Corrosive. Causes eye damage and skin irritation. Do not get in eyes, on skin, or on clothing. Wear goggles or face shield with rubber gloves when handling. Harmful or fatal if swallowed. Avoid contamination of food.

#### FIRST AID

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. For eyes, call a physician. Remove and wash contaminated clothing before reuse. If swallowed, drink <u>PROMPTLY</u> a large quantity of milk, egg whites, gelatin solution, or if these are not available, drink large quantities of water. Avoid alcohol. Call a physician immediately.

PRODUCT

BULLETIN



#### PACKAGING

ALPHA 570 is available in 55 gallon drum quantities.

empty container thoroughly with water and discard it.

PRODUCT

**BULLETIN** 

UNICHEM INTERNATIONAL	Supers	edes I	Previous Sheet	repared <u>0572</u> t Dated <u>Not</u>	Dated
Ι.	PRODUCT	IDENTI	FICATION		
Unichem International 707	-		Box 1499/Hobbs PHONE NUMBER		
Trade Name ALPHA 570	·····				
Chemical Description Proprietary Biocid	de Blend				
II	. HAZARDOU	S ING	REDIENTS		
Material			TLV	/ (Units)	5
Alkyl Dimethyl Benzylammoniu Alkyl Dimethyl Ethylammoniu Tributyltin Neodecanoate			Not	Established Established Established	
Neither this product nor its ing 1910.1200 sources as carcinogenic		listed	in any of OSHA	Standard, Sect	ion
	III. PHY	SICAL	DATA		
	B°F		ing Point	32°F	
Specific Gravity (H ₂ O=1) 0.9	998 g/ml	Solub	ility in Wate	Complete	······································
Appearance and Odor Light Sti	raw Color, Sl	ight Mu	sty Odor; Liqui	đ	
	RE AND EXPL	OSION	HAZARD DATA		
Flash Point (Test Method) No	one				
Extinguishing Media Carbon I water spray to cool fire-exposed	• •	Chemica	al, Water Spray	or Fog, Foam.	Use a
Special Fire Fighting Proced apparatus and full protective clo nature of this chemical.		-	s should wear se s should be mad		-
Unusual Fire and Explosion H	azards	None			

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Page 2 of 2 Product ALPHA 570
V. HEALTH HAZARD DATA
Threshold Limit Value: Not Determined Acute Oral LD_5: 0.88 g/kg (Male rats) 1.08 g/kg (Female Rat Acute Dermal LD_1: Greater than 2 g/Kg for male and female rate
Effects of Overexposure Contact will cause burns to the skin and severe damage to t eyes. Inhalation of vapors or mists will irritate the entire respiratory tract. Ingestion will cause irritation and burning of the digestive tract.
Emergency and First Aid Procedures Eyes: Flush promptly with copious quantities of water for at least fifteen minutes. Seek medical attention. Skin: Flush area with water. Wash with soap and remove contaminated clothing. Inhalation: Remove to fresh air. Apply artifical respiration if necessary. Ingestion: Call a physician. Do not induce vomiting. Dilute with water or milk. See note to physician below. (Section IX - Other Precautions)
VI. REACTIVITY DATA
Stability Stable X Conditions to Avoid None
Incompatibility (Materials to Avoid) Highly Alkaline Materials, Oxidizers
Hazardous Decomposition of Products Oxides of Carbon and Nitrogen
Hazardous Polymerization May Occur Conditions to Avoid Will Not Occur X None
VII. SPILL OR LEAK PROCEDURES
Steps to be Taken if Material is Released or Spilled Provide adequate ventilation Remove sources of ignition. Contain and absorb spill. This product is toxic to fish. ep out of lakes, streams, and ponds. Waste Disposal Method Dispose via a licensed waste disposal company. Follow local,
state, and federal regulations.
VIII. SPECIAL PROTECTION INFORMATION
Respiratory Protection (Specify Type) Use air-supplied or self-contained breathing apparatus if exposure levels exceed TLV for this product or its ingredients.
Ventilation Local Exhaust As needed to prevent Special None
Mechanical (General) vapors above Other None
Protective Gloves Rubber Eye Protection Safety Glasses, Goggles, and/or Face Shield
Other Protective Equipment Overalls, Rubber Boots, Eyewash Stations, Safety Showers
IX. SPECIAL PRECAUTIONS
Precautions to be Taken in Handling and Storing Store in cool, well-ventilated, low fire-risk area away from ignition sources and incompatible materials. Keep containers closed when not in use. Do not transfer or store in improperly marked containers.
Other Precautions Avoid prolonged or repeated breathing of vapors or contact with s Do not ingest. TO PHYSICIAN: Probably mucosul damage may contraindictable the use of gastric lavage. Measures against circulation shock, respiratory depression, and convulsion may be needed.

## MATERIAL SAFETY DATA SHEET

Dow Chemical U.S.A. Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 07666 Page: 1

PRODUCT NAME: AMBITROL (R) FL COOLANT

Effective Date: 02/10/86 Date Printed: 05/20/86 MSDS:000584

## 1. INGREDIENTS:

Ethylene Glycol	CAS# 000107-21-1	448
Diethylene Glycol	CAS# 000111-46-6	3.5%
Water	CAS# 007732-18-5	49%
Proprietary ingredients		

Substances listed in the Ingredients Section are those identified as being present at a concentration of 1% or greater, or 0.1% if the substance is on the list of potential carcinogens cited in OSHA Hazard Communication Standard. Where proprietary ingredient shows, the identity of this substance may be made available as provided in 29 CFR 1910.1200(1).

#### 2. PHYSICAL DATA:

BOILING POINT: 229F, 109C VAP PRESS: Approx. 2.5 mmHg @ 20C VAP DENSITY: Not applic. SOL. IN WATER: Completely miscible SP. GRAVITY: 1.084 @ 60/60F, 16C APPEARANCE: Red liquid. ODOR: Information not available.

### 3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: None METHOD USED: PMCC

FLAMMABLE LIMITS LFL: Not applicable. UFL: Not applicable.

EXTINGUISHING MEDIA: Non-combustible.

(Continued on Page 2) (R) Indicates a trademark of The Dow Chemical Company MATERIAL SAFETY DATA SHEET

Dow Chemical U.S.A. Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 07666 Page: 2

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PRODUCT NAME: AMBITROL (R) FL COOLANT

Effective Date: 02/10/86 Date Printed: 05/20/86 MSDS:000584

3. FIRE AND EXPLOSION HAZARD DATA: (CONTINUED)

FIRE & EXPLOSION HAZARDS: None.

FIRE-FIGHTING EQUIPMENT: Wear positive-pressure, self-contained breathing apparatus.

#### 4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) Not considered to be a problem under normal storage conditions.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Oxidizing material

HAZARDOUS DECOMPOSITION PRODUCTS: After water has volatilized, burning will produce carbon monoxide, carbon dioxide, and water.

HAZARDOUS POLYMERIZATION: Will not occur.

#### 5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Small spills: Cover with absorbent material, soak up and sweep into drums for disposal. Large spills: Dike around spill and pump into suitable containers for disposal or reprocessing.

DISPOSAL METHOD: Burn in approved incinerator in accordance with local, state, and federal regulations.

#### 6. HEALTH HAZARD DATA:

EYE: May cause slight transient (temporary) eye irritation. Vapors or mists may irritate eyes. Effects likely to heal readily.

SKIN CONTACT: Essentially nonirritating to skin.

SKIN ABSORPTION: Repeated skin exposure may result in absorption

(Continued on Page 3) (R) Indicates a trademark of The Dow Chemical Company NATERIAL SAFETY DATA SHEET

Dow Chemical U.S.A. Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 07666 Page: 3

PRODUCT NAME: AMBITROL (R) FL COOLANT

Effective Date: 02/10/86 Date Printed: 05/20/86

# MSDS:000584

#### 6. HEALTH HAZARD DATA: (CONTINUED)

of harmful amounts. The dermal LD50 has not been determined.

- INGESTION: Single dose oral toxicity is believed to be moderate. Amounts ingested incidental to industrial handling are not likely to cause injury; however ingestion of larger amounts could cause serious injury, even death. Single dose oral LD50 has not been determined.
- INHALATION: At room temperature, exposures to vapors are unlikely due to physical properties; higher temperatures may generate vapor levels sufficient to cause adverse effects.
- SYSTEMIC & OTHER EFFECTS: Excessive exposure may cause CNS, kidney, blood and possibly liver effects. Excessive exposure may cause irritation to upper respiratory tract. Observations in animals include deposition of calcium salts in various tissues after long-term dietary intake of ethylene glycol. Did not cause cancer in long term animal studies. Ethylene glycol has been reported to cause birth defects in rats and mice given high oral doses which were toxic to the mothers. Birth defects were also reported in mice at a high oral dose which was apparently nontoxic to the mother. Exposure of rats and mice to high aerosol concentrations resulted in teratogenic effects in mice but not in rats. Much of the total dose of EG in the aerosol studies probably resulted from ingestion of material deposited on fur. In studies on rats, ethylene glycol has been shown not to interfere with reproduction. In studies on mice, ingestion of ethylene glycol in large amounts caused a small decrease in the number of litters per pair, live pups per litter, and in live pup weight. Results of in vitro ("test tube") mutagenicity tests have been negative. Results of mutagenicity tests in animals have been negative.

(Continued on Page 4) (R) Indicates a trademark of The Dow Chemical Company

### NATERIAL SAFETY DATA SHEET

Dow Chemical U.S.A. Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 07666 Page: 4

PRODUCT NAME: AMBITROL (R) FL COOLANT

Effective Date: 02/10/86 Date Printed: 05/20/86

MSDS:000584

### 7. FIRST AID:

EYES: Irrigate immediately with water for at least 5 minutes.

SKIN: Wash off in flowing water or shower. Remove contaminated clothing and wash before reuse.

- INGESTION: If swallowed, induce vomiting immediately by giving two glasses of water and sticking finger down throat. Call a physician. (Never give anything by mouth to or attempt to induce vomiting in an unconscious person.)
- INHALATION: Remove to fresh air if effects occur. Consult a physician.
- NOTE TO PHYSICIAN: Consult standard literature. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient. In the treatment of intoxication by ethylene glycol, the use of ethanol, hemodialysis and intravenou intravenous fluids to control acidosis should be considered. N. Eng. J. Med. 304:21 1981.

## 8. HANDLING PRECAUTIONS:

- EXPOSURE GUIDELINE(S): ACGIH TLV is 50 ppm ceiling (125 mg/m3) for ethylene glycol vapor.
- VENTILATION: Control airborne concentrations below the exposure guideline. Good general ventilation should be sufficient for most conditions.
- RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use an approved air-purifying respirator.
- SKIN PROTECTION: Use impervious gloves when prolonged or frequently repeated contact could occur.

EYE PROTECTION: Use safety glasses.

(Continued on Page 5)

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## MATERIAL SAFETY DATA SHEET

Dow Chemical U.S.A. Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 07666 Page: 5

## PRODUCT NAME: AMBITROL (R) FL COOLANT

Effective Date: 02/10/86 Date Printed: 05/20/86

MSDS:000584

## 9. ADDITIONAL INFORMATION:

 SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Avoid skin and eye contact. Avoid ingestion. Avoid breathing vapors or mists.

Trace quantities of ethylene oxide (EO) may be present in this product. While these trace quantities could accumulate in headspace areas of storage and transport vessels, they are not expected to create a condition which will result in EO concentrations greater than 0.5 ppm (8 hour TWA) in the breathing zones of the workplace for appropriate applications. OSHA has established a permissible exposure limit of 1.0 ppm 8 hr TWA for EO. (Code of Federal Regulations Part 1910.1047 of Title 29)

MSDS STATUS: Revised 1-9.

(R) Indicates a trademark of The Dow Chemical Company The Information Herein Is Given In Good Faith, But No Warranty, Express Or Implied, Is Made. Consult The Dow Chemical Company For Further Information.

Revised: 7/31/80

Reviewed:	8/1/85
CITIES SERVICE OIL AND GAS CORPORATION	
Safety And Environmental Services	
P. O. Box 300	
Tuisa, Okiahoma 74102	

## MATERIAL SAFETY DATA SHEET

	•	NFPA	<b>\</b> *	
Trade Name: Field Grade	Health	1	Slightly Toxic	
Synonyms: Butane	Fire	4	Extremely Flammable	
CAS Reg. No.: Mixture	Reactivity	0	Stable	
Cities Service Index No +	*Citias Sarvica	Acc	ionment baced on	

Cities Service Index No.: *Cities Service Assignment based on TSIS-0020, et.al. our evaluation.

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## I. GENERIC COMPOSITION/INGREDIENTS

	Material	96	Hazard Data
Butane		>95	Asphyxiant/anesthetic

## II. PHYSICAL DATA

Boiling Point, 760 mmHg, °C(°F): ∿0.6 (-31)	Melting Point, °C (°F): NA
	Vapor Pressure, mmHg (25°C): ~1823
Specific Gravity (H ₂ O=1): ~0.6012	Solubility in H ₂ O, % By Vol.: ~15
Vapor Density (Air=1): ~2.0	Evaporation Rate (Buty)
<b>%</b> Volatiles By Vol.: 100	Acetate=1): Gas

Appearance and Odor: Colorless gas, natural gas odor.

## III. FIRE AND EXPLOSION DATA

Flash Point, °C (°F): Gas Autoignition Temperature, °C (°F): 405 (761)

Flammable Limits in Air, % by Vol: Lower: ~1.9 Upper: ~8.5

Extinguishing Media: Stop flow of gas.

Special Fire Fighting Procedure: Stop flow of gas.

Unusual Fire or Explosion Hazard: Forms explosive mixture w/gas.

## IV. HEALTH HAZARD INFORMATION

**Toxicity Summary:** Slightly toxic - simple asphyxiant/anesthetic.

Exposure Symptoms

Inhalation:Dizziness above 1% in air.Skin Contact:Liquid will cause freezing burns.Skin Absorption:No hazard.Eye Contact:Liquid will cause freezing burns.Ingestion:Not applicable.

Special Chronic Effects: None

First Aid

Inhalation:Remove to fresh air.Respiratory support if necessary.<br/>Seek medical aid.Skin:Treat as burn.Eyes:Treat as burn.Ingestion:Not applicable.

Notes to Physician: None

#### V. REACTIVITY DATA

Conditions Contributing to Instability: Stable

Incompatability: Strong oxidants.

Hazardous Decomposition Products (thermal, unless otherwise specified): CO₂, CO

Conditions Contributing to Hazardous Polymerization: None

VI. SPILL OR LEAK PROCEDURES

Follow accepted industry practice and/or follow local, state, and federal regulations. Check before handling.

ND = No Data NA = Not Applicable

## VII. SPECIAL PROTECTION INFORMATION

Ventilation Requirements: For confined space entry, follow accepted safe practices. Due regard should be given to explosive limits and oxygen concentrations.

## Specific Personal Protective Equipment

Respiratory: Normally nor required. Eyes: Safety glasses. Gloves: None Other Clothing or Equipment: None

## VIII. SPECIAL PRECAUTIONS

Precautionary Statements: None

Storage: DOT - flammable compressed gas.

The suggestions and data provided herewith are based upon tests and information which we believe to be reliable. However, we make no guarantee with respect thereto and assume no liability resulting from the use thereof. Users should make their own investigations to determine the suitability of the information or products for their particular purpose. Furthermore, nothing contained therein is intended as permission, inducement or recommendation to violate any laws or to practice any invention covered by existing patents.

# MAIH' SOIN GAS PHOUULIS MATERIAL SAFETY DATA SHEET

#### PRODUCT IDENTIFICATION

MSDS017: CARBON DIOXIDE

SYNONYM(S): Carbonic Anhydride CHEMIGAL FORMULA: CO₂ C.A.S. NUMBER: 124-38-9 D.O.T. SHIPPING NAME: Carbon Dioxide D.O.T. I.D. NUMBER: UN1013 D.O.T. HAZARD CLASS: Nonfiemmable Gas D.O.T. LABEL(S): Nonfiemmable Gas

#### PHYSICAL DATA

MOLECULAR WEIGHT: 44.011

SUBLIMATION POINT: -78.4°C; -109.2°F

VAPOR PRESSURE @ 21.1°C: 5,727 kPa (gauge); 830 psig

SPECIFIC VOLUME @ 1 ATM, 21.1°C: 0.547 m³/kg; 8.76 ft³/lb

RELATIVE DENSITY, (AIR=1): 1.53 @ 1 atm, 0°C

SOLUBILITY IN WATER @ 1 ATM, 25°C: 7.59 cm³/ kg water

DESCRIPTION: At room temperature and atmospheric pressure carbon dioxide is a colorless, odorless, slightly acid gas. It is shipped as a liquefied gas under its own vapor pressure.

#### FIRE AND EXPLOSION HAZARD DATA

FLAMMABLE LIMITS IN AIR: Nonflammable.

FIRE FIGHTING PROCEDURES: Carbon dioxide is nonflammable and as such does not create a fire hazard. However, cylinders that are exposed to fire may rupture with violent force. Extinguish surrounding fire and keep cylinders cool using a water spray applied from the maximum possible distance.

HEALTH HAZARD DATA

PERMISSIBLE EXPOSURE LIMITS:

OSHA TWA: 5,000 ppm (9,000 mg/m³) ACGIH TWA: 5,000 ppm (9,000 mg/m³) ACGIH STEL: 15,000 ppm (27,000 mg/m³)

ACUTE EFFECTS OF OVEREXPOSURE: Inhaling carbon dioxide may cause rapid breathing, rapid beating of the heart, headache, sweating, shortness of breath, dizziness, mental depression, visual disturbances, shaking, unconsciousness and death. Contact with the liquid phase or with cold gas escaping from the cylinder may cause frostbite.

CHRONIC EFFECTS OF OVEREXPOSURE: None known

#### FIRST AID INFORMATION

INHALATION: Move victim to fresh air. If not breathing, give artificial respiration, preferably mouth to mouth. If breathing is difficult, give oxygen. Call a physician.

CONTACT: Treat for frostbite.

#### REACTIVITY DATA

Carbon dioxide is stable under ordinary conditions of use and storage. It does not polymerize. It does cause violent polymerization of acrylaldehyde or ethylenelmine. It decomposes to carbon monoxide and oxygen when heated above 1700°C. This weakly acidic material will react with alkaline materials to form carbonates and bicarbonates.

An explosion can occur when carbon dioxide contacts mixtures of sodium peroxide with aluminum or magnesium. Reactive metals (such as alkali metals, magnesium, aluminum, titanium, or zirconium), their hydrides, and materials like diethyl magnesium, moist cesium oxide, or lithium acetylide with ammonia can ignite in carbon dioxide atmosphere. Dry ice can form shock sensitive mixtures with sodium, potassium or sodium-potassium alloy.

#### CARBON DIOXIDE

#### page 1 of 2 Revised: October 1985

; 8.76 ft³/16

Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

Product code: 15236

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Product Name: CAUSTIC SODA SOLUTION 50%, PURIFIED GRADE

Effective Date: 06/14/90 Date Printed: 10/07/91 MSDS:000101

#### 4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) Product absorbs carbon dioxide from the air. Keep containers closed and sealed.

INCOMPATIBILITY: Water and acid. Product is strong caustic alkali. May react violently with water, acid, and a number of organic compounds. Caustic reacts rapidly with aluminum, tin, and zinc. It will also react with bronze and brass.

HAZARDOUS DECOMPOSITION PRODUCTS: None.

HAZARDOUS POLYMERIZATION: Will not occur.

#### 5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Only trained and properly protected personnel should be involved in spill cleanup operations. Acting cautiously, small accidental spills of caustic soda solution should be carefully flushed with water. Dilute acid, preferably acetic acid, may be used to neutralize only the final traces of caustic after flushing.

DISPOSAL METHOD: Disposal of caustic soda must meet all federal, state, and local regulations. Contact The Dow Chemical Company for additional information.

#### 6. HEALTH HAZARD DATA:

EYE: May cause severe irritation with corneal injury and result in permanent impairment of vision, even blindness. Dusts may irritate eyes.

- SKIN CONTACT: Short single exposure may cause severe skin burns.
- SKIN ABSORPTION: A single prolonged skin exposure is not likely to result in absorption of harmful amounts. The dermal LD50 has not been determined.

INGESTION: May cause gastrointestinal irritation or ulceration and severe burns of the mouth and throat. Single dose oral LD50 has not been determined.

INHALATION: Dusts or mists may cause severe irritation to upper respiratory tract.

SYSTEMIC & OTHER EFFECTS: No relevant information found.

(Continued on page 3) (R) Indicates a Trademark of The Dow Chemical Company



## Dow U.S.A. The Dow Chemical Company Material Safety Data Sheet Midland, Michigan 48674 Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400 Product code: 15236 Page: 1 Product Name: CAUSTIC SODA SOLUTION 50%, PURIFIED GRADE Effective Date: 06/14/90 Date Printed: 10/07/91 MSDS:000101 INGREDIENTS: (% w/w, unless otherwise noted)

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#### Sodium hydroxide (NaOH) Sodium carbonate (Na2CO3) Sodium chloride (NaCl) CAS# 001310-73-2 48.5-50.5% CAS# 000497-19-8 CAS# 007647-14-5 <0.2% <1.0% CAS# 007732-18-5 BAL Water

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

#### 2. PHYSICAL DATA:

1.

BOILING POINT: Approximately 293F, 145C FREEZING POINT: Approximately 58F, 14C VAP. PRESS: 1.5 mmHg, 0.2 kPa @ 200 VAP. DENSITY: Not applicable SOL. IN WATER: Water solution SP. GRAVITY: @ 20C (Dens.) 1.52 g/ml APPEARANCE: Colorless to slightly colored liquid. ODOR: No odor.

## 3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: None METHOD USED: Not applicable

FLAMMABLE LIMITS LFL: Not applic. UFL: Not applic.

EXTINGUISHING MEDIA: Non-combustible.

FIRE & EXPLOSION HAZARDS: In water solution caustic can react with amphoteric metals (such as aluminum) generating hydrogen which is flammable and/or explosive if ignited.

FIRE-FIGHTING EQUIPMENT: Wear self-contained (positive-pressure if available) breathing apparatus and full protective clothing.

(Continued on page 2, over) (R) Indicates a Trademark of The Dow Chemical Company



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## 7. FIRST AID:

EYES: WATER is the only accepted method of removal of caustic soda (lye) from the eyes or skin. You may have 10 seconds or less to avoid serious permanent injury. Therefore, IMMEDIATE first aid must be given after any injurious exposure. Moving the victim from water access for transport to medical aid should be done only on the advice of qualified medical personnel. While transporting victim to a medical facility, continue washing if possible.

In case of eye contact, wash eyes immediately and continuously for 30 minutes. Call for medical assistance immediately.

SKIN: Immediate continued and thorough washing in flowing water for 30 minutes is imperative while removing contaminated clothing. Prompt medical consultation is essential. Wash contaminated clothing before reuse. Destroy contaminated shoes.

INGESTION: Do not induce vomiting. Give large amounts of water or milk if available and transport to medical facility.

- INHALATION: Remove to fresh air if effects occur. Consult medical.
- NOTE TO PHYSICIAN: Corrosive. May cause stricture. If lavage is performed, suggest endotracheal and/or esophagoscopic control. Material is strong alkali. If burn is present, treat as any thermal burn, after decontamination. For burns of skin only. Eye irrigation may be necessary for an extended period of time to remove as much caustic as possible. Duration of irrigation and treatment is at the discretion of medical personnel. No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

#### 8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE(S): Sodium hydroxide: OSHA PEL and ACGIH TLV are 2 mg/m3 Ceiling.

VENTILATION: Control airborne concentrations below the exposure guideline. Good general ventilation sufficient for most operations.

RESPIRATORY PROTECTION: In misty atmospheres, use an approved mist respirator. If respiratory irritation is experienced, use an approved air-purifying respirator.

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MSDS:000101

## 8. HANDLING PRECAUTIONS: (CONTINUED)

SKIN PROTECTION: Use protective clothing impervious to this material. Selection of specific items such as gloves, boots, apron, hard hat with face-shield or full-body suit will depend on operation. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse.

EYE PROTECTION: Use chemical goggles. Full face shield in addition to goggles may be desirable to protect face. Maintain eye wash fountain and safety shower at or near work area.

## 9. ADDITIONAL INFORMATION:

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Prevent eye and skin contact. Do not breathe dusts or mists.

Avoid storing next to strong acids. Caustic should be stored in clean, dry areas. Do not store in underground tanks. Product absorbs CO2 from air. Keep containers closed and sealed.

SPECIAL PRECAUTIONS FOR DILUTING CAUSTIC SODA SOLUTION:
ALWAYS add caustic soda solution to water with constant agitation. NEVER add water to the caustic soda solution.

2. The water should be lukewarm (80-100F). NEVER start with hot or cold water.

The addition of caustic soda to liquid will cause a rise in temperature. If caustic soda becomes concentrated in one area, or is added too rapidly, or is added to hot or cold liquid, a rapid temperature increase can result in DANGEROUS mists or boiling or spattering which may cause an immediate VIOLENT ERUPTION.

MSDS STATUS: Revised section 9 and regsheet.

For information regarding state/provincial and federal regulations see The Regulatory Information Section. (R) Indicates a trademark of The Dow Chemical Company

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Product Name: CAUSTIC SODA SOLUTION 50%, PURIFIED GRADE

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REGULATORY INFORMATION: (Not meant to be all-inclusive--selected regulations represented.)

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local iaws and regulations. See MSD Sheet for health and safety information.

## U.S. REGULATIONS

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SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard

#### CANADIAN REGULATIONS

The Workplace Hazardous Materials Information System (W.H.M.I.S.) Classification for this product is:

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The Transportation of Dangerous Goods Act (T.D.G.A.) classification for this product is:

Sodium Hydroxide, Solution/Class 8, (9.2)/UN1824/11

(R) Indicates a Trademark of The Dow Chemical Company The Information Herein Is Given In Good Faith, But No Warranty, Express Or Implied, Is Made. Consult The Dow Chemical Company For Further Information.



Dow U.S.A.

The Dow Chemical Company Midland, Michigan 48674

October 8 1991

EL PASO NATURAL GAS

2206233

CHACO PLANT 15 MILES SOUTH FARMINGTON FARMINGTON NM 87401

Sir/Madam:

Enclosed are Material Safety Data Sheets(s) which provide information on products you have purchased from us in the recent past. A copy has been sent to both the invoice address and the shipping address as they appeared on the order for these products. Since you may redirect the products to more than one place within your location, please make sure this information is available to all persons handling and/or using the product.

These Material Safety Data Sheet(s) have either been revised since you last received them or are for products which you recently purchased for the first time. Please consider them as the current copy to replace any previous version you may have.

The distribution of these sheets is part of a continuing program for providing information to our customers. The regulations promulgated by OSHA for Hazard Communication, 29 CFR 1910.1200 have been considered in preparing these Material Safety Data Sheet(s).

Thank you for your help.

Nancy B. Tefertiller

N. B. Tefertiller Health and Environmental Sciences 1803 Building

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Enclosure(s)

## MATERIAL SAFETY DATA SHEET

CORPORATE RESEARCH & DEVELOPMENT

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Date July 1979

HAZARD DATA

8-hr Twa 1 ppm (C)

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No.

SCHENECTADY, N.Y. 12305 Phone: (518) 385-4085 DIAL COMM 8*235-4085 SECTION I. MATERIAL IDENTIFICATION MATERIAL NAME: CHLORINE OTHER DESIGNATIONS: Cl2,CAS # 007 782 505 DESCRIPTION: A gas shipped in steel cylinders as a liquid under its own vapor pressure. MANUFACTURER: Available from many suppliers. SECTION II. INGREDIENTS AND HAZARDS > 99 Chlorine *Current OSHA ceiling limit. ACGIH TLV (1978) is 1 ppm with a STEL of 3 ppm for up to 15 minutes exposure. NIOSH (1976) proposed a ceiling limit of 0.5 ppm (15 minute sampling time). (Controversy going on whether OSHA standard should include ceiling limit or not.)

## SECTION III. PHYSICAL DATA

			Density at U C:
	Boiling point at 1 atm, deg C	-34	Gas at 1 atm, g/liter 3.214
	Vapor pressure at 20 C, mm Hg 4	800	Liquid at 3.65 atm, g/cc 1.47
	Vapor density (Air=1) 2	.49	Molecular weight70.91
	Water solubility at 20 C, 1 atm, g/1	7.3	- -
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Appearance & Odor: A greenish-yellow gas or clear, amber-colored liquid with a suffocating, pungent, irritating odor. The odor recognition threshold (100% of test panel. unfatigued) is reported at 0.314 ppm. The odor is easily noticed at 1.9-3.5 ppm and has been reported as intolerable at 2.6-41 ppm, depending on the observer.

SECTION IV. FIRE AND	EXPLOSION DATA	-	LDWER	UPPER
Flash Point and Method	Autoignition Temp.	Flammability Limits In Air		
Non-flammable				

Use extinguishing media that is appropriate for the surrounding fire. Use water spray to cool intact, fire-exposed containers (one ton tanks and cylinders will release chlorine when a fusible metal safety plug melts at 158-1657.) If possible, have specially trained personnel remove intact cylinders from fire area.

Chlorine will support the burning of most combustible materials, just as oxygen does. Flammable gases and vapors can form explosive mixtures with chlorine. Firefighters must use self-contained breathing equipment, eye protection, and full protective clothing when fighting fires in which chlorine is involved.

## SECTION V. REACTIVITY DATA

Chlorine is stable in steel containers at room temperature when dry. [Intense local heat (above 215°C) on steel walls can cause steel to ignite in chlorine.]

It is a powerful oxidizing agent which reacts violently with reducing agents and combustible materials. Materials such as acetylene, turpentine, other hydrocarbons, annonia, hydrogen, ether, powdered metals, etc. must be kept away from chlorine.

It reacts with H2S and H2O forming HCl; it combines with CO and SO2 to form phosgene and sulfuryl chloride (toxic and corresive materials).

Wet chlorine (150 ppm water) corrosively attacks most common metals. Handling chlorine requires special materials technology.

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	NO
SECTION VI. HEALTH HAZARD INFORMATION	TLV 1 ppm or 3 mg/m ³ (C)
Chlorine believed to damage the body by local constraints of most individuals in a few minutes (1) tract of most individuals in a few minutes (1) Higher level exposures produce coughing, dyspipulmonary edema (may be delayed) and death, do exposure (35-51 ppm, lethal in an hour; a few Reduced respiratory capacity (especially among sult from chronic low level exposure. Any conblistering and tissue destruction. FIRST AID: Call physician IMMEDIATELY for any predict help is not readily available, continued contact: (Treat for inhalation exposure indical help is not readily available, continued contact: (Treat for inhalation exposure indical help is not readily available, continued contact: Reflexe to fresh air. Restore bread administer oxygen until victim breathes easily field cases, give milk to relieve throat irrited cases.	tating to eyes, nose, and respiratory ppm intolerable for avg. person). hea, burns of the skin, conjunctivitis, spending on concentration and time of deep breaths fatal at 1000 ppm). g smokers) and dental erosion can re- htact with liquid chlorine causes burns, person overexposed to chlorine! st 15 minutes, holding eyelids open. If hue flushing with water. first!) Remove contaminated clothing eas thoroughly with water. hing when required. Have trained person ly on his own, Keep warm and at rest! In
SECTION VII. SPILL, LEAK, AND DISPOSAL	PROCEDURES
Establish written emergency plans and special tused.	raining of personnel where chlorine is
Notify safety personnel. Provide ventilation. trained, assigned personnel with approved sel appropriate protective clothing. Find and se require environmental consideration and poss Move leaking container to isolated area. Posif When possible draw off chlorine to process or to <u>DISPOSAL</u> : Bubble through a large volume of 155 ably dispose of resulting solution. Follow Fe	If-contained breathing equipment and top leak. (Large uncontrollable leaks tble evacuation of surrounding area.) tion to release cas <u>not</u> liquid. to disposal system. a aqueous NaOH or other alkali. Suit-
SECTION VIII. SPECIAL PROTECTION INFOR	
Provide general and local exhaust ventilation ( able venting for low lying areas. Use enclose whenever possible. Full face-piece respirator emergency use: canister gas mask below 5000 equipment for other conditions. Workers should be provided with chemical safety protective clothing must be used when needed or gas. Daily change of work clothes and sho Eyewash stations and chemical safety showers must storage of chlorine.	sed, isolated processing and handling ors must be available for non-routine and ) ppm in air and self-contained breathing y goggles and impervious gloves. Full ed to prevent exposure to chlorine, liqui owering after work shift are recommended.
SECTION IX, SPECIAL PRECAUTIONS AND CO	MMENTS
Store chlorine containers in well-ventilated ar incompatible materials (see Sec. V) and away tect containers from weather and physical dar for containers of compressed, corrosive gases handling chlorine. Regularly inspect (and te chlorine service. Liquid levels should be levels Use preplacement and periodic medical exams; pr chlorine those with cardiac, pulmonary or chr Special Ref: "Chlorine and Hydrogen Chloride",	from sources of heat and ignition. Pro- age; follow standard safety procedures a. Provide special training to workers est) piping and containment used for ess than 85% of tank or cylinder capacity reclude from workplace exposure to
Washington, DC (1976). DATA SOURCE(S) CODE: 2-12, 17, 19, 24, 26	APPROVALS: MIS, D.M. Nielen
Judgments as to the suitability of information hurein for purchaser's purposes are necessarily purchasers responsibility. Therefore, although reasonable care has been taken in the preparation of such information, General Electric Company extends no warranties, makes no representations and assumes no responsibility as to the accuracy or suitability of such information for application to purchaser's intended purposes or for consequences of its use.	Industrial Hygiene and Safety MEDICAL REVIEW: 12/79
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# Material Safety Data Sheet

May be used to comply with OCHA's Hacard Communication Standard, SOCPA 1910. 1900, Standard must be ensulted for specific requirements. QUICK EDENTIFIER Common Name: (mad on Jube! and Mat)

Comercial Instrument Ink (red)

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bains 195 bitbility Water Co Weter Co BECTION bank bint 75° F. Wite Lepition	• F omplete iscous li dor 4 - FIRE & C. Used Unknown Unknown Wellod Unknown	Vapor Density (Al quid wit EXPLOS Closed	h alcoho BION DA'	nown 1 TA Memai in Air	Brecific Gravity ( Reactivit, Water Melting Point Teble Limits T-by Velume hemical	LEL Lever	None Liquid a Unknown	t room UEL Upper	tempe Unkr	eratur	e	

	DE-OILING SURFACTANT	PRODUCT BULLETIN
DESCRITPION		homogeneous blend of organic ompounds, and other active
USES		sed for the emulsification and n a closed jacket water system.
APPLICATION	as soon as possible after enced. Approximately 2 g contained water is requir be utilized in severe or	ly flushed with fresh water
PROPERTIES	Color Form Density Pour Point Flash Point Open Cup Flash Point Closed Cup Viscosity @ 100 ⁰ F pH	Brown Liquid 8.1 lbs/gallon $17^{\circ}F$ 125^{\circ}F 94^{\circ}F 74.6 S.U. 3.8
HANDLING	No special precautions ar Surfactant. However, due handling of any water tre	e required for handling De-Oiling care should be exercised in the atment compound.
PACKAGING	De-Oiling Surfactant is a bulk quantities.	vailable in 55 gallon drums or in
		P. O. Box 1499 – Hobbs, N. M. 88240 – Pho. (505) 393-7751

MAT	FERIAL SAFETY DATA SHEET
UNICHEM	Date Prepared 05/22/86
	upersedes Previous Sheet Dated Not Dated
I. PRO	DUCT IDENTIFICATION
	ech/P. O. Box 1499/Hobbs, New Mexico 88240 RGENCY TELEPHONE NUMBER (505) 393-7751
Trade Name DE-DILING SURFACTANT (DO	5)
Chemical Description Proprietary Sur	rfactant in an Aqueous Solution
II. HAZ	LARDOUS INGREDIENTS
Material	TLV (Units)
Isopropanol CAS# 67-63-0	400 ppm
Neither this product nor its ingredien 1910.1200 sources as carcinogenic.	ts are listed in any of OSHA Standard, Section
III.	PHYSICAL DATA
Boiling Point, 760 mm Hg 180°F (In	itial) Freezing Point 17°F
Specific Gravity (H ₂ O=1) 0.97 g/m1	Solubility in Water Complete
Appearance and Odor Light Yellow C	lear Liquid; Slight Alcoholic Odor
IV. FIRE AN	D EXPLOSION HAZARD DATA
Flash Point (Test Method) 94°F TC	C
Extinguishing Media Carbon Dioxide water spray to cool fire-exposed conta	e, Dry Chemical, Water Spray or Fog, Foam. Use a iners.
Special Fire Fighting Procedures apparatus and full protective clothing.	Firefighers should wear self-contained breathing
Unusual Fire and Explosion Hazard	IS None
the use of this information or th	for any loss or injury arising out of the use of any materials designated. Tage 1 of 2

W .	
Contractory and the second second second second second second second second second second second second second	V. HEALTH HAZARD DATA
Threshold Limi	t Value Not Determined
Effects of Ove Ingestion may ca contact will cau	use catharsis. Inhalation of mist may cause respiratory irritation. Eye
water for at les Wash with soap a	First Aid Procedures Eyes: Flush promptly with copious quantities of ost fifteen minutes. Seek medical attention. Skin: Flush area with water. and remove contaminated clothing. Inhalation: Remove to fresh air. Apply sation if necessary. Ingestion: Call a physician. Do not induce vomiting. or milk.
I	VI. REACTIVITY DATA
	x         Conditions to Avoid           stable         None
Incompatibilit	y (Materials to Avoid) Oxidizers, Alkalis
	MPOSITION OF Products Oxides of Carbon, Nitrogen, Sulfur, and Ammonia.
Hazardous Poly	May Occur         Conditions to Avoid           Will Not Occur         None
	VII. SPILL OR LEAK PROCEDURES
-	ken if Material is Released or Spilled Provide adequate ventil f ignition. Contain and absorb spill.
Waste Disposal state, and feder	
· · · · · · · · · · · · · · · · · · ·	
state, and feder Respiratory Pr	al regulations.
state, and feder Respiratory Pr	VIII. SPECIAL PROTECTION INFORMATION Otection (Specify Type) Use sir-supplied or self-contained breathing
state, and feder Respiratory Pr apparatus if exp	Interview       Interview       Interview         Interview       VIII.       Special       Special         VIII.       Special       None
state, and feder Respiratory Pr apparatus if exp	al regulations.         VIII.       SPECIAL PROTECTION INFORMATION         Otection (Specify Type)       Use air-supplied or self-contained breathing         osure levels exceed TLV for this product or its ingredients.         Local Exhaust       As needed to prevent accumulation of         Mechanical (General)       vapors above of the self classes, Goggles, and/or         OVES       Rubber
state, and feder Respiratory Pr apparatus if exp Ventilation	al regulations.         VIII.       SPECIAL PROTECTION INFORMATION         Otection (Specify Type)       Use air-supplied or self-contained breathing         osure levels exceed TLV for this product or its ingredients.         Local Exhaust       As needed to prevent special         None         As needed to prevent special         None         Mechanical (General)         Vapors above         IV         OVES         Rubber         Eye Protection         Safety Glasses, Goggles, and/or Eace Shield
state, and feder Respiratory Pr apparatus if exp Ventilation Protective Glo	al regulations.         VIII.       SPECIAL PROTECTION INFORMATION         Totection (Specify Type)       Use air-supplied or self-contained breathing         osure levels exceed TLV for this product or its ingredients.         Local Exhaust       As needed to prevent accumulation of         Mechanical (General)       vapors above of the self classes, Goggles, and/or face Shield
state, and feder Respiratory Pr apparatus if exp Ventilation Protective Glo Other Protecti Precautions to low fire-risk ar	al regulations.         VIII.       SPECIAL PROTECTION INFORMATION         Cotection (Specify Type)       Use air-supplied or self-contained breathing osure levels exceed TLV for this product or its ingredients.         Local Exhaust       As needed to prevent accumulation of Mechanical (General)       None TLV         OVES       Rubber       Eye Protection       Safety Glasses, Goggles, and/or Face Shield         Lve Equipment       Overalls, Rubber Boots, Eyewash Stations, Safety Showers

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DIESEL FUEL #2

## TOXICITY INFORMATION

Lifetime skin painting studies conducted by the American Petroleum Institute, and others have shown that similar products boiling between 17% 370 degrees C (350-700 F) usually produce skin tumors and/or skin cancer in laboratory mice. The degree of carcinogenic response was weak to moderate with a relatively long latent period. The implications of these results for humans have not been determined.

Limited studies on oils that are very active carcinogens have shown that washing the animals' skin with soap and water between applications greatly reduces tumor formation.

Potential risks to humans can be minimized by observing good work practice and personal hygiene procedures generally recommended for petroleum products. See Section I for recommended protection and precautions.

Reports of animal studies using both sexes of several species have shown that kidney effects can occur in male rats after prolonged and repeated inhelation exposures to light hydrocarbon vapors of the general type represented by this product. While the effects are of a low order of severity in animals, the implications of these results for humans have not yet been determined.

Product has a low order of acute oral toxicity.

F. PHYSICAL DATA

The following data are approximate or typical values and should not be used for precise design purposes.

BOILING RANGE 160-350 degrees C. (320-650 F)

SPECIFIC GRAVITY (15.6 C/15.8 C) 0.86

MOLECULAR WEIGHT Approximately 212 average

pH Essentially neutral

POUR, CONGEALING OR MELTING POINT -10 degrees C. (+14 F.) Pour Point by ASTM D 97

VISCOSITY 2.7 cSt @ 40 degrees C. VAPOR PRESSURE Less than 1 mm Hg @ 20 C.

VAPOR DENSITY (AIR = 1) Greater than 5

PERCENT VOLATILE BY VOLUME

EVAPORATION RATE @ 1 ATM. AND 25 C (77 F) (n-BUTYL ACETATE=1) 0.02

SOLUBILITY IN WATER @ 1 ATH. AND 25 C (77 F) Negligible; less than 0.1%

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DIESEL FUEL

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G. REACTIVITY
This product is stable and will not react violently with water. Hazardour
polymerization will not occur. Avoid contact with strong oxidants such as
liquid chlorine, concentrated oxygen, sodium hypochlorite or calcium
hypochlorite.
H. SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Shut off and eliminate. all ignition sources. Keep people away. Recover
free product. Add sand, earth or other suitable absorbent to spill area.
Ninimize breathing vapors. Minimize skin contact. Ventilate confined
spaces. Open all windows and doors. Keep product out of severs and
watercourses by diking or impounding. Advise authorities if product have
entered or may enter sewers, watercourses or extensive land areas.
Assure conformity with applicable governmental regulations. Continue to
observe precautions for volatile, flammable vapors from absorbed material.
I. PROTECTION AND PRECAUTIONS
VENTILATION
Provide greater than 60 feet per minute hood face velocity. Use only with
ventilation sufficient to prevent exceeding recommended exposure limit or
buildup of explosive concentrations of vapor in air.
RESPIRATORY PROTECTION
Normally not needed at ambient temperatures. Use supplied-air respirators
protection in confined or enclosed spaces, if needed.
PROTECTIVE GLOVES
Use chemical-resistant gloves, if needed, to avoid prolonged or repeated
skin contact.
LEYE PROTECTION
Use splash goggles or face shield when eye contact may occur.
OTHER PROTECTIVE EQUIPMENT
Use chemical-resistant apron or other impervious clothing, if needed, to
avoid contaminating regular clothing which could result in prolonged or
repeated skin contact.
WORK PRACTICES/ENGINEERING CONTROLS
Keep containers closed when not in use. Do not handle or atore near heat,
sparks, flame, or strong oxidants.
PERSONAL HYGIENE
Minimize breathing vapor, mist or fumes. Avoid prolonged or repeated
contact with skin. Remove contaminated clothing; launder or dry-clean
before reuse. Remove contaminated shoes and thoroughly clean and dry

#### DIESEL FUF

before reuse; discard if oil-sonked. Cleanse skin thoroughly after contact, before breaks and meals, and at end of work period. Product is readily removed from skin by waterless hand cleaners followed by washing thoroughly with soap and water.

J. TRANSPORTATION INFORMATION

TRANSPORTATION INCIDENT INFORMATION

For further information relative to spills resulting from transportation incidents, refer to latest Department of Transportation Emergency Response Guidebook for Hazardous Materials Incidents, DOT P 5800.3.

The information contained herein is provided for informational purposes only. To the best of Giant's knowledge and belief, the information is accurate as of the date of preparation. Giant, however, makes no express or implied representations, warranties, or guarantees with respect to the accuracy, completeness and reliability of the information. Giant disclaime any liability for damage, loss, or injury arising out of, or resulting from, use of the information.

	azing, grinding, and possibly ma	in Inhelation, Ingestion or contact health hazard. However, operations, such as, schlning, esc., which results in elevating the temperature of the product to or above ticulates, may present health hazards.
FECTS OF OVEREXPOSUR	RE:	MAJOR EXPOSURE HAZARD
;		INHALA- SKIN EYE
nign pneumoconiosis	(siderosis). Inha the risk of lung ca	tions of iron oxide fumes or dusts may lead to a alation of high concentrations of ferric oxide ancer development in workers exposed to
nganiese, Copper, Le Eluenza-like illnes d are characterized	ad and/or Zinc in t is termed metal fund by metallic taste	s of freshly formed oxide fumes and dusts of the respirable particle size range can cause an e fever. Typical symptoms last 12 to 48 hours in the mouth, dryness and irritation of the in, fever and chills.
r artificial respire	to fresh air. If ation or oxygen as	overexposure to airborne fumes and particulates, breathing is difficult or has stopped, adminis- indicated. Seek medical attention promptly. administer a pain and fever reducing medication.
II. SPILL OR LEAK PE		administer a pain and rever reducing medication.
T APPLICABLE TO STEEL	₩	•
I. SPECIAL PROTECT	ION INFORMATION	
rticulates. Appropriate :		ume respirators should be used to avoid excessive inhalation of ends on the magnitude of exposure.
N: tective gloves should be (E:	worn as required for we	lding, burning or handling operations.
	les as required for weldi	ing, burning, saving, brazing, grinding or machining operations.
NTILATION: Local exhi- chining to prevent excess	sust ventilation should I ive dust or fuse exposure	be provided when welding, burning, saving, brazing, grinding or
HER PROTECTIVE EQUIP	PMENT: tions of use and specific	c work situations, additional protective equipment and/or clothi
X. SPECIAL PRECAUT	TIONS	
<b>Operations</b> with th	EN IN HANDLING AND S be potential for gen lated and controlled	TORAGE: nerating high concentrations of airborne particu- d as necessary. Avoid breathing metal fumes and/
MER COMMENTS:		·
To additional comm	ents are believed t	to be necessary for these products.

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Original Issue Date: Revision Date:

ANNEX I							
TYPICAL LEVELS OF TRACE OR RESIDUAL ELEMENTS IN STEELS							
`#-							
ELEMENT		& WEIGHT					
Aluminum	AL	0.002 - 0.01					
Arsenic	As	0.005 - 0.008					
Boron	B	0.0002 - 0.0004					
Calcium	Ca	0.0002					
Chronium	œ	0.02 - 0.08					
Cobalt	Co	<0.005 - 0.009					
Copper	Cu	0.009 - 0.18					
Lead	Pb	<0.001					
Molybdenum	Ю	<0.004 - 0.04					
Nickel	NI ,	0.011 - 0.04					
Niobium	ND	0.002 - 0.005					
Silicon	si	<0.004 - 0.02					
Tin	Sn	<0.004 - 0.02					
Titanium	Ti	0.001 - 0.004					
Vanadium	V	0.001 - 0.003					
Zirconium	2r	0.002					

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MATERIAL SAFETY DATA SHEET 031

#### PRODUCT IDENTIFICATION

MSDS031:	ETH	WE	
SYNONYM(S	;):	None	
CHEMICAL	FORM	ULA:	C2H6
C.A.S. NU	MBER	: 74	-84-0

D.O.T. SHIPPING NAME: Ethane D.O.T. I.D. NUMBER: UN1035 D.O.T. HAZARD CLASS: Flammable Ges D.O.T. LABEL(S): Fianmable Ges

#### PHITSICAL DATA

MOLECULAR WEIGHT: 30.070

BOILING POINT: - 88.6°C: -127.5°F

VAPOR PRESSURE @ 21.1°C: 3,744 kPa (gauge); 543 psig

SPECIFIC VOLUME # 1 ATM; 21.1 °C: 0.799 m3/kg: 12.8 ++3/16

RELATIVE DENSITY, (AIR=1): 1.048 8 1 atm, 0°C

SOLUBILITY IN WATER & 1 ATH, 20°C: 9.82 cm3/ Kg water

DESCRIPTION: At roce temperature and atmospheric pressure ethane is a coloriess, odoriess, flammable, nontoxic gas - it is shipped as a liquefied gas under its own vapor pressure.

#### FIRE AND EXPLOSION NAZARD DATA

FLANNABLE LIMITS IN AIR: 3.0 - 12.55 by volume.

AUTO-IGNITION TEMPERATURE: 472.2°C: 882°F

FIRE FIGHTING PROCEDURES: The only safe way to extinguish an ethane fire is to stop the flow of gas. If the flow cannot be stopped, let the fire burn itself out while cooling the surroundings using a water spray.

Personnel may have to user approach type protective suits and positive pressure self-contained breathing apparatus. Firefighters' turnout guar may be inadequate.

#### UNUSUAL FIRE AND EXPLOSION HAZARDS:

Cylinders that are exposed to fire may rupture with violent force. Extinguish surrounding fire and keep cylinders cool using a watur spray applied from the maximum possible distance. Fiermable gases may spread from a splil after the fire is extinguished and be subject to reignition. 2.

#### HEALTH HAZAND DATA

PERMISSIBLE EXPOSURE LIMITS:

#### OSHA 'TWA: None established

ACGIH TWA: None established *

* ACGIH considers ethane to be a simple asphyxiant.

ACUTE EFFECTS OF OVEREXPOSURE: . Ethane is nontoxic but can act as a simple asphyxiant by displacing air. Symptoms of apphyxia include rapid respirations, dizziness and fatigue.

CHRONIC EFFECTS OF OVEREXPOSURE: None known

#### FIRST AID INFORMATION

INHALATION: Move victim to fresh air. if not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give exygen. Call a physician.

ETHANE

#### page 1 of 2 Revised: October 1985

#### REACTIVITY DATA

STABILITY: (X) STABLE ( ) UNSTABLE

INCOMPATIBILITY: Oxidizing materials.

HAZARDOUS DECOMPOSITION/OXIDATION PRODUCTS: Carbon monoxide and carbon dioxide.

(X) WILL NOT OCCUR ( ) MAY OCCUR POLYMERIZATION:

## SPILL OR LEAK PROCEDURE

Shut off all ignition sources and ventilate the area. For controlling large flows, personnel may have to wear approach type protective suits and positive pressure self-contained breathing apparatus.

#### PRECAUTIONARY INFORMATION

STORAGE RECOMMENDATIONS: Cylinders should be stored and used in dry, well ventilated areas away from sources of heat.

PERSONAL PROTECTIVE EQUIPMENT:

EYE PROTECTION - Safety glasses should be worn.

RESPIRATORY PROTECTION - Respiratory equipment is not needed unless the gas displaces the air and causes a deficiency of oxygen and the possibility of asphyxiation.

SKIN PROTECTION - No special equipment is required. Gloves are recommended for cylinder handling.

BEFORE USING THE GAS:

Secure the cylinder to prevent it from failing or being knocked over. Leak check the lines and equipment. Heve an emergency plan covering steps to be taken in the event of an accidental referse.

## *** NOTICE ***

This date is furnished gratuitously, independent of any sale of the product, and only for your independent investigation and verification. While this date is believed to be correct, Metheson makes no representations as to the accuracy of the date. Matheson makes no varranties, guaranties or representations of any kind or nature with respect to the product or to this date, either express or implied, and whether arising by law or othervise, including but not limited to any implied varranty of merchantability or fitness for any particular purpose. Matheson shall in no event be limited to any personal injury, property or other damages of any nature whatsoever, whether special, indirect, consequential or compensatory, directly or indirectly resulting from the publication or use of or reliance upon this date.

#### IN CASE OF EMERGENCY CALL THE NEAREST MATHESON LOCATION

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Cucamonga, CA (714) 987-4611, Neverk, CA (415) 793-2559, Morrov, GA (404) 961-7891, Joliet, IL (815) 727-4848, Gloucester, MA (617) 283-7700, East Rutherford, NJ (201) 933-2400, Twinsburg, CH (216) 425-4406, La Porte, TX (713) 471-2544

ETHANE

#### page 2 of 2

Revised: October 1985

Revised: <u>7/31/80</u>

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Tul	E OIL AND GAS nd Environmenti P. O. Box 300 sa, Oklahoma 74 . SAFETY DA	al Services	
Trade Name: Ethane*Propane H	lealth	NFPA 1 	Slightly Toxic
Synonyms: F	ire	4	Extremely Flammable
CAS Reg. No.: R	eactivity	0	Stable
Cities Service Index No.: * TSIS-0046,0128	Cities Servi our evaluati	ce Assi ion.	ignment based on
Group:			
I. GENERIC CC Material	MPOSITION	/INGRI	EDIENTS Hazard Data
Ethane Propane	variable		asphyxiant asphyxiant/anesthetic
11. PH	IYSICAL DA	TA	
Boiling Point, 760 mmHg, °C(°F): <-42 (<-44)	Melting	Point,	°C (°F): NA
	Vapor F	ressur	e, mmHg (25°C): Gas at room temperature & Std. atm. pressure
Specific Gravity (H ₂ O=1): NA	Solubili	ty in H	20, % By Vol.: >1
Vapor Density (Air=1): ≧1	Evapora Acetate	tion Ra	ate (Buty!
% Volatiles By Vol.: 100	ALELALE:	-17. >	•
Appearance and Odor: Clear gas.			

ND = No Data

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## III. FIRE AND EXPLOSION DATA

Autoignition Temperature, °C (°F): ≥450 (≥842) Flash Point, °C (°F): Gas Upper: 12.5 Flammable Limits in Air, % by Vol: Lower: 2.0 Extinguishing Media: Stop flow of gas. Special Fire Fighting Procedure: Stop flow of gas. Unusual Fire or Explosion Hazard: Forms explosive mixtures with air. . IV. HEALTH HAZARD INFORMATION Slightly toxic - simple asphyxiant/anesthetic. Toxicity Summary: Exposure Symptoms Dizziness above 10% (propane) in air. Inhalation: Skin Contact: Liquid will cause freezing burns. Skin Absorption: No hazard. Eye Contact: Liquid will cause freezing burns. Ingestion: Not applicable. Special Chronic Effects: None First Aid

Inhalation:Remove to fresh air.Respiratory support if necessary.<br/>Seek medical aid.Skin:For liquid contact, treat as burn.Eyes:For liquid contact, treat as burn.Ingestion:Not applicable.

Notes to Physician: None

#### V. REACTIVITY DATA

Conditions Contributing to Instability: None

Incompatability: Strong oxidants.

Hazardous Decomposition Products (thermal, unless otherwise specified): CO, CO₂

Conditions Contributing to Hazardous Polymerization: None

VI. SPILL OR LEAK PROCEDURES

Follow accepted industry practices and/or local, state and federal regulations. Check before handling.

#### VII. SPECIAL PROTECTION INFORMATION

Ventilation Requirements: For confined space entry, follow approved safe practices. Due regard should be given to explosive limits and oxygen concentration.

## Specific Personal Protective Equipment

Respiratory: None normally required.Eyes:Safety goggles recommended.Gloves:NoneOther Clothing or Equipment:None

## VIII. SPECIAL PRECAUTIONS

Precautionary Statements: None

Storage: DOT - flammable compressed gas.

The suggestions and data provided herewith are based upon tests and information which we believe to be reliable. However, we make no guarantee with respect thereto and assume no liability resulting from the use thereof. Users should make their own investigations to determine the suitability of the information or products for their particular purpose. Furthermore, nothing contained therein is intended as permission, inducement or recommendation to violate any laws or to practice any invention covered by existing patents.

# **Material Safety Data Sheet**

MSDS 010 May 1989

## FOXBORO 1800 INK



NDUSTRIAL PRODUCTS DIVISION GRAPHIC CONTROLS 189 VAN RENSSELAER ST. BUFFALO, NY 14210

ISSUE 1-15-87

NO. 1 064-MA

ENERGENCY TELEPHONE NO.	716-853	-7500	
	1800 INSC		1NK CODE NO 84
		-	
	HAZ	ARDOUS	INGREDIENTS
NAME (CAB ND.)	* RANGE	TLV	TOXICOLOGICAL DATA
YORMLDENYDE { 30-00-0 } ETHYLENE GLYCOL { 107-21-1 }	<1 10-25	1 PPM S PPM Ceilin Vapor	POSITIVE ANIMAL CARCINOGEN. INDEFINITE HUMAN CARCINOGEN. (IARC) LDS0: 3.8 G/KG NO OTHER INGRECIENT IS LISTED IN THE MASSACHUSETTS SUBSTANCE LIST CONTAINED IN THE RIGHT-TO-KNOW REGULATIONS 105CHR 670, APPENDIX A.
		PHYSIC	AL DATA
BOILING PT. ( ⁰ F) 212-1	B <b>S O</b>		SPECIFIC GRAVITY 1.130-1.145
VAPOR PRESSURE MUR WA HA			SOLUBILITY IN WATER
			COLORS RED. BLUE, GREEN, OR
ODOR <u>SLIGHT ODOR OF PORM</u>			
	FIRE	AND EXP	LOBION DATA
PLASH POINT "F (METHOD USE DETINGUISHING MEDIA USE 1		ER TO PRI	MARY CAUSE OF FIRE LEL N/A UEL N/A
SPECIAL FIRE FIGHTING PROC UNUSUAL FIRE AND EXPLOSION		BREATHI	HTERS SHOULD BE EQUIPPED WITH SELF-CONTAINED NG APPARATUS AND TURN-OUT GEAR.

N/A - NOT APPLICABLE N/E - NOT ESTABLISHED

The Foxboro Company Foxboro, MA 02035 U.S.A. (508) 543-8750



**DRegistered** Trademark

MSDS 010 Page 2

			HEALTH HAZA	RD DATA
THRESHOLD LIHI		NOT		
LDSS, ORAL	> \$ 6 / 103			LDSO. DERMAL > 16/KB
				N AND EVES MAY RESULT IN INRITATION.
				CE. INHALATION OF VAPORS MAY RESULT
IN RESPIR	ATORY IRRITA	TION.		
FINET ALL PROC				TED AREAS THOROUGHLY BITH WATER. IF
				D, DILUTE WITH WATER AND INDUCE VONITING.
	GET	IMMED	TATE MEDICAL A	TTENTION.
				NOVE TO PRESH AIR. AID BREATHING IF
	NEC		AND GET MEDIC	AL ATTENTION.
			REACTIVIT	Y DATA
	STABLE	X	CONDITIONS	STRONG OXIDIZING AGENTS, DECOMPOSES
STABILITY	UNSTABLE		TO AVOID	AT TEMPERATURES > 190°C.
HAZARDOUS DECO	POSITION PR	00UC 11	ACROLE	
HAZANDOUS POLM				
		<b>98</b>	ILL OR LEAK	PROCEDURES
				STAINS WITH SCAPY WATER. WASTE DISPORAL STATE, AND LOCAL ENVIRONMENTAL CONTROL
		SPECI	AL PROTECTIO	IN INFORMATION
	OTECTION O	RGAN 1C		TOR, IF VAPORS OR HISTS ARE GENERATED.
VENTILATION				
		9006LE	S AND GLOVES T	O AVOID PROLONGED CONTACT.
OTHER N	ME			
<u></u>			<u></u>	

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# **Material Safety Data Sheet**

May be used to comply with OBHA's Hazard Communication Standard, BECFR 1910. 1900. Standard must be ensuited for specific requirements. QUICK IDENTIFIER Common Name: (used on inhol and list)

high Temperature ink (red) (Part # 96551)

Manufacturer			•							
Kaine	Taylor	Instrume	nt			······································				
Address	95 Ames	Street	P.O. B	Box 110		FringEss	Na (716)	-235-5000	5	
ity, State, an		er, New 1	York 14	,692		Other Informati Calls	Same			
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CLIMAX CHEMICAL MATERIA	L.SAF	EIY	· · · · ·	HCL
COMPANY	SHEE	T		PRODUCT
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SECTIONIEINDENTIR	CAHONICE	<u>erodu</u>	C David States	
MANUFACTURER'S NAME CLIMAX CHEMICAL COMPANY, INC.			CY TELEPHONE NO.	· ·
ADORESS (Number, Street, City, State and ZP CODE)		1-00	0-545-5959	
P.O. BOX 2548, HOBBS, NEW MEDICO 88240 TRADE NAME	CHEMICAL NAM	E	· · · ·	
Hydrochtorie Acid, Murtatie Acid CREMICAL FAMILY	Hydrochio			
Inorganic Acid	HCI (Aque	) (8UC		
SECTIONIL-HAZARDOUS	COMPONEN CAS REGI		VIXTURES	ACGIH TLY-TWA
HYDROGEN CHLORIDE (Reporting Quantity = 5000 ibs.)		-01-0	35%	5 ppm
This compound is highly corrosive to most metals with	//		3376	Ceiling
the evolution of Hydrogen gas. * Denotes chemical subject to reporting meutrements of Section 313 of This II of .				
the 1908 Superfund Amendments and Resultionization Act (SARA) and 40 CFR Part 372				
APPEARANCE AND ODOR			E 1.1800 @ 15.6/15.8	deg C.
Clear, coloriese liquid with pungent, sharp, irritating odor.	VAPOR DENSIT	22 8	e 11789 🖗 15.6/15.6	
150 - 230 degrees F. (65.6 - 110.0 degrees C.)	1.27	•		
VAPOR PRESSURE 78 mm Hg @ 20 degrees C.	S VOLATILE, B	VOLUME	•	
EVAPORATION RATE (n-BUTYL ACETATE = 1.00)	SOLUBILITY IN			
PH INFORMATION	MELTING POIN	logm H2O ( 20 Bl	≥ -53 deg C.(-83.4 de	g F.)
SECTIONIVEREA			E: -86 deg C.(-86.3 de	
STABILITY CONDITIONS TO AVOID Contact wi	th strong bases ci	IN CELINE VIO	lent reaction generation	ig large amounts of
Stable heat, Reactions with r INCOMPATIBILITY (Materials to Avoid) Bases, metals, mercur				
acetylides of cesium a HAZARDOUS DECOMPOSITION PRODUCTS				
None (Refer to "Conditions to Avoid") -				
HAZARDOUS POLYMERIZATION Will not occur.				
SECTION V - FIRE AND EX				
FLASHPOINT (Method used) None	FLAMMABLE	AITS IN AIR		
	None		•	
EXTINGUISHING AGENTS	None		•	
EXTINGUISHING AGENTS N/A UNUSUAL FIRE AND EXPLOSION HAZARDS Normally non-flamma	ble, but reacts wit		ls with evolution of hy	• •
EXTINGUISHING AGENTS N/A UNUSUAL FIRE AND EXPLOSION HAZARDS Normally non-flamma mixed with air may result in fire or explosion if ignited. Firefighters s	ble, but reacts wit hould wear self-c	ontained br	ls with evolution of hy sathing apparatus (+ p	• •
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SECT	ON VI-TOXICITY AND FIRST AID (Continued)
CHHONIC TOXICITY Exposures of 100 ppm for 8 hours a day for and pigeons. The hemoglobin content of th hours did not display any adverse effects. 1 exposure. Baboons exposed to 500, 5000,	50 days caused only slight unrest and irritation to the eyes and nose of rabbits, guinea pig e blood was also slightly diminished. Monkeys receiving twenty exposures of 33 ppm for 6 ilgher exposures (unspecified) have caused weight loss which paralleled the severity of or 10,000 ppm for 15 minutes did not have significant alterations in any pulmonary function ire. In humans, long term overexposures have been associated with erosion of the teeth.
Carcinogenicity: No standard carcinogenic determine if hydrogen chloride increased th studies the rate were exposed to 10 ppm hy lasted the animal's lifetime. Hydrogen chlo	ity studies for hydrogen chloride were indentified. Two studies on rats were conducted to be formation of nasal tumors or increased the carcinogenic potential of formaldehyde. In be drogen chloride, 6 hours per day, 5 days a week. One study lasted 84 weeks while the other ride did not cause an increase in nasal tumors and did not increase the carcinogenicity of
formaldehyde.	
Hydrogen chloride is not listed on the IARC Reproductive Toxicity: No studies were ide	, N I P or USHA carcinogen like. ntified relative to hydrogen chloride and reproductive toxicity.
SECTION VII-	PERSONAL PROTECTION AND CONTROLS
concentrations exceed 100 ppm or du	oved self-contained breathing apparatus with full face piece should be worn when air ring leaks and/or emergencies. Follow any applicable respirator use standards or regulation of the standards of the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second s
VENTILATION As necessary to maintain a SKIN PROTECTION Wear neoprene or PVC rai	n suit, boots, and gloves.
HYGIENE Avoid contact with skin and avoid contact with skin and avoid drinking, or using restroom. Any prot	hich are splashproof and face shield. d breathing vapors. Do not eat, drink, or smoke in work area. Wash hands prior to eating, active clothing, or shoes which become contaiminated with hydrochloric acid should be
monitoring should be performed regu	Isoundered before wearing again. I and eyewash station must be available in immediate area. To determine the exposure levelarly. NOTE: Protective equipment and clothing should be selected, used, and maintained is regulations. For further information, contact the clothing or expipment manufacturer.
SECTION VII-	STORAGE AND HANDLING PRECAUTIONS
acid-resistant plastic, or glass containers, label or tag. Hydrogen chloride can react w	n VII when handling this product. Store in closed, properly labeled, rubber-lined steel, DO NOT store near strong alkalies or reactive materials. DO NOT remove or deface contain th cyanide, forming lethal concentrations of hydrocyanic acid. DO NOT enter confined ing proper entry procedures such as ASIM D-4276.
Cleanup personnel must wear proper prote	tive equipment (see Section VII). Completely contain spilled acid with dikes, etc., and
products, both liquid and solid, must be rec	ters or into sewers. Neutralize with soda ash or dilute caustic soda. Neutralization
products, both liquid and solid, must be rec WASTE DISPOSAL METHOD Recovered soli management facility. Consult federal, state	ters or into sewers. Neutralize with soda ash or dilute caustic soda. Neutralization overed for proper disposal. ds or liquids may be sent to a licensed reclaimer or disposed of in a permitted waste , or local disposal authorities for approved procedures.
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I.

TIONAL SANITARY SUPPLY CO. 217 S. Figueroa Street L Angeles, California 90061 L. No. 213/770-1970 Mergency Tel. No. 213.327-6795	
MATERIAL SAFETY DATA SHEET	
ECTION 1. IDENTIFICATION OF PODUCT	
Product Name: Who was a series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series	./85
SECTION 2. INGREDIENTS CAS NUMBER EXPOSURE LIMITS IN AIR	EL
ACGIH-ILV         JSHA-P           PFTROLEUN DISTILLATES         ?1203         300 PPH         300           1,1,1         TRICHLOROETHANE         ?1556         350 PPH         350           ERCHLOROETHYLENE         127184         50 PPH         50           SOBUTANE/PROPANE         ?5285/74986         800 PPH         800	PPH PPM PPM PPM
SECTION S. PHISICAL DATA:	· · · · · · · · · · · · · · · · · · ·
apor Density (air=1): (1.0 Pecific Gravity g/cc @ 60 F: N/A Solubility in Water: INSOLUBLE Vapor Pressure, psig @ 70 F: 27-37 Ph @ 25 C: N/A Ppearance and Odor: SPRAY HIST/FLORAL Lame Extension @ 70 F: (18	- N/A N/A <1.0
Section 4. FIRE AND EXPLOSION HAZARD DATA	
<pre>ih Point, F (TCC): &gt;20 F J Ignition Temperature, F: N/A Plammable Limits in Air, Volume %: LOWER (LEL) 1.8 UPPER (UEL Fire Extinguishing Materials: WiTER SPRAY, FOAM, CARBON DIOXIDE, CHEMICAL pecial Firefighting Procedures: FIREFIGHTERS MUST WEAR FULL BUNK (HELMET, FACE SHELD, COATS, GLOVES, BOOTS). USE A SELF-CONTAI NIOSH APPROVED BREATHING APPARATUS, CONTAINERS EXPOSED TO HEA NIOSH APPROVED BREATHING APPARATUS, CONTAINERS EXPOSED TO HEA DESTRICT ON TO A SELF-CONTAINERS APPARATUS. CONTAINERS APPARATUS.</pre>	LER GEAR
BE WATER COOLED TO PREVENT BURSTING AND ROCKETING AND FURTHER SPEWING OF IGNITED FLAMMABLE CONSTITUENTS. Dusual Fire and Explosion Hazards: AEROSOL PRESSURIZED CONTAINER	RS WILL
BURST AND/OR ROCKET WHEN EXPOSED TO TEMPERATURES ABOVE 120 F	-
SECTION 5. REACTIVITY DATA	
<ul> <li>Tability: STABLE</li> <li>Conditions to Avoid: EXPOSURE TO TEMPERATURES IN EXCESS OF 120 F, SPARK, OPEN FLAME, OR OTHER SOURCES OF IGNITION.</li> <li>Incompatibility (materials to avoid): ALKALIES, STRONG OXIDIZERS, azardous Decomposition Products(including combustion products): DICXIDE, CARBON MONOXIDE AND ORGANIC VAPORS OF UNKNOWN COM³</li> </ul>	ACIDS
HYDROGEN CHLORIDE, CHLORINE OR PHOSGENE. Hazardous Polymerization: WILL NOT OCCUR	
ECTION 6. SPILL, LEAK AND DISPOSAL PROCEDURES	
Spill Response: TURN OFF ALL SOJRCES OF IGNITION. VENTILATE AREA COMPLETELY. DIKE AREA. APP.Y AN ABSOORBENT AND SWEEP UP aste Disposal: PLACE INTO CONTAINERS FOR DISPUSAL. WAST RESIDUE FLAMMABLE HANDLE ACCORDINGLY. Note: DISPOSE OF ALL WASTE IN ACCORDANCE WITH FEDERAL. STATE AND RECULATIONS.	

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ATERIAL SAFETY DATA SHEET Uct Name: Hysheen Aerosol Djst mop treatment 1 2 Issued: 8/7/86 PAGE 2 DL SECTION 7. HEALTH HAZARD DATA SYMPTOMS OF OVEREXPOSURE Inhaled: DIZZINESS, NAUSEA, HEADACHE, ANESTHETIC EFFECTS. THROAT IRFITATION ABOVE 1000 PPM. Contact With Skin of Eyes: IRRITATION, CONTACT DERMATITIS. Absorbed Through Skin: NOT READILY ABSORBED. MAY CAUSE SYSTEMIC EFFECTS. Swallowed: NAUSEA, VOMITING, SINGLE DOSE TOXICITY IS LOW TO MODERATE. HEALTH EFFECTS OR RISKS FROM EXPOSURE Acute: LIVER DISEASE AND RYTHM DISORDERS OF THE HEART FROM OVER EXPOSURE Chronic: LIVER AND TOXIC EFFECTS IN TEST ANIMALS SECTION 8. EMERGENCY AND FIRST AID PROCEDURES Eye Contact: FLUSH WITH WATER FOR 15 MINUTES. GET IMMEDIATE MEDICAL EYE CONTACT: FLUSH WITH WATER FOR IS MINUTES. GET IMMEDIATE MEDIC ATTENTION. MEDICAL ATTENTION. Inhaled: REMOVE TO FRESH AIR. IF NOT BREATHING GIVE CPR OR DXYGEN IMMEDIATE MEDICAL ATTENTION. Wallowed: DO NOT INDUCE VOMITING. GET IMMEDIATE MEDICAL ATTENTIC NOT ALLOW VOMITOUS TO BE BREATHED INTO LUNGS AS PNEUMONITIS RESULT. WASH WITH SOAP AND WARM WATER. GET IF NOT BREATHING GIVE CPR OR DXYGEN. GET ATTENTION DO RESULT. SUSPECTED CANCER AGENT NO: THIS PRODUCT'S INGREDIENTS ARE NOT FOUND IN THE LISTS BELOW. FEDERAL OSHA, NTP, IARC IALIFORNIA EMPLOYERS USING CAL/OSHA-REGULATED CARCINOGENS MUST REGISTER WITH CAL/OSHA. THE CAL/OSHA AND FEDERAL OSHA CARCINOGEN LISTS ARE SIMILAR. MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE ' EXISTING SKIN, EYE AND LUNG DISORDERS MAY BE AGGRAVATED BY EXPOSURE HIS PRODUCT. LIVER DISEASE AND RYTHM DISORDERS OF THE HEART DUE TO VER EXPOSURE. VER EXPOSURE. Recommendation to Physician: ASPIRATION OF MATERIAL INTO LUNGS CAN CAUSE CHEMICAL PNEUMONITIS WHICH CAN BE FATAL. ALSO, POSSIBLE PULNONARY EDEMA/HEMMORAGE. SECTION 9. SPECIAL PROTECTION INFORMATION entilation and Engineering Controls: MAINTAIN ADEQUATE VENTILATION TO KEEP VAPOR CONCENTRATION BE OW PEL LIMITS. DIRECTIONS. Eye Protection: NONE WHEN USED IN ACCORDANCE WITH LABEL DIRECTIONS. Eye Protection: NONE WHEN USED IN ACCORDANCE WITH LABEL DIRECTIONS. Loves: NONE WHEN USED IN ACCORDANCE WITH LABREL DIRECTIONS. ther Clothing and Equipment: NONE WHEN USED IN ACCORDANCW WITH LABEL DIRECTIONS. Work Practices, Hypenic Practices: WASH WITH SOAP AND WATER BEEDE Work Practices, Hygenic Practices: WASH WITH SOAP AND WATER BEFORE EATING, SMOKING, DRINKING OR USING TOILET FACILITIES. Ther Handling and Storage Requirements: HANDLE AND STORE IN ACCORDANCE WITH LABEL DIRECTIONS. DO NOT PUNCTURE OR INCINERATE CONTAINER. Protective Measures During Maintenance of Contaminated Eq. jpment: FLUSH OFF WITH WATER AND /OR WIP: OFF WITH RAGS ALL CONTAMINATION PRIOR TO WORKING ON EQUIPMENT. ALLOW TO AIR DRY. WORK IN WELL VENTILATED ÀŘEÄ. HE INFORMATION ON THIS MATERIAL SAFETY DATA SHEET REPRESENTS THE LATEST ATA AND REST OPINION AS TO THE PROPER USE AND HANDLING OF THIS PRODUCT UNDER NORMAL CONDITIONS. ANY USE OF THIS PRODUCT OR METHOD OF APPLICATION WHICH IS NOT IN CONFORMANCE WITH THIS DATA SHEET AN) THE RODUCT LABEL DIRECTIONS, IS THE RESPONSIBILITY OF THE USER. THIS ATERIAL SAFETY DATA SHEET WAS PREPARED TO COMPLY WITH THE OSHA HAZARD UNICATION REGULATION.

		METHANOL		<u></u>		MSDS No. HCRO01423 Rev. Date 05/21/86
	DIVIS 1500 P.D.	CHEMICAL COMPANY ION OF ATLANTIC RICHFIE Market Street Box 7258 Delphia. Pennsylvania	LD COMPANY 19101	hi er th Ti H	APORTANT: Read th andling and disposing nd pass this informati mployees, customers, nis product his product is covered azard Communication ocument has been pro- tith the MSDS require	is MSDS before of this product ion on to and users of d by the OSHA n Rule and this spared in accord
1.		Genera				
Trade Name	METHANOL				ephone Numbers MERGENCY	
Other Names	METHYL ALCOHOL, WOOD	ALCOHOL	<u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>	c	800/424-9300 215/353-8300 USTOMER SERVIC 800/321-7000	ARCO CHEM
Chemical Family	ALIPHATIC ALCOHOL		DOT Hazardou METHYL ALC		Proper Shipping	Name
Generic Nam			DOT Hazard C	lass		
CAS No.	SEE SECTION IX	Company ID No. E000142300		UN/NA ID	No. UN 1230	
11. [	DANGER	Summary of H	lazards	1	BEGINNING ON	
P	HYSICAL HAZARDS:	EXTREMELY FLAMMABLE-I Flame	AAY BURN WITH	INVISIBL	Ê	
<b>A</b>	CUTE HEALTH EFFECTS: (SHORT-TERM)	MODERATE INHALATION N MODERATE EYE IRRITAN MODERATE SKIN ABSORP MODERATE INGESTION H SLIGHT SKIN IRRITANT	L LION HAZARD	PPLEMENT		
<b>c</b>	HRONIC HEALTH EFFECTS: (Long-term)	SWALLOWING AS LITTLE Methanol has been rei Serious irreversible See supplement	PORTED TO CAU	SE DEATH	OR	
111.		Fire and Expl	osion			
Flash Point II AP 5	Method) O'F (CC )	Autoignition Temperature AP 725° F	(Method)		mits (% Vol. in Air) tmospheric Temperat 6 Upper	
Fire and Explosion Hazards	WITH AIR AND EXPOSED CONFINED. MIXTURES WI STILL FLAMMABLE (FLAS	PORS BELOW NORMAL AMBIEN TO IGNITION SOURCE, CAN TH WATER AND AS LITTLE H PT. <100 F). UNDER SON DING ALUMINUM AND ZINC,	BURN IN OPEN AS 21% (by vo Me circumstan	OR EXPLO	DE IF GL ARE Corrode	
Extinguishing Media	DRY CHEMICAL CO2 WATERSPRAY FOAM FOR ALCOHOLS	WATER FOG	,			
Special Firefighting Procedures	W/O PROPER PROTECTION FIGHT FIRE FROM SAFE RUPTURE CLOSED CONTAI INJURIES. APPLY AQUEO	OT BE VISIBLE TO THE NAN . SEE SECTION X - DECOM DISTANCE/PROTECTED LOCA NERS. SPREADING FIRE, IN US EXTINGUISHING MEDIA ( NEARBY EQUIPMENT. NOTIO	POSITION PROD FION. HEAT MA NCREASING RIS CAREFULLY TO	UCTS POSS Y BUILD P K OF BURN AVOID FRO	IBLE. RESSURE/ S/ THING	

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IV.	P	Health Hazards					<b>.</b>
Summary of Acute Hazards	MODERATE HEALTH HAZARD - SEE 8	BELOW FOR ROUTE-SPE	CIFIC	DETAILS	· · · · · · · · · · · · · · · · · · ·		
ROUTE OF EX	POSURE S	IGNS AND SYMPTOMS				Primary Rou	teis
Inhalation	OVEREXPOSURE MAY CAUSE COUGHIN ICATION AND COLLAPSE.	NG. SHORTNESS OF BE	REATH,	DIZZINES	S. INTOX-	X	
Eye Contact	MAY CAUSE MODERATE IRRITATION. REDNESS OR SWELLING.	, INCLUDING BURNING	SENS	ATION, TE	ARING.	X	
Skin Absorption	EXPOSURE TO THIS MATERIAL CAN HEALTH HAZARD.	RESULT IN ABSORPTI	ON TH	ROUGH SKI	N CAUSING	. 🛛	
Skin Irritation	MAY PRODUCE SKIN IRRITATION.						
Ingestion	SEE SUPPLEMENT				<u> </u>	X	
Summary of Chronic Hazard and	SEE SUPPLEMENT						
Special Health Effects	SEE SUPPLEMENT						
<b>V.</b>	Protective Equipment a	nd Other Con	trol I	Measur	es		
Respiratory	DC NOT USE AIR-PURIFYING RESPI OR SELF-CONTAINED BREATHING AP ARE SATISFACTORY.						1
Eye	EVE PROTECTION SUCH AS CHEMICAL SPLASH GOGGLES AND/OR FACE SHIELD MUST BE WORN WHEN POSSIBILITY EXISTS FOR EVE CONTACT DUE TO SPLASHING OR SPRAYING LIQUID, AIRBORNE PARTICLES, OR VAPOR. CONTACT LENSES SHOULD NOT BE WORN.						
Skin	WHEN SKIN CONTACT IS POSSIBLE, SLEEVES, BOOTS, HEAD AND FACE MUST BE CLEANED THOROUGHLY AFT	PROTECTION SHOULD					
Engineering Controls	GENERAL ROOM OR LOCAL EXHAUST Posure standard(s).	VENTILATION IS USU	ALLY I	REQUIRED	TO MEET EX-		
Other Hygienic	EMERGENCY EYE WASH FOUNTAINS A IMMEDIATE VICINITY OF ANY POTE		SHOULI	D BE AVAI	LABLE IN THE	<u></u>	
Work Practices	USE GOOD PERSONAL HYGIENE PRAC SMOKING, OR USING TOILET FACIL THOROUGHLY BEFORE REUSE. SHOWE	ITIES. PROMPTLY RE	MOVE :	SOILED CL	OTHING/WASH		
<b>VI.</b>	Occupat	ional Exposure	e Lin	nits			
Substance		Source	Date	Туре	Value/Units	Tim	e
METHYL ALCO	HOL - SKIN	ACGIH Osha	1984 1971	TWA STEL TWA	200 PPM 250 PPM 200 PPM	15 M	HRS MIN HRS
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	METHANOL	HCROO142 Rey. Date 05/21/86
VII.	Emergency and First Aid	
Inhalation	IF OVERCOME BY EXPOSURE, REMOVE VICTIM TO FRESH AIR IMMEDIATELY. GIVE Oxygen or artificial respiration as needed. Obtain emergency medical attention. prompt action is essential.	
Eye Contact	IN CASE OF EYE CONTACT, IMMEDIATELY RINSE WITH CLEAN WATER FOR 20-30 MINUTES. RETRACT EYELIDS OFTEN. OBTAIN EMERGENCY MEDICAL ATTENTION.	
Skin Contact	IMMEDIATELY REMOVE CONTAMINATED CLOTHING. WASH SKIN THOROUGHLY WITH MILD SOAP/WATER. FLUSH W/LUKEWARM WATER FOR 15 MINUTES. IF STICKY, USE WATERLESS CLEANER FIRST. SEEK MEDICAL ATTENTION IF ILL EFFECT OR IRRITATION DEVELOPS.	
Ingestion	IF SWALLOWED, GIVE LUKEWARM WATER (PINT) IF VICTIM COMPLETELY CONSCIOUS/ ALERT. INDUCE VOMITING. OBTAIN EMERGENCY MEDICAL ATTENTION. PROMPT ACTION IS ESSENTIAL.	·
Emergency	METHANOL INGESTION IS LIFE-THREATENING. INDUCE VOMITING WITH SYRUP OF IPECAC. FOLLOW EMESIS WITH MODERATE AMOUNTS OF WATER ORALLY.	
Medical Treatment Procedures	SYMPTOM ONSET MAY BE DELAYED. ETHANOL THERAPY MAY BE INDICATED.	
VIII.	Spill and Disposal	
Precautions if Material ' is Spilled or Released	EXTREMELY FLAMMABLE LIQUID, RELEASE CAUSES IMMEDIATE FIRE/EXPLOSION HAZARD. LIQUIDS/VAPORS MAY IGNITE. EVACUATE/LIMIT ACCESS. EQUIP RESPONDERS WITH PROPER PROTECTION (SEE SEC. V). KILL ALL IGNITION SOURCES. STOP RELEASE. PREVENT FLOW TO SEWERS/PUBLIC WATERS. RESTRICT WATER USE FOR CLEANUP.NOTIFY FIRE/ENVIRONMENTAL AUTHORITIES. IMPOUND/RECOVER LARGE LAND SPILL. BLANKET WITH FIREFIGHTING FOAM (SEE SEC. III), SOAK UP SMALL SPILL WITH INERT SOLIDS. USE SUITABLE DISPOSAL CONTAINERS. ON WATER, MATERIAL SOLUBLE/MAY FLOAT OR SINK.MAY BIODEGRADE. CONTAIN/MINIMIZE DISPERSION/COLLECT. DISPERSE RESIDUE TO REDUCE AQUATIC HARM. REPORT PER REGULATORY REQUIREMENTS.	
Waste Disposal Methods	CONTAMINATED PRODUCT/SDIL/WATER MAY BE RCRA/OSHA HAZARDOUS WASTE (SEE 40 CFR 261 AND 29 CFR 1910). IF SPENT SOLVENT INTENDED FOR DISPOSAL, MAY BE DESIGNATED FOO5; IF SPILL CLEANUP RESIDUE, U154 UNDER RCRA LISTINGS. LAND- FILL SOLIDS AT PERMITTED SITES. USE REGISTERED TRANSPORTERS. BURN CONCEN- TRATED LIQUIDS IN SYSTEMS DESIGNED FOR LOW FLASH POINT MATERIAL. AVOID FLAMEDUTS. ASSURE EMISSIONS COMPLY WITH APPLICABLE REGULATIONS. DILUTE AQUEOUS WASTE MAY BIODEGRADE. AVOID OVERLDADING/POISONING PLANT BIOMASS. ASSURE EFFLUENT COMPLIES WITH APPLICABLE REGULATIONS.	, . <b></b>
IX.	Components (This may not be a complete)	
Component N	addinposition	
Component N METHANCL		tion on Pa

Compositions given are typical values, not specifications.

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THANOL					MSDS No. HCROC	1423
<b>x.</b>		Physical and	Chemical	Data		
Boiling Poir	nt (At 760.0 mm Hg) 147' F	Viscosity Units, Temp. (M N/AP	ethod)		Dry Point N/AP	• .
Fre-ing Po	9 144° F	Vapor Pressure (MM HG AT <u>68</u> °F)	AP 96	;	Volatile Characteristic MODERATE	<b>5</b>
Specific Gr AP 0.79	avity (H, O = 1 at 39.2'F	Vapor Sp. Gr. (Air = 1.0 at AP 1.1	60'- 90'F) Se	Diubility in Wate COMPLETE	r pH N/AP	
	Polymerization TED TO OCCUR	Other Chemical Reactivity	<b>,</b>		Stability STABLE	
Other Physi and Chemic	ical N/P al Properties					
Appearance and Odor		COLORLESS LIQUID: FAINT NDT A GOOD INDICATOR (				
Conditions to Avoid	HEAT, SF	PARKS, OPEN FLAME, OXIC	DIZING CONDIT	TONS		
Materials to Avoid	REACTIVE	DXIDIZING AGENTS; ALUMI METAL WHICH WILL DISF FORMS OF PLASTICS, RUE	LACE HYDROGE	N ;	· · · · · · · · · · · · · · · · · · ·	
lazardous ecomposit Products		TE COMBUSTION WILL GEN OTHER TOXIC VAPORS SUC			RBON MONOXIDE AND	·
<b>KI.</b>		Additional	Precautio	ns		
andling, Storage and econta- mination Procedures	BLANKET STORAGE WIT CAREFULLY VENT INTE BEFORE TRANSFER. WI SHOULD CONFORM TO N MATERIAL OF CONSTRU HANDLE "EMPTY" DRUM ISOLATE, VENT, DRAI ANCE OR REPAIR. REM SIVENESS AND OXYGEN	STRONG OXIDIZING AGENT H DRY INERT GAS. STORE RNAL PRESSURE BEFORE F LL ABSORB ATMOSPHERIC MATIONAL ELECTRIC CODE. (CTION. DO NOT STORE IN IS WITH CARE/VAPOR RESI N. WASH AND PURGE SYST IOVE ALL IGNITION SOURC DEFICIENCIES. USE-ADE PRECAUTIONS PERTAINING	E DRUMS WITH REMOVING CLOS MOISTURE. EL CARBON STEE I ALUMINUM OR DUE MAY BE F TEMS OR EQUIP CES. CHECK AT COUATE PERSON	BUNG IN UP PO URE. GROUND C ECTRICAL EQUI L IS SATISFAC ZINC (GALVAN LAMMABLE/POIS MENT BEFORE M MOSPHERE FOR AL PROTECTIVE	SITION. ONTAINERS PMENT TORY IZED). ONOUS. AINTEN- EXPLO-	
General Comments		TION PRESENTED AND CON DIRECT TEST DATA ON TH			FROM	-
J						
No	ote Qualificat	EQ ≈ Equal ions: LT = Less Than GT ≈ Greater Than	AP = Approxii UK = Unkown TR = Trace	N/AP =	o Applicable Information Not Applicable No Data Available	Found
The condit	ANY WARRANTY, EXPRESS ( tions of methods of handling, AND OTHER REASONS, WE [	ained from sources which we be DR IMPLIED, REGARDING ITS C , storage, use and disposal of th DO NOT ASSUME RESPONSIBIL	ORRECTNESS. ne product are bey ITY AND EXPRES	ond our control an SLY DISCLAIM LIAE	d may be beyond our know) BILITY FOR LOSS DAMAGE	edos.
CAPENSE A	E Rev No: O	MAY CONNECTED WITH THE H	AROLING, STORA			



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лII.	Label Information	on
Manufacturer:	ARCO CHEMICAL COMPANY DIVISION OF ATLANTIC RICHFIELD COMPA 1500 MARKET STREET. P.O. BOX 7258 PHILADELPHIA, PENNSYLVANIA 19101	Telephone Numbers NY EMERGENCY 800/424-9300 CHEMTREC 215/353-8300 ARCO CHEM CUSTOMER SERVICE 800/321-7000 INFO ONLY
Use Statement:	FOR INDUSTRIAL USE ONLY KEEP OUT OF REACH OF CHILDREN	
Signal Word:	DANGER	
Physical Hazards: EXTREMELY FLAMMABLE	:	
	` <b>v</b>	
Health Hazards: Inhalation Hazard Skin Contact Hazard Ingestion Hazard	SKIN	RRITANT IRRITANT AUSE LONG-TERM ADVERSE HEALTH EFFECTS
Precautionary Measures:	DO NOT HANDLE NEAR HEAT, SPARKS, OR KEEP CONTAINER CLOSED WHEN NOT IN US DO NOT STORE NEAR COMBUSTIBLE MATERI AVOID CONTACT WITH EYES. AVOID PROLONGED OR REPEATED BREATHIN AVOID PROLONGED OR REPEATED CONTACT USE ONLY WITH ADEQUATE VENTILATION/P PREVENT CONTACT WITH FOOD, CHEWING, O WASH THOROUGHLY AFTER HANDLING. DO NOT TASTE/SWALLOW.	E. ALS. 3 OF VAPOR. WITH SKIN. ERSONAL PROTECTION.
DOT Information: Hazard Class- Proper Shipping-	UN/NA ID Number- UN 1230 FLAMMABLE LIQUID METHYL ALCOHOL	
Instructions: In case of fire, use-		ATER FOG
First Aid -Inhalation		VICTIM TO FRESH AIR IMMEDIATELY. GIVE N AS NEEDED. OBTAIN EMERGENCY MEDICAL ENTIAL.
-Eye Conta		TELY RINSE WITH CLEAN WATER FOR 20-30 . Obtain emergency medical attention.
-Skin Cont -Ingestion	SOAP/WATER. FLUSH W/LUKEWARM WA' Cleaner First. Seek medical atti If swallowed, give lukewarm wat	CLOTHING. WASH SKIN THOROUGHLY WITH MILD TER FOR 15 MINUTES. IF STICKY, USE WATERLES ENTION IF ILL EFFECT OR IRRITATION DEVELOPS ER (PINT) IF VICTIM COMPLETELY CONSCIOUS/ EMERGENCY MEDICAL ATTENTION. PROMPT ACTION
In case of spill,	IS ESSENTIAL. Extremely flammable liquid. Rei Hazard. Extinguish all ignition	LEASE CAUSES IMMEDIATE FIRE/EXPLOSION N SOURCES. IMPOUND/RECOVER LARGE LAND WATER, MAY BIODEGRADE. CONTAIN/MINIMIZE
Protective Equipment: -Respiratory	USE NIOSH/MSHA APPROVED SUPPLIES	AIR DR SELF-CONTAINED BREATHING APPARATUS
-Eye	CHEMICAL SPLASH GOGGLES AND/OR I	FACE SHIELD.
-Skin	PROTECTIVE CLOTHING INCLUDING G	OVES, APRON, SLEEVES, BOOTS, AND FULL

Issue No. 001



XIII.

**METHANOL** 



### Supplement

#### ACUTE AND CHRONIC HEALTH EFFECTS

SWALLOWING AS LITTLE AS 1 TO 4 DUNCES OF METHANOL HAS BEEN REPORTED TO CAUSE DEATH OR SERIOUS IRREVERSIBLE INJURY SUCH AS BLINDNESS IN HUMANS. STUDIES IN EXPERIMENTAL ANIMALS INDICATE THAT THE METABOLISM OF METHANOL TO FORMIC ACID RESULTS IN METABOLIC ACIDOSIS AND REVERSIBLE OR IRREVERSIBLE DAMAGE TO THE OPTIC NERVE. SEE THE MEDICAL TREATMENT SECTION OF THIS DATA SHEET FOR INFORMATION ON TREATING METHANOL POISONING.

A RECENT ARTICLE HAS REPORTED EFFECTS OF EXPOSURE TO METHANOL VAPORS (AM. IND. HYG. ASSOC. J. 45(1): 57-55, 1984). IN THIS REPORT TEACHERS AIDES EXPOSED TO METHANOL VAPORS (365-3080 PPM) IN DIRECT-PROCESS SPIRIT DUPLICATING OPERATIONS REPORTED SIGNIFICANTLY MORE OF THE FOLLOWING COMPLAINTS THAN A COMPARISON GROUP: BLURRED VISION, HEADACHE, DIZZINESS, AND NAUSEA.

#### SPECIAL HEALTH EFFECTS

INGESTION OF THIS PRODUCT, EVEN IN SMALL AMOUNTS, CAN CAUSE BLINDNESS AND DEATH. ONSET OF SYMPTOMS MAY BE DELAYED FOR 18-24 HOURS: TREATMENT PRIOR TO ONSET OF OBVIOUS SYMPTOMS MAY BE LIFE-SAVING. METHANOL IS RAPIDLY ABSORBED AND EMESIS SHOULD BE INITIATED EARLY TO BE EFFECTIVE. WITHIN 30 MINUTES OF INGESTION, IF POSSIBLE. ADMINISTER SYRUP OF IPECAC. AFTER THE DOSE IS GIVEN, ENCOURAGE PATIENT TO TAKE 6-8 OUNCES OF CLEAR NON-CARBONATED FLUID. DOSE MAY BE REPEATED ONCE IF EMESIS DOES NOT OCCUR WITHIN 20-30 MINUTES, ADMINISTRATION OF AN AQUEOUS SLURRY OF ACTIVATED CHARCOAL WITH MAGNESIUM CIRTATE OR SORBITOL AS A CATHARTIC HAS BEEN REPORTED HELPFUL.

ETHANOL INHIBITS THE FORMATION OF TOXIC METABOLITES. IF ETHANOL THERAPY IS INDICATED, ADMINISTER A LOADING DOSE OF 7.6-10 ML/KG OF BODY WEIGHT OF 10% ETOH IN D5W OVER 30-60 MINUTES. MAINTENANCE DOSE IS 1.4 ML/KG/HR OF 10% ETOH, TO ACHIEVE A 100-130 MG/DL BLOOD ETOH LEVEL DURING ETHANOL THERAPY. (IF CHARCOAL IS ADMINISTERED, ETHANOL SHOULD BE ADMINISTERED INTRAVENOUSLY AND NOT CRALLY.)

MAINTAIN CONTACT WITH POISON CONTROL CENTER DURING ALL ASPECTS OF DIAGNOSIS AND TREATMENT.

#### NOTICE TO DEPOSITORS-40 CFR PART 280-UNDERGROUND STORAGE TANK REGULATIONS

A NEW FEDERAL LAW REQUIRES OWNERS OF UNDERGROUND TANKS, USED TO STORE PETROLEUM OR CERCLA HAZARDOUS SUBSTANCES. TO NOTIFY DESIGNATED STATE OR LOCAL AGENCIES BY MAY 8, 1986 OF THE EXISTENCE OF THEIR TANKS. NOTIFICATIONS FOR TANKS BROUGHT INTO USE AFTER MAY 8, 1986 MUST BE MADE WITHIN 30 DAYS. CONSULT EPA'S REGULATIONS. ISSUED ON NOVEMBER 8, 1985. TO DETERMINE WHETHER YOU ARE AFFECTED BY THIS LAW MATERIAL SAFETY DATA SHEET

CORPORATE RESEARCH & DEVELOPMENT 120 ERIE BOULEVARD SCHENECTADY, N.Y. 12305



NO. <u>134</u> <u>MINERAL SFIRTS</u> <u>TYPE 14</u> <u>Revision B</u> DATE July 1984

DATE

SECTION I. MATERIAL IDENTIFICATION MATERIAL NAME: MINERAL SPIRITS, TYPE In DESCRIPTION: Refined distillate of petroleum. Hydrocarbon mixture (see Sect II) with a controlled distillation range and a flash point >100 F. OTHER DESIGNATIONS: Stoddard Solvent; Petroleum Distillate, Naphtha or Spirits, (combustible); White Spirits; ASTM D235, Type I; GE Material D538; CAS #008 052 413; C_E0. MANUFACTURER: Availablé from many suppliers. SECTION II. INGREDIENTS AND HAZARDS 50 HAZARD DATA 8-hr Tak 100 gpa* Mineral Spirits, Type I  $(or 525 mg/m^2)$ Typical composition: 30-50 Paraffinic hydrocarbons 30-40 Naphthenic hydrocarbons (Cycloparaffins) 10-20 Eye, Human Aromatic and olefinic hydrocarbons 470 pp= 15M (Irritation Effect) *ACGIH (1983) TLV; STEL is 200 ppm. NIOSE has recommended a 10-hr TWA of 60 ppm or 350 mg/m³. The "action level" is also recommended to be 350 mg/m³. Current CSHA PEL for Stoddard Solvent is 500 ppm. SECTION III. PHYSICAL DATA Specific gravity 60/60 F Soiling point, 1 atm, deg F ----- 300-407 ce 0.79 Voleciles, % -Vapor pressure @ 25 C, mm Hg ---- cs 5 ca 100 Vapor density (Air=1) (average) - ca 4.8 ca 0.08 Evaporation rate (BuAc=1) - İnsoluble Solubility in water, 200 -----Appearance & Odor: Clear, colorless liquid with a kerosine-like odor that is usually perceptible to humans at about 1 ppm in air. SECTION IV. FIRE AND EXPLOSION DATA Lower Upper Fics Point one Methoe 1 Autoionition Temp. Flommobility Limits in Air 450-500 F b.e 100 F =i=. (TCC) % by volume ~6 Extinguishing media: Foam, dry chemical, carbon dioxide, and water spray or fog. Use ci a direct stream of water on burning liquid can scatter flames. This liquid is near its lower flammability limit at room temperature (saturated air at 25 C contains about 0.5 volume % of Stoddard Solvent). In a fire situation or when heated or misted, it becomes a hazardous, highly flammable material. Use self-contained breathing apparatus for respiratory protectics is fighting fires in enclosures. SECTION V. REACTIVITY DATA This material is stable in closed containers under its normal handling and storage conditions. It does not polymerize. As a combustible hydrocarbon liquid (OSHA Class II), it can react violently with strong oxidizing agents such as chlorine, oxygen, or such strong exidizing acids as mitric and sulfuric. Thermal-exidetive degradation can produce carboz zonoxide and partially exidized hydrocarbons.

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SECTION VI. HEALTH HAZARD INFORMATION	TLV 100 ppm (See Sect II)				
This material is a central nervous system depressant and a mucous membrane irritant. Symptoms of overexposure include dizziness, headache, intoxication with euphoria leading to unconsciousness. Nose and throat irritation may occur from inhalation. Prolonged or repeated skin contact will cause defatting, irritation and dermatitis. Eye contact with liquid can cause conjunctivitis. Eye irritation can also occur after 15 minutes exposure to vapors at 470 ppm. A fatal ingestion dosage for humans is estimated at 3-4 ounces. Aspiration into the lungs after ingestion can cause edema; and one ounce aspirated may <i>HIRST AID</i> :					
Eve Contact: Flush thoroughly with running water for 15 min., including under eyelids. <u>Skin Contact</u> : Promptly remove solvent wet clothing and wash contact area with soap and <u>water</u> . Get medical help if irritation persists or if large body area contacted. <u>Inhalation</u> : Remove to fresh air. Restore and/or support breathing as needed. (If breathing is difficult, give oxygen therapy.) Get medical help. <u>Ingestion</u> : <u>Contact physician</u> ! Aspiration a hazard! Give 3 oz of USP white mineral oil or edible vegetable oil to drink. Do not induce vomiting unless medical help is not available, the victim is alert, and 71-2 oz has been ingested.					
SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURE					
Notify safety personnel of large spills. Eliminate sources of heat or ignition. Provide adequate ventilation. Clean-up personnel need protection against skin contact and inhalation of vapors. Contain spill. Recover liquid when possible. Absorb small spills and residues with vermiculite, dry sand, or similar material. Pick up and place in suitable containers. Avoid discharging Mineral Spirits directly into a sewer or surface waters!					
DISPOSAL: Absorbed material can be buried in an ap removed via a licensed solvent disposal company. regulations.					
SECTION VIII. SPECIAL PROTECTION INFORMATION					
Provide general vertilation and, especially when heated or misted, local exhaust ventila- tion (explosion-proof) to meet TLV requirements. A chemical cartridge respirator with organic vapor cartridge and a full facepiece can be used below 1000 ppm. Self-contained breathing apparatus with a full facepiece has been recommended for use up to 5000 ppm. Approved protective gloves should be used to prevent prolonged or repeated skin contact. Chemical safety goggles and/or face shield should be used where splashing is possible. An eyewash station and washing facilities should be accessible. Remove contarinated clothing (fire and health hazard); thoroughly dry or launder before					
reuse. Preplacement and periodic medical exams should emp nervous system, and respiratory diseases for the with such problems may be at an increased risk f	se regularly exposed. Individuals				
SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS					
Store in a cool, clean, well-ventilated, fire resistant storage area away from oxidizing agents and sources of heat and ignition. Use a solvent storage room or cabinet that meets requirements for an OSHA Class II Combustible liquid. Store in closed metal drums or safety cans with identifying labels. Prevent physical damage to containers. Bond and ground containers for transfers of liquid to prevent static sparks. Use non- sparking tools and follow electrical codes in areas of use and storage. No smoking in					
areas of use or storage. Use with good ventilation. Avoid inhalation of mist or vapors. Prevent eye contact and repeated or prolonged skin contact.					
DOT Classification: PETROLEUM NAPHTHA I.D. No. UN PETROLEUM DISTILLATE I.D. No.					
DATA SOURCE'S) CODE: 2-7,9,11,12,14,16,27,31,38,47					
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MOBIL DIL CORPORATION MATERIAL SAFETY DATA BULLETIN

*********************** I. PRODUCT IDENTIFICATION ****************************** HOBIL 600 W CYLINDER OIL HEALTH EMERGENCY TELEPHONE: SUPPLIER: (212) 833-4411 MOBIL OIL CORP. CHEMICAL NAMES AND SYNONYMS: TRANSPORT EMERGENCY TELEPHONE: (800) 424-9300 (CHEMTREC) PET. HYDROCARBONS AND ADDITIVES USE OR DESCRIPTION: CYLINDER DIL ********** II. TYPICAL CHEMICAL AND PHYSICAL PROPERTIES ************ APPEARANCE: ASTM 3.0 LIQUID ODOR: MILD PH: NA VISCOSITY AT 100 R, SUS: 2000.0 AT 40 C, CS: 375.0 VISCOSITY AT 210 F, SUS: 140.0 AT 100 C/ CS: 29.0 FLASH POINT F(C): 540(282) (ASTM D-92) POUR POINT F(C): 40(4) MELTING POINT S(C): NA BOILING POINT F(C): > 600(316) RELATIVE DENSITY, 15/4 C: 0.901 SOLUBILITY IN WATER: NEGLIGIBLE VAPOR PRESSURE-MM HG 200: < .1 NA=NOT APPLICABLE NE=NOT ESTABLISHED D=DECOMPOSES FOR FURTHER INFORMATION, CONTACT YOUR LOCAL MARKETING OFFICE. ***** WT PCT EXPOSURE LIMITS SOURCES (APPROX) MG/M3 PPH (AND NUTES) HAZARDOUS INGREDIENTS: NONE OTHER INGREDIENTS: REFINED MINERAL DILS >95 ADDITIVES AND/OR OTHER INGREDS. < 5 KEY TO SOURCES: A=ACGIH-TLV, A*=SUGGESTED-TLV, M=MOBIL, D=DSHA NOTE: LIMITS SHOWN FOR SUIDANCE DHLY. FOLLOW APPLICABLE REGULATIONS. EFFECTS OF OVEREXPOSURE: NOT EXPECTED TO BE A PROBLEM. ################# V. EMERGENCY AND FIRST AID PROCEDURES ***** EYE CONTACT: FLUSH WITH WATER. ŧ. SKIN CONTACT: WASH CONTACT AREAS WITH SDAP AND WATER. INHALATION: NOT EXPECTED TO BE A PROBLEM. INGESTION: NOT EXPECTED TO BE A PROBLEM WHEN INGESTED. IT UNCOMFORTABLE SEEK NEDICAL ASSISTANCE. L *************** VI. FIRE AND EXPLOSION HAZARD DATA ********************* 540(292) (ASTM 0-92) FLASH POINT F(C): Ł FLAMMABLE LIMITS. LEL: .6 UEL: 7.0 EXTINGUISHING MEDIA: CARBON DIOXIDE/ FOAM/ DRY CHEMICAL AND WATER FOG." SPECIAL FIRE FIGHTING PROCEDURES: FIREFIGHTERS MUST USE SELF-CONTAINED ١Ľ. **BREATHING APPARATUS** UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE NEPA HAZARD ID: HEALTH: C, FLAMMABILITY: 1, REACTIVITY: 0 

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	MOBIL 600 W CYLI	NDER DIL	601260 PAGE 2 DF 3
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		AND REGULATIONS, AN	D PROCUCT
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			SUITABLE FOR PROCESSING
		G FACILITY OR CAN BE	
			. USE OF THESE METHODS
IS SUB.	JECT TO USER COMP	LIANCE WITH APPLICAB	LE LAWS AND REGULATIONS
AND COL	NSIDERATION OF PR	DDUCT CHARACTERISTIC	S AT TIME OF DISPOSAL.
•			
			4TION **************
EVE PROTECT	ION: NO SPECIAL	EQUIPMENT REQUIRED.	
SKIN PROTECT	TION: NO SPECIAL	EQUIPMENT REQUIRED.	HOWEVER, GOOD PERSONAL
HYGIEN	E PRACTICES SHOUL	D ALWAYS BE FOLLOWED	•
RESPIRATORY	PROTECTION: NO	SPECIAL REQUIREMENTS	UNDER ORDINARY
CONDITI	IONS OF USE AND W	ITH ADEQUATE VENTILA	TION.
VENTILATION:	: NU SPECIAL REQ	UIREMENTS UNDER ORDI	NARY CONDITIONS OF USE
AND WIT	TH ADEQUATE VENTI	LATION.	
*******	********** X.	SPECIAL PRECAUTIONS	********
	PRECAUTIONS REQUI		
********	********** XI.	TOXICOLOGICAL DATA	******
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MOBIL 600 W CYLINDER DIL	601260	PAGE 3 OF 3
<pre>****************** XII. REGULATORY INFORMATION TSCA INVENTORY STATUS: ALL COMPONENTS REGISTERED. '.D.T. SHIPPING NAME: NOT APPLICABLE D.D.T. HAZARD CLASS: NOT APPLICABLE US OSHA HAZARD COMMUNICATION STANDARD: PRODUCT AS WITH OSHA CFR 1910.1200 AND DETERMINED NOT TO RCRA INFORMATION: THE UNUSED PRODUCT, IN OUR OPIN SPECIFICALLY LISTED BY THE EPA AS A HAZARDOUS PART 261DJ; DOES NOT EXHIBIT THE HAZARDOUS CH ISNITABILITY, CORROSIVITY, OR REACTIVITY, AND WITH THE METALS CITED IN THE EP TOXICITY TEST PRODUCT MAY BE REGULATED.</pre>	SESSED IN A BE HAZARDO ION, IS NOT WASTE (40 ARACTERISTI IS NOT FOR	CCCRDANCE JS. CFR, CS OF YULATED
THE FOLLOWING PRODUCT INGREDIENTS ARE CITED ON THE	LISTS BELD	4 =
CHEMICAL NAME CAS NUMBER DILS, LAPD 8016-28-2		AT IONS
KEY TO LIST CITATIONS 1 = OSHA Z, $2 = ACGIH$ , $3 = IARC$ , $4 = 5 = EPA CARC$ , $7 = NFPA 49$ , $8 = NFPA 325H$ , $9 = 11 = IL RTK$ , $12 = NA RTK$ , $13 = MN RTK$ , $14 = 16 = FL RTK$ , $17 = PA RTK$ .	NTP, Dot HMT, '	$IO = CA RTK_{P}$
INFORMATION GIVEN HEREIN IS OFFERED IN GOOD FAITH ITHOUT GUARANTEE. CONDITIONS OF USE AND SUITABIL PARTICULAR USES ARE BEYOND OUR CONTPOL; ALL RISKS ARE THEREFORE ASSUMED BY THE USER AND WE EXPRESSLY WASBANILES DE EYSRY KIND AND NAIURE, INCLUDING WAR MERCHANIAGILIIY AND ELINESS FOR A PARLICULAR PURPO USE DB SUITABILITY DE INC PRODUCT. NOTHING IS INT RECOMMENDATION FOR USES WHICH INFRINGE VALID PATEN LICENSE UNDER VALID PATENTS. APPEOPRIATE WARNINGS	AS ACCURATE, ITY OF THE OF USE OF THE DISCLAIM AN RANILES DE SE IN RESPE ENDED AS A NTS OR AS EX	BUT PRODUCT FOR HE FRODUCT LL CI ID IBE TENDING
PROCEDURES SHOULD BE PROVIDED TO HANDLERS AND USER		
PREPARED BY: MOBIL OIL CORPORATION ENVIRONMENTAL AFFAIRS AND TOXICOLOGY DEPARTME FOR FURTHER INFORMATION, CONTACT: MOBIL DIL CORPORATION, PRODUCT FORMULATION AN 3225 GALLOWS ROAD, FAIRFAX, VA 22037	NT, PRINCET	ON/ NJ ONTROL
FOR MOBIL USE ONLY: (FILL NO: TSDO19A032) MHC: US33-224 APPROVE REVISED: 02/15/84		

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MOBIL MATERIAL SAFETY DATA SULLETIN

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103IL CIL COPPORATION						
ENVIRONMENTAL AFFAIRS AND T	OXICULIST	DEPT	N	EW TURKA	- N.Y. 10	017 (054
*******	RODUCT ID E	NTIFIC	ATION	*****	******	** *****
l l	MOBIL DT	E 797	OIL			
SUPPLIER:			HEALTH	EMERGEI	NCY TELEP	HONES
MOBIL OIL CORP.				212)883-		
CHEMICAL NAMES AND SYNDNYHS	5 :				RGENCY TE	LE PHONE :
PET. HYDROCARBONS AND					-9300 ( CHE	
USE OR DESCRIPTION:			-	DESIGNA		
STEAM TURBINE OIL		•		TRN 600'		
Steam, to terme sie			•	184 000		
************** TYPICAL CHE	MICAL AND	PHYSI	CAL PR	OPERTIES	5 *****	******
APPEARANCE:	VISCOSIT	Y: AT	100 F	, SUS	AT 40	C, CS
ASTM 0.5 LIQUID			160.		30.	0
DOGR:	VISCOSIT	TA :Y	210 F	• SUS	AT 100	C, CS
MILD			44 -		5.	
RELATIVE DENSITY: 15/4 C	SOLUBILI	TYIN	WATER:		PH:	
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NA			0(-7)			
BOILING PEINT: F(C)	FLASH PO	_	• • • •	стнал)		
>600(315)				) (ASTM	n-92)	
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	W			TWAD:	MG/M3	PPH
·	<i>.</i>					
	(A)	PPROX)				
HAZARDOUS INGREDIENTS: NONE	<b>(</b> A )	PPROX)				
NONE	( A	PPROX)				
HAZARDOUS INGREDIENTS: NONE NCN-HAZARDOUS INGREDIENTS: REFINED MINEPAL DILS		<b>ρρασχ)</b> <b>7</b> 5				

NOTE: TEVS SHOWN FOR GUICANCE ONLY. FOLLOW APPLICASLE REGULATIONS.

INFORMATION GIVEN HEREIN IS OFFERED IN GOOD FAITH AS ACCURATE, BUT WITHOUT GUAPANTEE. CONDITIONS OF USE AND SUITABILITY OF THE PPODUCT FOR PARTICULAR USES APE BEYOND OUR CONTROL; ALL PISKS OF USE OF THE PRODUCT ARE THEREFORE ASSUMED BY THE USER AND WE EXPESSIV DISCLAIM ALL WASPANIES OF EVERY KIND AND NATURE, INCLUDING WARPANIES OF PEPCHANIABILITY AND FIINESS FOR A PARTICULAR PURPOSS IN RESPECT TO THE USE OF SUITABILITY OF THE PRODUCT. NOTHING IS INTENDED AS A PECOMMENDATION FOR USES WHICH INFRINGE VALID PATENTS OR AS EXTENDING LICENSE UNDER VALID PATENTS. APPROPRIATE WARNINGS AND SAFE HANDLING PROCEDURES SHOULD BE PROVIDED TO HANDLERS AND USERS.

### IIdoivi MJBIL DTE 797 OIL 600114 PAGE 2 FIRE AND EXPLOSION HAZAPO DATA ***** ****** FLASH POINT: F(C) (METHOD) FLAMMABLE LIMITS: LEL UEL 7.0 410(210) (ASTH D-92) . 6 EXTINGUISHING MEDIA: CARBON DIOXIDE, FOAM, DRY CHEMICAL AND WATER FOG. SPECIAL FIRE FIGHTING PROCEDURES: FIFEFIGHTERS MUST USE SELF-CONTAINED PREATHING APPAPATUS. UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE ******* THRESHOLD LIMIT VALUE: (IF ESTABLISHED) EFFECTS OF DVEREXPOSURE: SLIGHT SKIN IRRITATION. ***************** EMERGENCY AND FIRST AID PROCEDURES EYE CONTACT: FLUSH WITH WATER. SKIN CENTACT: WASH CONTACT AREAS WITH SDAP AND WATER. INHALATION: NOT EXPECTED TO BE A PPOBLEM. INGESTION: NOT EXPECTED TO BE A PROBLEM WHEN INGESTED. IF UNCOMFORTABLE SEEK HEDICAL ASSISTANCE. ****** *********************** FEACTIVITY DATA ******** STABILITY: (THERMAL, LIGHT, FTC.) CONDITIONS TO AVOID: STABLE EXTREME HEAT INCOMPATIBILITY: (MATERIALS TO AVOID) STRONG OXIDIZERS HAZARDBUS DECOMPOSITION PRODUCTS: CAREON MONOXIDE. HAZARDOUS POLYMEPIZATION: CONDITIONS TO AVOID: WILL NOT OCCUR

Mobil MOBIL DTE 797 DIL 600114 PAGE 3 ******* SPILL OR LEAK PROCEDURE ***** ENVIRONMENTAL IMPACT: REPORT SPILLS AS REQUIRED TO APPROPRIATE AUTHORITIES. U. S. COAST GUARD REGULATIONS REQUIRE IMMEDIATE REPORTING OF SPILLS THAT COULD REACH ANY WATERWAY INCLUDING INTEPMITTENT DRY CREEKS. REPORT SPILL TO COAST GUARD TOLL' FREE NUMBER 800-424-8802. PROCEDURES IF MATERIAL IS RELEASED OR SPILLED: AUSORB ON FIRE RETARDANT TREATED SAWDUST, DIATOMACEDUS EARTH, ETC. SHOVEL UP AND DISPOSE OF AT AN APPROPRIATE WASTE DISPOSAL FACILITY IN ACCORDANCE WITH CURRENT APPLICABLE LAWS AND REGULATIONS, AND PRODUCT CHARACTERISTICS AT TIME OF DISPOSAL. WASTE MANAGEMENT: DISPOSE OF. WASTE BY SUPERVISED INCINERATION IN COMPLIANCE WITH APPLICABLE LAWS AND REGULATIONS. *********************** SPECIAL PROTECTION INFORMATION ************** EYE PROTECTION: NO SPECIAL EQUIPMENT REQUIRED. SKIN PPOTECTION: NO SPECIAL EQUIPMENT REQUIRED. HOWEVER, GOOD PERSONAL HYGIENE PRACTICES SHOULD ALWAYS BE FOLLOWED. RESPIRATORY PROTECTION: NG SPECIAL REQUIREMENTS UNDER ORDINARY CONDITIONS OF USE AND WITH ADEQUATE VENTILATION. VENTILATION: NO SPECIAL REQUIREMENTS UNDER ORDINARY CONDITIONS OF USE AND WITH ADE MATE VENTILATION. OTHER: ****** HANDLING: NO SPECIAL PRECAUTIONS REQUIRED.

### IVIODII

MOBIL DTE 797 DIL

600114 PAGE 4

ACUTE

DRAL TOXICITY: (FATS) NONTOXIC(ESTIMATED) ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

DERMAL TOXICITY: (RABBITS) NONTOXIC(ESTIMATED) ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

INHALATION TOXICITY: (RATS)

NOT APPLICABLE ---HAPMFUL CONCENTRATIONS OF MISTS AND/OR VAPORS ARE UNLIKELY TO BE ENCOUNTERED THROUGH ANY CUSTOMARY OR REASONABLY FORESEEABLE HANDLING, USE, OR MISUSE OF THIS PRODUCT. EYE IRPITATION: (RABBITS)

EXPECTED TO BE NON-IRRITATING. ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

SKIN IRRITATION: (RABBITS) MAY CAUSE SLIGHT IRRITATION ON PROLONGED OR REPEATED CONTACT. ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

SUBACUTE AND MUTAGENICITY (SUMMARY)

### CHRONIC OR SPECIALIZED (SUMMARY)

OTHER DATA

FILE CODES: (FILL NC: MTL253001 ) MHC: C+ O+ NA O+ 1+ PPEC: US84-071 APPROVE 3874 ENVIRONMENTAL AFRAIRS AND TOXICOLOGY DEPT. REVISED: MANAGER OF PRODUCT SAFETY INFORMATION, PHONE: 509-737-5596 4/17/54

WODI 625881 PAGE 1 DF 4 MOBIL DIL CORPORATION MATERIAL SAFETY DATA BULLETIN ******* I. PRODUCT IDENTIFICATION ************************ MOBIL PEGASUS 490 HEALTH EMERGENCY TELEPHONE: SUPPLIER: (212) 883-4411 MOBIL DIL CORP. CHEMICAL NAMES AND SYNONYMS: TRANSPORT EMERGENCY TELEPHONE: (800) 424-9300 (CHEMIREC) PET. HYDROCARBONS AND ADDITIVES USE OR DESCRIPTION: GAS ENGINE DIL *********** II. TYPICAL CHEMICAL AND PHYSICAL PROPERTIES APPEARANCE: ASTM 4.0 LIQUID PH: NA ODOR: MILD VISCOSITY AT 100 F. SUS: 670.0 AT 40 C, CS: 128.0 VISCOSITY AT 210 F, SUS: 72.0 AT 100 C, CS: 13.6 FLASH POINT F(C): >480(249) (ASTH D-92) POUR POINT F(C): 10(-12) MELTING POINT F(C): NA 30ILING POINT F(C): > 600(316) SOLUBILITY IN WATER: NEGLIGIBLE RELATIVE DENSITY, 15/4 C: 0.879 VAPER PRESSURE-MM HG 200: < .1 NA=NOT APPLICABLE NE=NOT ESTABLISHED D=DECOMPOSES FOR FURTHER INFORMATION, CONTACT YOUR LOCAL MARKETING OFFICE. ********** WT PCT EXPOSURE LIMITS SOURCES (APPROX) MG/H3 PPN (AND NOTES) HAZARDOUS INGREDIENTS: NONE **OTHER INGREDIENTS:** REFINED MINERAL DILS >?5 ADDITIVES AND/OR OTHER INGREDS. < 5 KEY TO SOURCES: A=ACGIH-TLV, A+=SUGGESTED-TLV, M=MOBIL, D=CSHA NOTE: LIMITS SHOWN FOR FUIDANCE ONLY. FOLLOW APPLICABLE REGULATIONS. ******* IV. HEALTH HAZARD DATA ****************** EFFECTS OF OVEREXPOSURE: NOT EXPECTED TO BE A PROBLEM. ************* V. EMERGENCY AND FIRST AID PROCEDURES *************** EYE CONTACT: FLUSH WITH WATER. SKIN CONTACT: HASH CONTACT AREAS WITH SOAP AND WATER. INHALATION: NOT EXPECTED TO BE A PROBLEM. INGESTION: NOT EXPECTED TO BE A PROBLEM. HOWEVER, IF GREATER THAN 1/2 LIFER(PINT) INGESTED, IMMEDIATELY GIVE 1 TO 2 GLASSES OF WATER AND CALL & PHYSICIAN, HOSPITAL EMERGENCY ROOM OR POISON CONTROL CENTER FOR ASSISTANCE. OD NOT INDUCE VOMITING OR GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

### IVIODII 605831 MOBIL PEGASUS 490 PAGE 2 OF 4 VI. FIRE AND EXPLOSION HAZARD DATA ******************* **** FLASH POINT F(C): > 480(249) (ASTN D-92) FLAMMABLE LIMITS. LEL: . 6 UFL: 7.0 EXTINGUISHING MEDIA: CAREON DIOXIDE, FDAM, DRY CHEMICAL AND WATER FDG. SPECIAL FIRE FIGHTING PROCEDURES: FIREFIGHTERS MUST USE SELF-CONTAINED BREATHING APPARATUS, UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE NEPA HAZARD ID: HEALTH: 0, FLAMMABILITY: 1, REACTIVITY: 0 STABILITY (THERMAL, LIGHT, ETC.): STABLE CONDITIONS TO AVOID: EXTREME HEAT INCOMPATIBILITY (MATERIALS TO AVOID): STRONG OXIDIZERS HAZARDOUS DECOMPOSITION PRODUCTS: CARBON MONOXIDE. HAZARDOUS POLYMERIZATION: WILL NOT OCCUR *********************** VIII. SPILL OR LEAK PROCEDURE ********************* ENVIRONMENTAL IMPACT: REPORT SPILLS AS REQUIRED TO APPROPRIATE AUTHORITIES. U. S. COAST GUARD REGULATIONS REQUIPE IMMEDIATE REPORTING OF SPILLS THAT COULD REACH ANY WATERWAY INCLUDING INTERMITTENT DRY CREEKS. REPORT SPILL TO COAST GUARD TOLL FREE NUMBER 800-424-8802. PROCEDURES IF MATERIAL IS RELEASED OR SPILLED: ADSORB ON FIRE RETARDANT TREATED SAWDUST, DIATOMACEOUS EARTH, ETC. SHOVEL UP AND DISPOSE OF AT AN APPROPRIATE WASTE DISPOSAL FACILITY IN ACCORDANCE WITH CURRENT APPLICABLE LAWS AND REGULATIONS, AND PRODUCT CHARACTERISTICS AT TIME OF DISPOSAL. WASTE MANAGEMENT: PRODUCT IS SUITABLE FOR BURNING IN AN ENCLOSED. CONTROLLED BURNER FOR FUEL VALUE OR DISPOSAL BY SUPERVISED INCINERATION. IN ADDITION, THE PRODUCT IS SUITABLE FOR PROCESSING BY AN APPROVED RECYCLING FACILITY OR CAN BE DISPOSED OF AT ANY GOVERNMENT APPROVED WASTE DISPOSAL FACILITY. USE OF THESE METHODS IS SUBJECT TO USER COMPLIANCE WITH APPLICABLE LAWS AND REGULATIONS AND CONSIDERATION OF PRODUCT CHARACTERISTICS AT TIME OF DISPOSAL. EYE PROTECTION: NO SPECIAL EQUIPMENT REQUIRED. SKIN PROTECTION: NO SPECIAL EQUIPMENT REQUIRED. HOWEVER, GOOD PERSONAL HYGIENE PRACTICES SHOULD ALWAYS BE FOLLOWED. RESPIRATORY PROTECTION: NO SPECIAL REQUIREMENTS UNDER ORDINARY CONDITIONS OF USE AND WITH ACEQUATE VENTILATION. VENTILATION: NO SPECIAL REQUIREMENTS UNDER ORDINARY CONDITIONS OF USE AND WITH ADEQUATE VENTILATION. ***** NO SPECIAL PRECAUTIONS REQUIRED.

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	MOBIL PEGASUS 490	605381 PAGE 3 OF 4
******	******* XI. TOXICOLDGICAL DATA	**********
	ACUTE	
	(RATS): LD50: > 5 G/KG O/10 PAT .IGHTLY TOXIC(ESTIMATED)BASED	
	NO/OR THE COMPONENTS.	UN TESTING OF SINIEAR
	( (RASBITS): LOSO: > 2 G/KG 0/1	O RASBITS DIED AT THIS
	/EL. SLIGHTLY TOXIC(ESTIMATED) -	
	ODUCTS AND/OR THE COMPONENTS.	
	ICITY (RATS): NOT APPLICABLE	
	OR VAPORS ARE UNLIKELY TO BE ENC OR REASONABLY FORESEEABLE HANDLI	
THIS PPODU		NG USE UK MISUSE UF
	(PARBITS): EXPECTED TO BE NON-I	RRITATING. EYE
	N SCORES: 0 AT 24 HOURS, 0 AT 48	
	FESTING OF SIMILAR PRODUCTS AND/O	
	N (RABBITS): EXPECTED TO BE NON-	
	N SCORE: 0/3BASED ON TESTING	OF SIMILAR PRODUCTS
ANUVUR IN:	E COMPONENTS.	
*****	****** XII. REGULATORY INFORMAT	ION **************
	STATUS: ALL COMPONENTS REGISTER	
	G NAME: NOT APPLICABLE	
	CLASS: NOT APPLICABLE	
	COMMUNICATION STANDARD: PRODUCT	
	CFR 1910.1200 AND DETERMINED NOT DN: THE UNUSED PRODUCT/ IN OUR D	
	LLY LISTED BY THE EPA AS A HAZARD	
	); DOES NOT EXHIBIT THE HAZARDOUS	
IGNITABILI	ITY, CORROSIVITY, OR REACTIVITY,	AND IS NOT FORMULATED
	METALS CITED IN THE EP TOXICITY T	EST. HOWEVER, USED
PRODUCT MA	AY BE REGULATED.	
THE FOLLOWING P	PRODUCT INGREDIENTS ARE CITED ON	THE LISTS BELOW:
•		· · · · · ·
CHEMICAL NAME		R LIST CITATIONS
	L ANALYSIS) (0.018 7440-66-	-5 15
PCT)		
	KEY TO LIST CITATIONS	
1 = 35H1 7,	$2 = ACGIH_{\mu}$ $3 = IAPC_{\mu}$	•
	7 = NEPA 49, $5 = NEPA 325H$ ,	
	12 = HA RTK, 13 = HN RTK, 1	
$13 = FL RTK_P$	17 = PA RTK.	·
	*******	
	VEN MEREIN IS OFFERED IN GOOD FAI	
	TEE. CONDITIONS OF USE AND SUITA	
	S ARE BEYOND OUR CONTROL; ALL RIS	
ARE THEREFORE #	ASSUMED BY THE USER AND <u>we expres</u>	SSLY DISCLAIM ALL
	EYEEY KIND AND NAIURE, INCLUDING	
	Y AND FIINESS FOR A PARTICULAR PL	
	LIIY DE THE PEODUCI. NOTHING IS For USES which infringe valid pr	
	VALID PATENTS. APPROPRIATE WARNS	
	ULD BE PPOVIDED TO HANDLERS AND U	
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**** PREPARED BY: MOBIL DIL CORPORATION ENVIRONMENTAL AFFAIRS AND TOXICOLOGY DEPARTMENT, PRINCETON, NJ FOR FURTHER INFORMATION, CONTACT: MOSIL OIL CORPORATION, PRODUCT FORMULATION AND QUALITY CONTROL 3225 GALLOWS ROAD, FAIRFAX, VA 22037 (703) 849-3255 FOR MOEIL USE ONLY: (FILL NO: RN6120A201) MHC: 1* 1* NA C* 0* PPEC: US32-090 APPROVE REVISED: 10/26/82

NHOLMI				510156	PAGE 1
MODIL,MAT	ERIAL SAFETY	DETC FU	LLETIN		
MDEIL CIL CORPORATION Environmental Affairs and to	KICOLOSY DE			4240 STRE N.Y. 100	
	DUCT IDENTI TOBILUEE HD		*****	*******	******
SUPPLIER: MOBIL DIE CORP. CHENICAL NAMES AND SYNDNYMS:		C TEA NSP	212)883- DRT EMER	SENCY TEL	EPHONE:
PET. HYDPOCKPBONS AND A USE OF DESCRIPTION: AUTOMOTIVE GEAR LUBRICA		GTHER	SCO)424- DESIGNAT TRN 5101		Y V Z C J
++++++++++++ TYPICAL CHEN	ICAL AND PH	SICAL PP	CPERTIES	******	*******
APPEARANCE: ASTM 7.C VISCOUS LIQUE ODDR:	VISCOŠITY: VISCOSITY:	AT 100 F 728. AT 210 F	0 • SUS	AT 40 132.0 AT 100	C. CS
MILO Relative dengity: 15/4 C C.195	SCLUEILITY	NEGLIGI		13.9 PH: NB	
TELTING POINT: F(C) NA SOILING POINT: F(C)	POUR POINT: FLASH POINT:	-15(-26			
>ACO(315) Vapor pressure:mm HG 200 K .1		>375(19	1) (ASTM	D-92)	
NA=NJT APPLICABLE +***********************				MPDSES	******
· ·	WT P	CT TLV( DX)	TWA):	MG/43	PPM
HAZARDOUS INGREDIENTS: None					•.
NCN-HAZARDOUS INGREDIENTS: PEFINED MINERAL DILS ADDITIVES AND/OR DTHER INGR	> 90 REDS. < 10				

NOTE: TEVS SHOWN FOR GUIDANCE ONLY. FOLLOW APPLICABLE REGULATIONS.

INFORMATION GIVEN HEREIN IS OFFERED IN GOOD FAITH AS ACCURATE, BUT HITHOUT GUARANTEE. CONDITIONS OF USE AND SUITABILITY OF THE PRODUCT FOR PARTICULAR USES ARE EEYOND OUR CONTROL; ALL RISKS OF USE OF THE PRODUCT ARE THEREFORE ASSUMED BY THE USER AND WE EXPRESSLY DISCLAIM ALL PAREANTIES OF EVERY KIND AND NATURE, INCLUDING WARFANTIES DE MERCHANIABILITY AND FILNESS FOR A PARTICULAR PUBPOSE IN RESPECT TO THE USE OF SUITABILITY OF THE USES WHICH INFRINGE VALID PATENTS OR AS EXTENDING LICENSE UNCER VALID PATENTS. APPROPRIATE WARMINGS AND SAFE HANDLING PRODUCTES SHOULD BE PROVIDED TO HANDLERS AND USERS.

L. EQUIPART	MORTLURE HE POW-90	510156 5435 2
	++++ FIRE AND EXPLOSION HAZARD DATE	* * * * * * * * * * * * * * * * * * * *
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UNUSUAL FIRE AN None	D EXPLOSION HAZAROS:	
		*******
EFFECTS OF OVER Slight eye	FXPOSUPE: E lepitation, suight skin irritation,	
EYS CONTACT:	** EMERGENCY AND FIRST AID PROCEDURES 1 with water.	*******
SKIN CONTACT: WASH	CONTACT AREAS WITH SDAP AND WATER.	-
INHALATION: Not e	EXPECTED TO BE A PROBLEM.	
LITER(PINT) ING 4 PHYSICIAN, HO ASSISTANCE. DO UNCONSCIOUS PEP +++++++++++++++ STABILITY: (THE STABLE INCOMPATIBILITY STPONG OXID	ERMAL, LIGHT, ETC.) CONDITIONS TO AVOI ERMAL, LIGHT, ETC.) CONDITIONS TO AVOI EXTREME HEAT (: (MATERIALS TO AVOID)	DF WATER AND GALL DL CENTER FOR BY MOUTH TO AN
CLRBEN MONO Hizirdous Polym Will Not Oc	PRIZATION: CONDITIONS TO AVOI	

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ADSORD ON FIRE RETARDANT TREATED SANDUST, DIATCHACEDUS EAPTH, ETC. SCRAPE UP AND REMOVE. DISPOSE OF AT AN APPROPRIATE MASTE DISPOSAL CACILITY IN ACCORDANCE WITH CUPPENT APPRICAPLE LAWS AND PEGULATIONS, AND PPILUCT CHERACTERISTICS AT TIME OF DISPOSAL. WASTE MANAGEMENT: DILUTE WASTE WITH A SCLVENT, TO REDUCE ITS VISCOSITY, AND DISPOSE BY SUPERVISED INCINERATION IN COMPLIANCE WITH APPLICAPLE LAWS AND REGULATIONS. ************************************	ENVIPONMENTAL REPORT S COAST GUARD R REACH ANY WAT	IMPACT: PILLS AS REQUIRED TO APPR EGULATIONS REQUIRE IMMEDIA EPWAY INCLUDING INTERMITT	DPRIATE AUTHORITIES. ATE REPORTING OF SPI ENT DRY CREEKS. REP	LLS THAT COULD
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EYE PROTECTION: NORMAL INSUSTRIAL EYE PROTECTION PRACTICES SHOULD BE EMPLOYED. SKIN PROTECTION: NO SPECIAL EQUIPMENT REQUIRED. HOWEVER, GOOD PERSONAL HYGIENE PRACTICES SHOULD ALWAYS BE FOLLOWED. RESPIRATORY PROTECTION: NO SPECIAL REQUIREMENTS UNDER DRDINARY CONDITIONS OF USE AND WITH ADEQUATE VENTILATION. VENTILATION: NO SPECIAL PEQUIREMENTS UNDER ORDINARY CONDITIONS OF USE AND WITH ADEQUATE VENTILATION. STHER: ************************************	DILUTE W BY SUPERVISED	ASTE WITH A SCLVENT, TO R		
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NO SPECIAL FEQUIREMENTS UNDER DRDINARY CONDITIONS OF USE AND WITH ADEQUATE VENTILATION. VENTILATION: NO SPECIAL PEQUIREMENTS UNDER ORDINARY CONDITIONS OF USE AND WITH ADEQUATE VENTILATION. DTHER:	NO SPECI	AL EQUIPMENT REQUIRED. H	OWEVER, GOCO PERSONA	
NO SPECIAL PEQUIREMENTS UNDER ORDINARY CONDITIONS OF USE AND WITH ADEQUATE VENTILATION. OTHER: ************************************	NO SPECI	AL FEQUIREMENTS UNDER DRD	INARY CONDITIONS OF	USE AND WITH
OTHER: ************************************	NG SPECI	ILATICN.	INARY CONDITIONS OF	USE AND WITH
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### NODI

HIRILDSE HD EOX-00

ACUTE

CRAL TOXICITY: (FATS) SLIGHTLY TOXIC(ESTIMATED) ---BASED ON TESTING OF SIMILAR PPODUCTS AND/OR THE COMPONENTS.

DERMAL TOXICITY: (RABBITS) SLIGHTLY TOXIC(ESTIMATED) ---BASED ON TESTING OF STMILAR PRODUCTS AND/OR THE COMPONENTS.

INHALATION TOXICITY: (RATS)

NOT APPLICABLE ---HAPMFUL CONCENTRATIONS OF HISTS AND/OF VAPORS ARE UNLIKELY TO BE ENCOUNTERED THROUGH ANY CUSTOMARY OR REASONABLY FORESEEAGLE MANDLING, USE, OR MISUSE OF THIS PRODUCT. EYE IRRITATION: (PABEITS)

MAY CAUSE SLIGHT IFFITATION. ---BASED ON TESTING OF SIMILAR PEDDUCTS AND/OR THE COMPONENTS.

SKIN IFFITATION: (RAEBITS) MAY CAUSE SLIGHT IRRITATION ON PPOLONGED OR REPEATED CONTACT. ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

SUBACUTE AND MUTAGENICITY (SUMMARY)

CHRONIC OR SPECIALIZED (SUMMARY)

CTHER DATA

FILE CODES: (FILL NC: RP54350201 ) MHC: 1+ 1+ NA 1+ 1+ PPEC: USE3-2E9 APPROVE 1744 ENVIRONMENTAL IFFAIRS AND TOMICOLOGY DEPT. REVISED: MANAGER OF PRODUCT SAFETY INFORMATION, PHONE: 609-737-5596 12/ 9/33

# MATHESON GAS PRODUCTS MATERIAL SAFETY DATA SHEET

Of

#### PRODUCT IDENTIFICATION

MSDS067: NITROGEN SYNONYM(S): None CHEMICAL FORMULA: N₂ C.A.S. NUMBER: 7727-37-9 D.O.T. SHIPPING NAME: Nitrogen D.O.T. I.D. NUMBER: UN1066 D.O.T. HAZARD CLASS: Nonflammable Gas D.O.T. LABEL(S): Nonflammable Gas

#### PHYSICAL DATA

MOLECULAR WEIGHT: 28.0134 BOILING POINT: ~195.8°C; -320.4°F

SPECIFIC VOLUME @ 1 ATM, 21.1°C: 0.861 m3/kg; 13.8 ft3/1b

RELATIVE DENSITY, (AIR=1): 0.967 ( 1 atm, 25°C

SOLUBILITY IN WATER @ 1 ATM, 25°C: 14.85 cm³/kg water

DESCRIPTION: Nitrogen is a coloriess, odoriess, nontoxic, nonflammable gas. It is compressed and shipped in high pressure cylinders.

#### FIRE AND EXPLOSION HAZARD DATA

FLAMMABLE LIMITS IN AIR: Nonflammable

FIRE FIGHTING PROCEDURES: Nitrogen is nonflammable and as such does not create a fire hazard. However, cylinders that are exposed to fire may rupture with violent force. Extinguish surrounding fire and keep cylinders cool using a water spray applied from the maximum possible distance.

#### HEALTH HAZARD DATA

PERMISSIBLE EXPOSURE LIMITS:

OSHA TWA: None established

ACGIH TWA: None established

ACUTE EFFECTS OF OVEREXPOSURE: Nitrogen is nontoxic but can act as a simple asphyxlant by displacing air. Symptoms of asphyxla include rapid respirations, dizziness and fatigue.

CHRONIC EFFECTS OF OVEREXPOSURE: None known

FIRST AID INFORMATION

INHALATION: Move victim to fresh air. If not breathing, give artificial respiration, preferably mouth to mouth. If breathing is difficult, give oxygen. Gall a physician.

#### REACTIVITY DATA

STABILITY: (X) STABLE ( ) UNSTABLE

INCOMPATIBILITY: Not reactive under normal circumstances.

HAZARDOUS DECOMPOSITION/OXIDATION PRODUCTS: None

POLYMERIZATION: (X) WILL NOT OCCUR ( ) MAY OCCUR

#### SPILL OR LEAK PROCEDURE

Ventilate the area. Nitrogen can act as a simple asphyxiant by displacing air. Personnel entering the area should wear positive pressure self-contained breathing apparatus.

#### PRECAUTIONARY INFORMATION

STORAGE RECOMMENDATIONS: Cylinders should be stored and used in dry, well ventilated areas away from sources of heat.

#### PERSONAL PROTECTIVE EQUIPMENT:

`#

EYE PROTECTION - Safety glasses should be worn.

RESPIRATORY PROTECTION - Respiratory equipment is not needed unless the gas displaces the air and causes a deficiency of oxygen and the possibility of asphyxiation.

SKIN PROTECTION - No special equipment is required. Gloves are recommended for cylinder handling.

#### BEFORE USING THE GAS:

2.

Secure the cylinder to prevent it from failing or being knocked over. Leak check the lines and equipment.

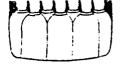
3. Have an emergency plan covering steps to be taken in the event of an accidental release.

#### *** NOTICE ***

This data is furnished gratuitously, independent of any sale of the product, and only for your independent investigation and verification. While this data is believed to be correct, Matheson makes no representation as to the accuracy of the data. Matheson makes no warranties, guaranties or representations of any kind or nature with respect to the product or to this data, either express or implied, and whether arising by law or otherwise, including but not limited to any implied warranty of merchantablity or fitness for any particular purpose. Matheson shall in no event be liable for any personal injury, property or other damages of any nature whatsoever, whether special, indirect, consequential or compensatory, directly or indirectly resulting from the publication or use of or reliance upon this data.

#### IN CASE OF EMERGENCY CALL THE NEAREST MATHESON LOCATION

Cucamonga, CA (714) 987-4611, Newark, CA (415) 793-2559, Morrow, GA (404) 961-7891, Jollet, IL (815) 727-4848, Gloucester, MA (617) 283-7700, East Rutherford, NJ (201) 933-2400, Twinsburg, OH (216) 425-4406, La Porte, TX (713) 471-2544



## MATERIAL SAFETY DATA SHEET 011

#### PRODUCT IDENTIFICATION

MSDS011: M-BUTANE	D.O.T. SHIPPING NAME: Butane
SYNONYM(S): Normal Butane, Butane	D.O.T. I.D. NUMBER: UN1075
CHEMICAL FORMULA: CH3CH2CH2CH3 or C4H10	D.C.T. HAZARD CLASS: Flammable Gas
C.A.S. NUMBER: 106-97-8	D.O.T. LABEL(S): Flammable Gas

#### PHYSICAL DATA

MOLECULAR WEIGHT: 58.124

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FREEZING POINT: -138.4°C; -217.0°F

BOILING POINT: - 0.6°C; 31.1°F

VAPOR PRESSURE @ 21.1*C: "110 kPa (gauge); 16.3 psig -

SPECIFIC VOLUME @ 1 ATM, 21.1°C: 0.400 m3/kg; 6.4 ft3/1b

RELATIVE DENSITY, (AIR=1): 2.11 @ 1 atm. 20°C

SOLUBILITY IN WATER @ 1 ATM, 0°C: 3.147 cm3/ 100 cm3 water

DESCRIPTION: At room temperature and atmospheric pressure n-butane is a coloriess, flammable, relatively nontoxic gas with a characteristic natural gas odor. It is shipped as a liquefied gas under its own vapor pressure.

#### FIRE AND EXPLOSION HAZARD DATA

FLAMMABLE LIMITS IN AIR: 1.8 - 8.45 by volume.

AUTO-IGNITION TEMPERATURE: 430 °C; 806 °F

FIRE FIGHTING PROCEDURES: The only sufe way to extinguish an n-butane fire is to stop the flow of gas. If the flow cannot be stopped, let the fire burn itself out while cooling the cylinder and the surroundings using a water spray.

Personnel may have to wear approach type protective suits and positive pressure self-contained breathing apparatus. Firefighters' turnout gear may be inadequate.

Small secondary fires may be brought under control by using carbon dioxide or dry chemical type fire extinguishers while stopping the flow.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

- Cylinders that are exposed to fire may rupture with violent force. Extinguish surrounding fire and keep cylinders cool using a water spray applied from the maximum possible distance. Fiammable gases may spread from a splil after the fire is extinguished and be subject to 1.
- 2.

reignition.

HEALTH HAZARD DATA

PERMISSIBLE EXPOSURE LIMITS: OSHA TWA: None established

ACG1H TWA: 800 ppm (1,900 mg/m³)

ACUTE EFFECTS OF OVEREXPOSURE: n-Butane is a simple asphyxiant. Inhalation of high concentrations may cause rapid respirations, dizziness, fatigue, and nausea. Massive exposures may cause unconsciousness and death.

Contact with the liquid phase may cause frostbite.

CHRONIC EFFECTS OF OVEREXPOSURE: None known

FIRST AID INFORMATION

INHALATION: Move victim to fresh air. If not breathing, give artificial respiration, preferably mouth to mouth. If breathing is difficult, give oxygen. Call a physician.

CONTACT: Treat for Frostbite.

N-BUTANE

page 1 of 2 Revised: October 1985

#### REACTIVITY DATA

STABILITY: (X) STABLE ( ) UNSTABLE

INCOMPATIBILITY: Oxidizing materials.

HAZARDOUS DECOMPOSITION/OXIDATION PRODUCTS: Carbon Monoxide and carbon dioxide

POLYMERIZATION: (X) WILL NOT OCCUR ( ) MAY OCCUR

#### SPILL OR LEAK PROCEDURE

Shut off all ignition sources and ventilate the area. For controlling large flows, personnel may have to wear approach type protective suits and self-contained breathing apparatus.

#### PRECAUTIONARY INFORMATION

STORAGE RECOMMENDATIONS: Cylinders should be stored and used in dry, well-ventilated areas away from sources of heat or ignition. Do not store with oxidizers.

PERSONAL PROTECTIVE EQUIPMENT:

EYE PROTECTION'- Safety glasses should be worn.

RESPIRATORY PROTECTION - Approved respiratory equipment must be worn when alroorne concentrations exceed safe limits. Gas displaces the air and causes a deficiency of oxygen and the possibility of asphyxlation.

SKIN PROTECTION - No special equipment is required. Gloves are recommended for cylinder handling.

BEFORE USING THE GAS:

- 3:
- Secure the cylinder to prevent it from failing or being knocked over. Install check valves or traps to prevent suckback to the cylinder. Ground all lines and equipment Leak check the lines and equipment. Have an emergency plan covering steps to be taken in th event of an emergency release. 5.

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#### *** NOTICE ***

This data is furnished gratuitously, independent of any sale of the product, and only for your independent investigation and varification. While this data is believed to be correct, Matheson makes no representation as to the accuracy of the data. Matheson makes no varianties, guaranties or representations of any kind or nature with respect to the product or to this data, either express or luplied, and whether arising by law or otherwise, laciuding but not limited to any implied variantly of merchantability or fitness for any particular purpose. Matheson shall in no event be limble for any personal injury, property or other damages of any nature whatsoever, whether special, indirect, consequential or compensatory, directly or indirectly resulting from the publication or use of or reliance upon this data.

IN CASE OF EMERGENCY CALL THE NEAREST MATHESON LOCATION

Cucamonga, CA (714) 987-4611, Nevark, CA (415; 793-2559, Morrov, GA (404) 961-7891, Jollet, IL (815) 727-4848, Gloucester, MA (617) 283-7700, East Rutherford, NJ (201) 933-2400, Twinsburg, OH (216) 425-4406, La Porte, TX (713) 471-2544

N-BUTANE

Revised: October 1985 page 2 of 2

#### ノハ じそう 「コしし。ししつ ノ 'NÏ MATERIAL SAFETY DATA SHEET 076

#### PRODUCT TRENTIFICATION

MSDS076: PROPANE	D.O.T. SHIPPING NAME: Propana
SYNONYM(S): Liquefied Petroieum Gas	D.O.T. I.D. NUMBER: UN1075
CHENICAL FORMULA: C3H8 or CH3CH2CH3	D.O.T. HAZARD CLASS: Flammable Gas
C.A.S. NUMBER: 74-98-6	D.O.T. LABEL(S): Fiemmable Gas
	PHTSICAL BATA

MOLECULAR WEIGHT: 44.097

£ ****

FREEZING POINT: -187.7°C: -305.9°F

BOILING POINT: - 42.1 °C; -43.7 F

VAPOR PRESSURE: 752 kPa (gauge); 109 ps1g

SPECIFIC VOLUME & 1 ATM. 21.1 °C: 0.531 m3/kg; 8.5 ++3/16

RELATIVE DENSITY, (AIR=1): 1.55 @ 1 atm, 20°C

SOLUBILITY IN WATER & 1 ATM, 18°C: 6.5 cm3/ 0.1 kg water

DESCRIPTION: At room temperature and atmospheric pressure propane is a coloriess, fianmable, nontoxic ges, with a characteristic natural ges odor. It is shipped as a liquefied gas under its own vapor pressure.

#### FIRE AND EXPLOSION WEARD DATA

FLANNALE LINITS IN AIR: 2.2 - 9.55 by volume.

AUTO-IGNITION TEMPERATURE: 468 °C; 874 °F

FIRE FIGHTING PROCEDURES: The only safe way to artinguish a propane fire is to stop the flow of gas. If the flow cannot be stopped, let the fire burn itself out while cooling the cylinder and the surroundings using a water spray.

Personnel may have to user approach type protective suits and positive pressure self-contained breathing apparatus. Firefighters' turnout guer may be inadequate.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

- Cylinders that are exposed to fire may rupture with violent force. Extinguish surrounding fire and keep cylinders cool using a watur spray applied from the maximum possible distance. Flammable gases may spread from a splil after the fire is extinguished and be subject to reignition. 1. 2.

#### HEALTH HAZARD DATA

PERMISSIBLE EXPOSURE LIMITS:

OSHA TWA: 1,000 ppm (1,000 mg/m³)

ACGIH TWA: None established *

* ACGIH considers propane to be a simple asphyxient.

ACUTE EFFECTS OF OVEREXPOSURE: Propage is nontaxic but can act as a simple asphyxiant by displacing air. Symptoms of asphyxia include rapid respirations, dizziness and tatigue.

Contect with the figuid phase or with the cold gas escaping from a cylinder may cause frostbite. CHRONIC EFFECTS OF OVEREXPOSURE: None known

#### FIRST AID INFUNATION

INHALATION: Move victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Call a physician.

CONTACT: Treat for frostbite.

PROPANE

#### Revised: October 1985 080e 1 of 2

#### REACTIVITY DATA

STABILITY: (X) STABLE ( ) UNSTABLE

INCOMPATIBILITY: Oxidizing materials.

HAZARDOUS DECOMPOSITION/OXIDATION PRODUCTS: Carbon monoxide, carbon dioxide

(X) WILL NOT OCCUR ( ) MAY OCCUR POLYMERIZATION:

#### SPILL OR LEAK PROCEDURE

Shut off all ignition sources and ventilate the area. For controlling large flows, personnel may have to wear approach-type protective sults and positive pressure self-contained breathing apparatus.

#### PRECAUTIONARY INFORMATION

STORAGE RECOMMENDATIONS: Cylinders should be stored and used in dry, well-ventilated areas away from sources of heat or ignition. Do not store with oxidizers.

PERSONAL PROTECTIVE EQUIPMENT:

EYE PROTECTION - Safety glasses should be worn.

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RESPIRATORY PROTECTION - Approved respiratory equipment must be worn when airborne concentrations exceed safe levels.

SKIN PROTECTION - No special equipment is required. Gloves are recommended for cylinder handling.

BEFORE USING THE GAS:

- <u><u>?</u>:</u>
- Secure the cylinder to prevent it from failing or being knocked over. Leak check the lines and equipment. Heve an emergency plan covering steps to be taken in the event of an accidental release.

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PROPANE

page 2 of 2

# **Material Safety Data Sheet**

QUICK EDENTIFIER Commen Name: (and an inbel and list)

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# **Material Safety Data Sheet**

May be used to comply with OBLA's Hatard Communication Standard, SPCFR 1910. 1900, brandard must be consulted for specific requirements. QUICK EDENTIFIER Commen Name: (mad on Jubel and Hat)

Regular Recorder Mik (red, blue, black, green, purple)

BECTION 1 - (Pa of	rt #s 9688, 537, 96539A lor Instrume	9	96566 <b>,</b> 96	501, 9050	δ <b>, 9659</b> 2	, 96593, 9	6S132, 9	<b>6</b> 5160	. 968
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95	Ames Street	P.0. Bc	x 110		Other	(716)-23	5-5000		
-	hester, New	York 146	592	· .	Inferenction Calls	Same			
ensairs of Person specificie for Preparetio	n (Optional)	•			Dete Prepared	11/18/85			
ection 2 - HA	ZARDOUS IN	IGREDIE	NTS/IDE!	YTTTY			للبرينيين المتكري		
arardous Componentie) (	chemica) & common s	14194(0)}		oeha Pel	ACOTH TLV	Other Exposus Limite		ptinnal)	CA.
)ye				None	None			1	_
um arabic				None	None			1	_
enatured alco	hol (ethyl a	Lcohol)		1000 ppm	1000 ppm		1	5	611
lycerine	·····			None	None	•	<u> </u>	7	565-
later				None	None		٦	6 7	73218
	SICAL & CHE	MICAL C		_					
		MICAL C		ERISTICS	1.15	Vapor Pressure	teren Hapi	nknow	
195° F	Vance	MICAL C	own	pecific Fravily (H,O=1)	1.15		(mm Hgt) U	nknow	
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A:builty Water Complet	Vapor Density (Ai	Jnkn	own	pocific Gravity (H,O=1) Reactivity in	None	Préserve			
Ablity Water Complet Performance Viscous odor	Vapor Density (A) te s liquid with	alcohol	own	Specific Travity (H,O=1) Reactivity in Water Molting	None				2
Ability Water Complet Oder Oder eCTION 4 - File	Vapor Density (Al te s liquid with RE & EXPLOS	alcohol	own	Specific Dravity (H,O=1) Reactivity in Water Welting Point	None Liquid a	Prime	iperatur-		2
Abblity Water Complet Moder Viscous odor ECTION 4 - Fil and 75° F. C.	Vapor Density (Ai te s liquid with RE & EXPLOS Waturd Used Closed	alcohol	own TA Mammable in Au 7 by Dry cher	Reactivity in Water Welting Point Limite LEL Velume Leve	None Liquid a Unknown	Prime	iperatur-	<u> </u>	
Ability Water Complet Water Complet Door Viscous odor ECTION 4 - Fill and 75° F. C. suc-Upplitics maperature Unknow metal Fire	Vapor Density (Al te s liquid with RE & EXPLOS Mathod Used Closed	alcohol BION DAT	OWN CM FA Flammable in Aur 7 by	Reactivity in Water Welting Point Limite LEL Velume Leve	None Liquid a Unknown	Prienve t room tem UEL Upper Un	iberatur known	<u> </u>	
Ability Water Complet Water Complet Door Viscous odor ECTION 4 - Fill and 75° F. C. Suc-Upiliten Experience Unknow	Vapor Density (Ai te s liquid with RE & EXPLOS Waturd Used Closed	alcohol BION DAT	own TA Mammable in Au 7 by Dry cher	Reactivity in Water Welting Point Limite LEL Velume Leve	None Liquid a Unknown	Prienve t room tem UEL Upper Un	iberatur known	<u> </u>	
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ohibility Water Complet preservice Viscous odor VECTION 4 - FI leab oint 75°7. C. wic-Ipplitics emperature Unknow with Fire sching Prosedures	Vapor Density (Ai te s liquid with RE & EXPLOS Wathod Used Closed m	alcohol BION DAT	own TA Mammable in Au 7 by Dry cher	Reactivity in Water Welting Point Limite LEL Velume Leve	None Liquid a Unknown	Prienve t room tem UEL Upper Un	iberatur known	<u> </u>	

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rdous mposition Produ	ete None	•		•			•			
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CTION 6 -	HEALTH	HAZAF	RDS					بل جنيبارين و		
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tential Carcino	geh		rograza	icology Yes D No Ø		lonographs Ne	<u> </u>	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	No D	
Aid Procedures	Avoid	inhalat	ion and	l ingestion	n. For e	yes and sl	din, fl	ush with	water f	for
	15 mir	utes.	For eve	es, call pl	nysician.					
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U.S Occupatior	-			LABOR Administ	ration	Form Appro OMB No. 44	
MATERIAI		• •					
Required under USDI Shipbuilding, a			-				
		SECT	ION I				
MANUFACTURER'S NAME ANDESITE OF CALIFORNIA, I			•		EMERGENCY TELES (213) 726-		
ADDRESS (Number, Street, City, State, and ZIP Co 1260 South Goodrich Blvd. CHEMICAL NAME AND SYNONYMS		os Ang	geles,	TRADE N/	0022 ME AND SYNONYME STEP SORBEN		
OXIDES OF METALS		<u>`</u>	ADSC	RBENT/	ANTI-SLIP		
SECTION	11 -	HAZAF	RDOUS I	NGREDI	ENTS		
PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	AL	LOYS AND	METALLIC COATINGS	s %	TLV (Units)
PIGMENTS			BASE M			<u> </u>	
CATALYST			ALLOYS	;			
VEHICLE			METALL	IC COATING	<b>3</b> 5		
SOLVENTS			FILLER PLUS CO	METAL	CORE FLUX		
ADDITIVES			OTHERS	; 			<u> </u>
OTHERS							
HAZARDOUS MIXTURES	OF C	OTHER LIC	DUIDS, SO	LIDS, OR G	ASES	%	TLV (Units)
CONTAINS NO HAZARDOUS MAT	ERI	ALS A	S DEFI	INED BY	BUREAU OF		
LABOR STANDARDS. SEE ATT	ACH	IED CO	NSUME	R SPECI	FICATION		
SHEET.							

SECTION I	II - PHYSICAL DATA	
BOILING POINT (°F.) See attached	SPECIFIC GRAVITY (H20=1)	
VAPOR PRESSURE (mm Hg.) Data Sheet	PERCENT, VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)	EVAPORATION RATE (	
SOLUBILITY IN WATER		
APPEARANCE AND ODOR		

FLASH POINT (Method used) NONE	FLAMMABLE LIMITS	Lei	Uei
EXTINGUISHING MEDIA NONE		<u>_</u>	1
SPECIAL FIRE FIGHTING PROCEDURES			
UNUSUAL FIRE AND EXPLOSION HAZARDS			

## Andesite of California Inc.

1260 South Goodrich Boulevard Los Angeles, California 90022

#### Sorbent Properties

Sorbent Name: SAFESTEP

Generic Name/Description: Sorbent for safe, immediate, and complete pick-up/clean-up/disposal of common and toxic/hazardous waste spills (see attached brochure)

Molecular Formula: Natural silicates of aluminum and other metals Polarity: Polar

#### MINERAL ANALYSIS

Silicon Dioxide	71.00 %
Aluminum Oxide	14.23
Ferric Oxide	1.75
Calcium Oxide	. 54
Magnesium Oxide	. 90
Potassium Oxide	1.61
Alkalies	5.96

Specific Gravity: 2

Bulk Density: 0.5 to 0.7 g/ml

Combustible: No

Ash Content: Majority, inorganic material

BTU/Lb: N/A

Reactivity: No dangerous reaction. Reacts with hydrofluoric acid

Toxcitity: Human: None Environmental: None

Uptake Selectivity: No substances selectively sorbed

Sorbent/Sorbate Properties: See attached proposed Commercial Item Description.

Performance Parameters: <u>None</u> of the following environmental effects impact sorbent use on a particular sorbate pH, salinity, ambient temperature.

Safety precautions: as appropriate only for the sorbate in question.

#### SUBSTANCES SORBED BY THE SORBENT

#### CERCLA LIQUID FUNCTIONAL GROUPS

Acids, inorganic Acids, organic Alcohols and glycols Aldehydes Aliphatics

Aliphatics, halogenated Amides Amines, alkyl Amines, aryl Aromatics Aromatics, halogenated

Caustics Cyanates Cyanides and nitriles Epoxides Esters Ethers Halides, alkyl Halides, inorganic Heavy metals Hydrazines Ketones Nitro compounds

Nitroso compounds Olefins Organophosphates Oxides, alkylene Peroxides Phenols and cresols

Sulfates Sulfides and mercaptans Sulfites

Based upon the chemically inert nature of SAFESTEP, it is believed that SAFESTEP can be used effectively on all of the listed CERCLA functional groups with the few possible exceptions noted below:

- 1) Hydrofluoric acid reacts with the silicious components of the sorbent.
- Concentrated peroxides should not be contracted with SAFESTEP without prior testing for possible catalytic decomposition of the peroxides.
- 3) SAFESTEP's possible effect upon hydrazines also merits testing.

The above recommendations are based upon our best available Knowledge and experience with the product. However, this information is not to be considered a warrantee, expressed or implied. The user must assume complete responsibility for the safe use of the product with any sorbates in question.

	SODA ASH
Continental Products of Texas	QUICK IDENTIFIER
100 Industrial • P.O. Box 3627 • Odessa, Texas 79760	NFPA Designation 704
Telephone No. (915) 337-4681	FIRE
MATERIAL SAFETY DATA SHEET	HAZARD RATING 4 - EXTREME J - HIGH HEALTH J - MODERATE I - SLIGHT 0 - INSIGNIFICANT
SECTION 1 - IDENTITY	SPECIFIC HAZARD
Common Name: (used on label) (Trade Name & Synonyms) SODA ASR	
Chemical Name Sodium Carbonate Formula P	
e"	2003
Family Inorganic Alkali	
Cas No.	
SECTION 2 - HAZARDOUS INGREDIENTS	
Hazardous Component(s) %	Threshold Limit Value (units)
NA	•
SECTION 3 - PHYSICIAL & CHEMICAL CHARACTERISTICS (Fine Point NA       Specific Gravity (H,O=1)       2.533	Vapor Pressure (mm Hg) NA
Percent Volatile         Vapor           by Volume (%)         NA           Density (Air = 1)         NA	Evaporation Rate NA
Solubility Reactivity in NA in Water NA	
and Odor White odorless, anhydrous hygroscopic powder or o	granular material
Flash Flammable Limits " Point NA in Air % by Volume NA	Extinguisher CO, Auto-Ignition NA
Special Fire Self contained breathing Cover Upper Special Fire Lower Upper	Waŧer, Dry chemical
Unusual Fire and Explosion Hazards Nonexplosive or inflammable	
Explosion Hazards Nonexplosive or inflammable SECTION 4 - PHYSICAL HAZARDS	
Explosion Hazards Nonexplosive or inflammable SECTION 4 - PHYSICAL HAZARDS	
Explosion Hazards Nonexplosive or inflammable SECTION 4 - PHYSICAL HAZARDS Ability CONDITIONS	lioxide gas
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Explosion Hazards Nonexplosive or inflammable SECTION 4 - PHYSICAL HAZARDS	lioxide gas

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Thre±hold Limit Value	NA					
Signs and Sympton						
1. Acute Overexposure		mucous membrane al tract, vomi			l cause damag	je to
Chronic Overexposure	-					
Medical Conditions Aggravated by Exp						
Chemical Listed as or Potential Carcin		Yes	nal Toxicology Program		Ye	5HA s No X
OSHA Permissible Exposure Limit	NA		IH Threshold Value NA		her Exposure mit Used NA	
Emergency and First Aid Procedur	es .		•			
1. Inhalation	Irritation will	result from in	nhalation. Seek	medical assist	tance.	
2. Eyes Prom	ptly wash from e	eyes with plenty	y of water @ le	ast 15 minutes	and get medi	cal help.
					-	-
Skin	Flush skin imme	diately. Get m	edical attentio	n if irritation	n persists.	
4. Ingestion Ge	t medical attent	ion immediately	y. Give large a	mounts of water	r or milk to	dilute.
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000000000000000000000000000000000000000						
SECTION 6 -	SPECIAL PROTE	CTION INFORM	ATION		······································	
Aespiratory Protection (Specify Type)	R	CTION INFORM		onate		
Respiratory Protection	NIOSH approv			Special	Other	
despiratory Protection (Specify Type) Ventiliation	NIOSH approv	ved respirator i Accel Exhaust yes	for sodium carb Mechanical (General) yes Eye Protection Saf	Special ety glasses or		ety goggles
Acspiratory Protection (Specify Type) Ventilation Protective Gloves Rubb Other Protective	NIOSH approv	ved respirator i com inhaust yes ploves	For sodium carb Mechanical (General) yes Eye Protection Saf if	Special		ety goggles
Respiratory Protection (Specify Type) Ventilation Protective Gloves Rub)	NIOSH approv	ved respirator i com Exhaust yes gloves ficient to prote	For sodium carb Mechanical (General) yes Eye Protection Saf if	Special ety glasses or		ety goggles
Acopiratory Protection (Specify Type) Ventilation Protective Gloves Rubb Other Protective Clothing or Equipment	NIOSH approv	ved respirator i cond Exhaust yes gloves ficient to prote it.	For sodium carb Mechanical (General) yes Eye Protection Saf if ect	Special ety glasses or dusty.		ety goggles
Acopiratory Protection (Specify Type) Ventilation Protective Gloves Rubb Other Protective Clothing or Equipment	NIOSH approv	ved respirator i coal Exhaust yes gloves ficient to prote it. UTIONS AND SP pol dry place. P	For sodium carb Mechanical (General) yes Eye Protection Saf if ect  PILLZ/LEAK PRO	Special ety glasses or dusty. CEDURES	chemical saf	
Acspiratory Protection (Specify Type) Ventilation Protective Gloves Rubb Other Protective Clothing or Equipmer SECTION 7 - Precautions to be Tak	NIOSH approv	ved respirator i coal Exhaust yes gloves ficient to prote st. UTIONS AND SP col dry place. A acid. o and remove exc	For sodium carb Mechanical (General) yes Eye Protection Saf if ect PILL/LEAK PRO Avoid prolonged	Special ety glasses or dusty. CEDURES storage - caki	chemical saf	t. Do not
Acspiratory Protection (Specify Type) Ventilation Protective Gloves Rubb Other Protective Clothing or Equipmer SECTION 7 - Precautions to be Tak in Handling and Stors Steps to be Taken in 6 Material is Released o Waste Disposal	NIOSH approv ber or glastic g Clothing suff skin from dus SPECIAL PRECA SPECIAL PRECA Store in co store near Case Shovel up "Spilled area with	ved respirator i com com com com com com com com	For sodium carb Mechanical (General) yes Eye Protection Saf if ect PILL/LEAK PRO Avoid prolonged cess. Flush res	Special ety glasses or dusty. CEDURES storage - caki	chemical saf	t. Do not
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# MORTON THIOKOL. INC.

Morton Salt Division

110 North Wacker Drive. Chicago, Illlinois 60606-1555

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Emergency Phone No. (312) 807-2000

PRODUCT ID	ENTIFICATION						
Chemical Name:	Sodium Chloride						
Common Name:			Produc	t Name: _			
	647-14-5			al Formu	la: <u>NaCl</u>		
HAZARDOUS	INGREDIENTS	S					
Chemical Name	Common	Nomo	040 NO	0/		OSHA	ACGIH
	Common	Name	CAS NO.	_%		PEL	TLV-TWA
None			<i>~</i>				
·							
•							
PHYSICAL D	ΑΤΑ			•			
Boiling Point, (7	60mm Hg.) <u>1413°(</u>		Specifi	c Gravity	(Water =	1) 2.165	
Vapor Pressure	(mm Hg) <u>1mm@</u>	865°C	% Non-				·
	AIR = 1)					1) N/A	
	er _1g in 2.8ml H ₂ C	) at 25ºC	pH6.	7 - 7.3			
	ite Crystalline Powe			Odorless			
FIRE AND E	PLOSION HA	ZARD DAT	Ά			·	
Flash Point	<u>\/A</u> •F	Flammabl	e Limits	Lel <u>N/</u>	Δ	Uel	N/A
Method Used:	Non-Combustible						
Extinguishing M	edia: Not applicabl	e			,		
	· ·	-					
Special Fire Figh	lling Procedures:	Not applic	able				
Unusual Fire and	d Explosion Hazar		· - I. I				
		Not applic	able				
	mposition Produc	Not applic	able				

Not toxic to the skin         Eye:         Not toxic to the eye         Inhalation:         Not toxic through inhalation         Chronic Toxicity: No applicable information found         Mutagenesis:         No applicable information found         Mutagenesis:         No applicable information found         Effects of Overexposure:         Ingestion:       1. Disagreeable taste         2. Nausea and vomiting         Skin Contact:       1. Irritation         2. Inflammation       3. Small ulcerations         Eye Contact:       1. Mechanical irritation         2. Watering of eyes       3. Inflammation of conjunctivas         Inhalation:       1. Slight irritation of nose         2. Sneezing       2. Sneezing         Acute Systemic Effects:       Ingestion of large amounts can cause irritation of the stomach.         Chronic Systemic Effects:       No applicable information found.         EMERGENCY AND FIRST AID PROCEDURES       Eye Contact:         Eye Contact:       1. Wash the affected eye or eyes under slowly running water for 15 minutes or lor making sure that the victuris eyelids are held wide apart and he moves his e slowly in every direction.         2. Make sure that no solid particles remain the the creases of the eye; if they do, contit to wash the eye.		Does not meet toxicity criteria under OSHA 1910.1200 Hazard Communication, Appendix A parts 3. & 6.
Eye: Not toxic to the eye  nhalation: Not toxic through inhalation  Chronic Toxicity: No applicable information found  Mutagenesis: No applicable information found  Effects of Overexposure: Ingestion: I. Disagreeable taste No applicable information Skin Contact: I. finfammation Small ulcerations Eye Contact: I. Mechanical irritation Nutatering of eyes Sinfammation of conjunctivas Inhalation: I. Slight irritation of nose Sineezing  Acute Systemic Effects: Ingestion of large amounts can cause irritation of the stomach.  Chronic Systemic Effects: No applicable information found.  EMERGENCY AND FIRST AID PROCEDURES Eye Contact: I. Wash the alfected eye or eyes under slowly running water for 15 minutes or lor making sure that the victum's eyelids are held wide apart and he moves his e slowly in every direction. Mathe sure that no solid particles remain the the creases of the eye; if they do, conti	Dermal Toxicity:	
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<ul> <li>Eye Contact:         <ol> <li>Wash the affected eye or eyes under slowly running water for 15 minutes or lor making sure that the victim's eyelids are held wide apart and he moves his e slowly in every direction.</li> </ol> </li> <li>Make sure that no solid particles remain the the creases of the eye; if they do, contito wash the eye.</li> </ul>		in Elizates
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	Chronic Systemi	<ul> <li>No applicable information found.</li> <li>Y AND FIRST AID PROCEDURES</li> <li>Mash the affected eye or eyes under slowly running water for 15 minutes or longe making sure that the victim's eyelids are held wide apart and he moves his eye</li> </ul>
	Chronic Systemi	<ul> <li>No applicable information found.</li> <li>Y AND FIRST AID PROCEDURES</li> <li>Antact: 1. Wash the affected eye or eyes under slowly running water for 15 minutes or longe making sure that the victim's eyelids are held wide apart and he moves his eye slowly in every direction.</li> <li>2. Make sure that no solid particles remain the the creases of the eye; if they do, continues the slowly in every direction.</li> </ul>
Skin Contact: 1. Remove the victim from the source of contamination.	Chronic Systemi	<ul> <li>No applicable information found.</li> <li>Y AND FIRST AID PROCEDURES</li> <li>Antact: 1. Wash the affected eye or eyes under slowly running water for 15 minutes or longe making sure that the victim's eyelids are held wide apart and he moves his eye slowly in every direction.</li> <li>2. Make sure that no solid particles remain the the creases of the eye; if they do, continues on the sure that the victim is eyelide to the the creases of the eye; if they do, continues on the the creases of the eye; if they do, continues on the the creases of the eye; if they do, continues on the the creases of the eye; if they do, continues on the the creases of the eye; if they do, continues on the the creases of the eye; if they do, continues on the the creases of the eye; if they do, continues on the the creases of the eye; if they do, continues on the the creases of the eye; if they do, continues on the the creases of the eye; if they do, continues on the the creases of the eye; if they do, continues on the the creases of the eye; if they do, continues on the the creases of the eye; if they do, continues on the the creases of the eye; if they do, continues on the the creases of the eye; if they do, continues on the the creases of the eye; if they do, continues on the the creases of the eye; if they do, continues on the the creases of the eye; if they do, continues on the creases of the eye; if they do, continues on the creases of the eye; if they do, continues on the creases of the eye; if they do, continues of the eye; if they do, continues on the creases of the eye; if they do, continues of the eye; if they do, continues of the eye; if they do, continues of the eye; if they do, continues of the eye; if they do, continues of the eye; if they do, continues of the eye; if they do, continues of the eye; if they do, continues of the eye; if they do, continues of the eye; if they do, continues of the eye; if they do, continues of the eye; if theye; if they do, continues of the eye; if theye; if theye; if</li></ul>
2. Remove clothing from the affected area.	Chronic System EMERGENC Eye Con	<ul> <li>No applicable information found.</li> <li>Y AND FIRST AID PROCEDURES</li> <li>Intact: <ol> <li>Wash the affected eye or eyes under slowly running water for 15 minutes or longe making sure that the victim's eyelids are held wide apart and he moves his eye slowly in every direction.</li> <li>Make sure that no solid particles remain the the creases of the eye; if they do, continu to wash the eye.</li> <li>If the pain persists, the medical service will refer the victim to an ophthalmologist</li> </ol> </li> </ul>
<ol> <li>Wash affected area under the shower.</li> <li>Rinse carefully.</li> </ol>	Chronic System EMERGENC Eye Con	<ul> <li>No applicable information found.</li> <li>Y AND FIRST AID PROCEDURES</li> <li>Itact: <ol> <li>Wash the affected eye or eyes under slowly running water for 15 minutes or longe making sure that the victim's eyelids are held wide apart and he moves his eye slowly in every direction.</li> <li>Make sure that no solid particles remain the the creases of the eye; if they do, continu to wash the eye.</li> <li>If the pain persists, the medical service will refer the victim to an ophthalmologist ntact: <ol> <li>Remove the victim from the source of contamination.</li> </ol> </li> </ol></li></ul>

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(continued)

5. Dry gently with a clean soft towel.

6. If the skin is inflamed or painful, contact the medical service who will treat it in the same way as a heat or thermal burn.

Inhalation:

1. Make the victim blow his nose to remove the dust but discourage him from sniffing.

If there is any doubt about the victim's condition send or escort him to the infirmary, first-aid room or hospital.

Ingestion:

 Make the victim vomit by having him stick his finger down his throat or tickling his uvula with the handle of a spoon.

2. Afterwards give him as much milk or water as he wants.

#### REACTIVITY DATA

Stability 🛛 Stable 🗌 Unstable Conditions to Avoid:

Incompatibility: (Materials to Avoid)

Bromine Trifluoride, Lithium (BrF₃, Li)

Can Hazardous Polymerization Occur: No

Hazardous Decomposition Products and Conditions:

When heated to decomposition it emits toxic fumes of Cl₂ and Na₂O

#### SPILL OR LEAK PROCEDURES

Response to Small Spills:

No special requirements

Response to Large Spills:

No special requirements

Hazards to be Avoided: None known

Reportable Quantity: Check your State for requirements

Waste Classification: Some States have set maximum limits on Chlorides in waste effluent.

Disposal Methods: Dilution with water is the only practical method to meet requirements.

## SPECIAL PROTECTION INFORMATION

**Respiratory Protection:** 

No special equipment

For Hands, Body:

No special equipment

For Eyes:

No special equipment

Ventilation:

None required

## SPECIAL PRECAUTIONS

#### **Other Precautions:**

Transport in dry equipment. Storage should be in a dry location.

Sec. 1. Sec. Sugar

#### LABELING INFORMATION

DOT Shipping Name: Salt (common) sodium chloride DOT Label: Not applicable UN No.: Not applicable

Other Contents of Product Label:

Not applicable

#### WARNING:

None

#### USERS RESPONSIBILITY

The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment.

#### Disclaimer of Liability

The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. It is the responsibility of the user to comply with all applicable federal, state, and local laws and regulations.

Nothing contained herein is to be construed as a recommendation for use in violation of any patents or of applicable laws or regulations.

MORTON THIOKOL, INC.

**Morton Salt Division** 



110 North Wacker Drive, Chicago, Illinois 60606-1555 (312) 807-2000

# MATERIAL SAFETY DATA SHEET

## CORPORATE RESEARCH & DEVELOPMENT

#### SCHENECTADY, N.Y.



#### SODIUM HYDROXIDE

INU.

Revision A

Date September 1977

## SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: SODIUM HYDROXIDE OTHER DESIGNATIONS: Caustic Soda, Soda Lye, NaOH, GE Material D4B4, ASTM D456, DESCRIPTION: This material is an anhydrous solid (flake, pellet, etc.) CAS# 001 310 732 MANUFACTURER: Available from many suppliers.

SECTION II, INGREDIENTS AND HAZARDS	x	HA	ZARD D	274
ypicel content: Sodium Hydroxide "(NaOH)	96		ng Limi g/m ³	<u>t</u> .
mpurities: Sodium Carbonate (Na2CO3) Sodium Chloride (NaCl) Sodium Sulfate (Na2SO4) Potassium, Calcium and Magnesium Silicon Dioxide (SiO ₂ ) Other metals (total)	0.5-2.5 0.01-2.1 0.02-0.1 0.1 0.03 0.01			
SECTION III, PHYSICAL DATA			· · · · · ·	
pecific gravity (20/4 C) 2.13 olatiles non-volatile Viscosi at room Water s temperature elting point, deg C 318	oressure, mm H ity at 350 C, o solubility, %	@ 120 срв @ О	0 C	232 4.0 29.0
ppearance & odor: White or off-white, hygroscopic sol	Lid; no odor.			
SECTION IV. FIRE AND EXPLOSION DATAFlash Point and MethodAutoignition Temp.None - not combustibleN/A	oility Limits	In Air	LOWER	UPPE= N/A
<pre>lthough it is not combustible, it can be hazardous if following should be known for fire fighting: (1) It (m.p. 318 C). (2) Hot or molten material can react v (3) Can react with certain metals, such as aluminum, (See also Reactivity Data, Section V)</pre>	can melt and violently with	flow wi water	en heat (splatt	ed ering)
SECTION V. REACTIVITY DATA				
t is a stable material under normal conditions of stor hazardous decomposition products. Slowly it can pick with carbon dioxide from the air to form sodium carbo	k up moisture	from th	ne air a ic chem:	ind rea

SECTION VI. HEALTH HAZARD INFORMA	TION T	LV (Ceiling Value) 2 zg/	دھ
odium hydroxide is a strong alkali and is			
destructive to all human tissue it contac		•	•
duce severe or permanent injury. Dust or tory tract. FIR	ST AID	bu can mjure the entire	respira-
ve contact - Wash eyes immediately with pl	enty of runni	ng water for no less than	15 min-
utes, including under the eyelids and all	surfaces. Sp	eed in rinsing out the ey	es with
water after contact is extremely importan	nt if permanen	t injury is to be avoided	. Contact
physician as soon as possible.		· · · · · · · · · · · · · · · · · · ·	
ngestion - Immediately dilute chemical by neutralize with dilute vinegar or fruit j	drinking larg	e amounts of water or til	k, then
not induce it. Contact a physician prompt			, but ub
nhalation - Remove from exposure to mist o	or dust and ge	t prompt medical help.	
kin contact - Wash contact area promptly w	ith large qua	ntities of water. (Dilute	acetic
acid, vinegar, can be used to neutralize.			
shower. Prolong washing in serious case hour or longer. Physician should see all	es until medic	al nelp arrives - even io ban minor exposures to sm	r an all erees
of stin	cases other t		ATT GLEGS
SECTION VII. SPILL, LEAK, AND DIS	POSAL PROCE	DURES	
hen solid sodium hydroxide is spilled in a	dry conditio	n, it can be promptly sho	veled up
for recovery or disposal. (CAUTION! Avoid	dusting. Avo	id contact with the skin.	) Control
the disposal of the waste solid. (Delay i from the armosphere and may increase the	n ciean up ma	y allow absorption of mod	sture
surfaces with water and neutralize with d	ilute acid. p	referably acetic acid. to	TEMOVE
final traces. (Sodium bicarbonate may als	o be used to	partially neutralize.) Fi	nally,
rinse with water.			
isposal of waste is greatly dependent on l plans should be made to meet legal and te	ocal conditio	ns and requirements. Pre-	emergency
be deliberately discharged directly into			
neutral salts and dilute well with water.			
	)		
SECTION VILL COROLAL DOOTECTION		, 	
SECTION VIII. SPECIAL PROTECTION		·	
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conditions can exist. Use filter-type re	INFORMATION quirements, e		
rovide adequate ventilation to meet TLV re conditions can exist. Use filter-type re needed.	INFORMATION quirements, e spirator for	nist and dust protection	
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ASSURED

SS - CONCENTRATE

Product

100%

0.840

7.00

Water

4-6

Dallas, Texas 75220

Labor-Saving Chemical Tools for Institution & Industrial Use

**DESCRIPTION:** SS-CONCENTRATE is a 100% organic formulation representing a completely new approach in one step degreasing and deodorizing. It is noncorrosive and contains no petroleum distillates, organic halides or alkalies. This multipurpose formulation will strip grease and heavy oil deposits from virtually any surface. It will emulsify instantly in water at ambient temperature to penetrate and liquefy many different types of resins and greases.

USE: This is the perfect product for removal of oily films from metal surfaces. Its lingering, fresh, natural citrus scent provides a multiplicity of additional applications, such as unclogging drains and grease traps. It will remove tar, asphalt and bitumen from most hard surfaces.

#### TECIINICAL DATA

Color Odor Flash Point (c.c.) Free Acid Free Alkali Orange Fresh Citrus 140°F None None

CDB

Activity pH (10% aqueous solution) Specific Gravity Pounds per Gallon Diluent

DIRECTIONS: To declog drains, pour 8 ounces of SS-CONCEN'IRATE directly into drain. Let stand for 1 hour or more. Flush with hot water. For disposals, use the same procedure.

To clean and degrease surfaces, dilute 4 ounces of SS-CONCENTRATE into 1 gallon of warm water. Apply solution generously to surface to be cleaned. Let stand for 5 minutes. Rinse thoroughly.

For odor control, dilute 2 ounces of SS-CONCENTRATE into 1 gallon of cold water. Apply through a sprayer to odor source. SS-CONCENTRATE will immediately leave a fresh citrus scent.

#### **USED IN:**

#### USED TO:

Sewage Plants Schools Degrease Trucks **Remove Decals** Service Stations Declog Grease Traps Clear Drains Restaurants ' Office Buildings Remove Printer's Ink Garbage Trucks Remove Adhesive Remove Tire Marks Automotive Plants Apartments Clean Motors Nursing Homes Remove Soap Scum Theatres Clean Equipment Locker Rooms Hospitals **De-Tar Vehicles and Loosen Chewing Gum from** Rest Rooms Commissaries Carpets and Hard Surfaces (other than plastic) Clean Fuel Oil Deposits from Metal Surfaces

**CAUTION:** Combustible. Keep away from heat and open flame. Do not take internally. Avoid contact with eyes. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. If irritation persists, seek medical attention. If swallowed, consult a physician immediately. CONTAINS NO PETROLEUM DISTILLATES.

#### (Continued...OVER)

Save Time and Labor With Crain Chemical Products, You Can Expect the Best From Crain Chemical Cumpany, Since 1945

(Patent Appiled For)

#### Page Two ....

Tar & Asphalt Removal: To emulsify tar, asphalt, bitumen and asphalt-based plastic cement, apply undiluted to the solied surface by spraying, mopping or pouring. Allow to stand 2-4 minutes for deep penetration, agitate if necessary. Rinse with water preferably under pressure.

The Mark Removal: Apply with mop, sprayer or brush. Allow to stand 1-2 minutes. For best results agitate the area while SS-CONCENTRATE is penetrating. Hose off with water and squeegee or vacuum dry.

Engine & Motor Degressing: Brush or spray concentrate on surface to be cleaned. Allow 3-5 minutes to soak in. Rinse with hot water or steam off.

Rug & Uphoistery Spot Removal: To remove oil and grease, pour 'SS-CONCENTRATE on sponge or cloth and apply to solled area. Blot solled area with sponge or cloth. If spot remains, repeat process. To remove chewing gum, blot SS-CONCENTRATE on gum and : let stand for 2 minutes. Use a tongue depressor or the dull edge of a knife to scrape off. It is always best to test SS-CONCENTRATE on an inconspicuous area before applying.

All-Purpose Degreasing: (Concrete floors, grills and hoods, kitchen floors, machinery, etc.) Spray or sponge on, allow to stand 2-4 minutes before rinsing with clear water. SS-CONCENTRATE may be diluted up to 50:1 with water, depending on desired task and applied in the same manner.

Citrus-Scented Odor Control: SPACE SPRAY — Spray mist into air to help control malodors. SURFACE SPRAY — Spray to lightly wet source of malodor.

Tile & Tub Cleaning: Sponge, mop or brush on surface. Let stand 2-3 minutes, agitate and rinse with clear water.

Drain Line Maintainer: SS-CONCENTRATE deodorizes and liquefies grease and scum which cause clogging. Add 3-4 ounces to each drain and let stand 5-10 minutes, then flush with hot water for 2 minutes.

Grense Traps: For traps under 20 feet capacity, pour or pump 5 ounces daily into grease trap. For larger traps add 8-10 ounces daily.

Garbage Trucks & Dumpster Cleaning/Degreasing: Mix 1 gallon of SS-CONCENTRATE to 20 gallons of warm water. Spray the solution on surface to be cleaned or degreased. Let stand for 2-3 minutes. If necessary, agitate with a brush, then hose off with water.

Bumper Sticker & Decni Remover: Pour SS-CONCENTRATE on cloth and apply to area being cleaned. Rub until adhesive is removed.

Drain Declogging: For drains stopped up due to grease accumulations, pour 4 ounces of concentrate directly into drain. Allow to stand 10 minutes, wash down with hot water. If not completely cleared, repeat. Same procedure is used for bathroom sinks and tubs.

Shower & Tub Soap Scum Removal: Ideal for removing some film incrustation on walls of shower and tub. Apply with sponge, allow to stand 1-2 minutes. Agitate, if necessary, and the time off.

Remove Stains from Concrete: Remove oil stains from concrete driveways. Pour or spray SS-CONCENTRATE directly on stain. Allow 3-5 minutes to dissolve stain, rinse off.

Pet Odor Contrat. For Indoor use, dilute 1 outer of 85-CONCENTRATE with 1 gallon of rold water. Apply through a sprayer to oder source. For outdoor use, dilute 2 outers of 88 CONCENTRATE with 1 gallon of cold water and follow same procedure. Do not use directly on pets.

Removes Stains from Natural Fiber Clothing: To remove oil, granse and food stains from clothing, pour SS-CONCENTRATE on cloth and apply to solled area. Wash with detergent as usual. If spot remains, repeat process. Always test an inconspicuous area of clothing before applying.

Try SS-CONCENTRATE on these items too ...

Scuff Marks Kitchen Grease Rubber Cement Crayon Marks Spray Adhesive Putty Duplicator Ink Asphalt Fresh Paint Waxes, Creosote • • • • • • • •

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December 18, 1988

Material Safety Data Sheet





USA and Canada

Other Countries

#### er Countries

## SULFURIC ACID

`e-	PHONE NUMBERS
PHILLIPS 66 COMPANY A Subsidiary of Phillips Petroleum Company Bartlesville, Oklahoma 74004	Emergency: Business Hours (918) 661-3865 After Hours (918) 661-8118 General MSDS Information:
	(918) 661-8327

## A. Product Identification

Synonyms: 011 of Vitreol Chemical Name: Sulfuric Acid Chemical Family: Acid Chemical Formula: H2SO4 CAS Reg. No.: 7664-93-9 Product No.: CC5570

Product and/or Components Entered on EPA's TSCA Inventory: YES

## B. Hazardous Components

Ingredients	CAS Number	× By Wt.	OSHA PEL	ACGIH TLV	
Sulfuric Acid	7664-93-9	93 (Min)	1 mg/m3	1 mg/m3	
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## C. Personal Protection Information

Ventilation: Use adequate ventilation to control exposure below recommended exposure limits. See Recommended Exposure Limits in Health Hazard Data (Section F). Respiratory Protection: Use NIOSH/MSHA approved full-face, air supplied respiratory protective equipment. Use NIOSH/MSHA approved self-contained breathing apparatus (SCBA) for entry to or escape from unknown atmospheres. Eye Protection: Full-face shield and chemical goggles for splash protection. Skin Protection: Rubber gloves. Protective clothing, boots and rubber apron. NOTE: Personal protection information shown in Section C is based upon general-...

information as to normal uses and conditions. Where special or unusual uses or conditions exist, it is suggested that the expert assistance of an industrial hygienist or other qualified professional be sought.

## **D.** Handling and Storage Precautions

Avoid inhalation and skin and eye contact. Wear protective equipmentand/or garments described above if exposure conditions warrant.

Store in cool, dry, well-ventilated area. Provide means of controlling leaks and spills. Avoid contact with materials listed below in Reactivity Data. When diluting acid, add acid to water never add water to acid.

## E. Reactivity Data

Stability: Stable Conditions to Avoid: Not Applicable Incompatibility (Materials to Avoid): Oxidizing or reducing materials, metals, combustible materials, and moisture. Avoid adding water to product. Hazardous Polymerization: Will Not Occur Conditions to Avoid: Not Applicable Hazardous Decomposition Products: Sulfuric acid mist and sulfur oxides. Hydrogen gas can be generated as a decomposition product and care must

be taken not to ignite.

## F. Health Hazard Data

**Recommended Exposure Limits:** 

OSHA PEL is 1 mg/m3; ACGIH TLV is 1 mg/m3.

Sulfuric Acid (CP-0-1)

First Aid and Emergency Procedures:

- Eye: Hold eyelids apart and irrigate eyes with running water for at least 15 minutes and continue to irrigate until otherwise directed by a physician. Treat for shock as necessary.
- Skin: Flood affected area with running water for at least 15 minutes while removing contaminated clothing. Treat for shock as necessary. Seek immediate medical attention.
- Inhalation: Immediately remove from exposure. Initiate artificial respiration, cardiopulmonary resuscitation, or treatment for shock as necessary. Administer oxygen as needed. Obtain prompt medical assistance.
- Ingestion: If vomitus is bloody, do not attempt to give anything by mouth. Otherwise, immediately rinse the mouth and lips and assist victim in swallowing large amounts of water. Do not induce vomiting or attempt chemical neutralization. Treat for shock as necessary. Obtain prompt medical assistance. May present an aspiration hazard.

## G. Physical Data

Appearance: Colorless, Oily Liquid Odor: Pungent Boiling Point: 626F (330C) Vapor Pressure: 0.02 psia (1 mm Hg) at 295F Vapor Density (Air = 1): >1 Solubility in Water: Complete, generates large amounts of heat Specific Gravity (H20 = 1): 1.834 at 60/60F Percent Volatile by Volume: Negligible Evaporation Rate (Butyl Acetate = 1): <1 Viscosity: Not Established

## H. Fire and Explosion Data

Flash Point (Method Used): Flammable Limits (% by Volume in Air):	Not Applicable LEL - Not Applicable UEL - Not Applicable
Fire Extinguishing Media:	Dry chemical, foam or carbon dioxide (CO2)
Special Fire Fighting Procedures:	Product is not flammable, but may cause ignition on contact with combustible liquids and solids. Self-contained breathing apparatus and full protective clothing recommended. Water may be used to extinguish burning combustibles, but do not apply directly to acid.
Fire and Explosion Hazards:	Can cause ignition on contact with combustibles. Exothermic with water. Sulfur oxides and hydrogen gas may be released as decomposition products.

Sulfuric Acid (CP-0-1)

#### Acute Effects of Overexposure:

- Eye: Corrosive, devastating injury resulting in glaucoma, cataracts, extensive damage to cornea and conjunctiva leading to blindness.
- Skin: Corrosive; can burn and char the skin which can lead to scarring.
- Inhalation: Irritation of the eyes, nose and respiratory system, coughing; severe overexposure can result in laryngeal, tracheobronchial and even pulmonary edema, brochoconstriction, laryngeal spasm leading to asphyxiation.
- Ingestion: Corrosive to tissues; immediate pain when taken into the mouth as well as spasm of the larynx, trachea, and bronchi. Epigastric pain, nausea, vomiting, intense thifst, circulatory collapse, perforation of the trachea or stomach, and death. May be aspirated into the lungs if swallowed resulting in pulmonary edema and chemical pneumonitis.

Chronic conjunctivitis, frequent respiratory and digestive disturbances, erosion and/or d have been reported in persons exposed to sul course of many years.	iscoloration of teeth
Other Health Effects:	
No known applicable information.	
Health Hazard Categories: Animal Human	Animal Human
Known Carcinogen Toxic Suspect Carcinogen Corrosive Mutagen Irritant	xin _XX

## N. Additional Comments

This product contains the following chemical or chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372. (See Section B).

Sulfuric Acid

Phillips believes that the information contained herein (including data and statements) is accurate as of the data hereof. NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, IS MADE AS CONCERNS THE INFORMATION HEREIN PROVIDED. The information provided herein relates only to the specific product designated and may not be valid where such product is used in combination with any other materials or in any process. Further, since the conditions and methods of use of the product and information referred to herein are beyond the combination with any other materials or in any process. Further, since the conditions and methods of use of the product and information referred to herein are beyond the combined Phillips (references to Phillips including its divisions, affiliates, and subsidiaries) Phillips expressive disclams any and all liability as to say results obtained or anstaing from any use of the product or such information. No statement made herein shall be construed as a permission or recommendation for the use of any product in a manner that might infringe existing patents.

NA - Not Applicable NE - Not Established

Sulfuric Acid (CP-0-1)

# MATERIAL SAFETY DATA SHEET

## PART ONE

SECTION I

FRODUCT NAME OR HUMBER (ss it inpears on tabel)	ENERGENEY TELEPHONE NO.
TRIBOL UYO (LIGHT, MEDIUM, HEAVY)	(213)-879-0271 MANUFACTUREA'S C-U.N.E NO.
ADUMESS (Number, Street, City, State and Zie Coue)	MANUFACTURER'S D.U.N.E NO.
4801 Nest 147th St., Hawthorne, Callfornia, 90250	07-964-5248
HAZAROOUS MATERIAL OUSCRIPTION, PROPER SHIPPING NAME, HAZARO CLASS, HAZARO IO NI	0. (49 CFA 172.101)
None - does,not apply	
ADDITIONAL HAZARD CLASSES (ad application)	

CHEMICAL FAMILY MIXEURE

PORMULA HIXTURE

## SECTION II - INGREDIENTS

CAS REGISTRY NO.	<b>WP</b>	<del>9</del> 7	CHEMICAL NAME(S)	Listed up a Carcinogen in NTP, IARG or OSHA 1916(2) (Soecity)
			TO THE BEST OF OUR ENOULEDDE, THIS PRODUCT CONTAINS NO MASARD- OUB INDREDIENTS, AS DEFINED BY 29 SFR 1910-1200.	
			(REFER TO SECTION & ON REVERSE SIDE)	

#### SECTION III - PHYSICAL DATA

SULING 1014 \$ 600	60 F Typical 0.97	1
	to dark amber, mild odor	IS MATERIAL: LICUID SCUID

## SECTION IV --- FIRE AND EXPLOSION HAZARD DATA

FLASH POINT >460 +F	mathod used	ASTH D92	FLAMMABLE LIMITS not	explosive	UEL		
	, foam, or dr	y chemicals					
SPECIAL FIRE FIGHTING PROCES	DURES None; f	ight as petro	lleum fire	······································			
				·······			
UNUSUAL FIRE AND EXPLOSION HAZARDS None							
			······································				

SECT	ION V-HEALTH HAZARD DATA
EFFECTS OF OVEREXPOSULE - Canditians to	
Hild skin irritation	the generalized ACSIN limit be fellowed
CAIMAAY AQUTES OF ENTAY Innersten @	TWA 5 mg/m3, if spraved in air.
ENERGENCY AND FIRST AND FRUCIDURES	Rinse material from eye with warm water; if ingested,
::	do not induce vomiting, call a physician.

#### SECTION VI-REACTIVITY DATA

	UNSTAB		NOITIONS	0 IOVA 01
STABILITY	STABL X	1.1.5		of ignition
<u> </u>	<u>ng QX10</u>	12100 200		•.
HAZNODE	10101	mal Use	DUCTS:	
HAZARDO	US	MAY BOOUP		CONDITIONS TO AVOID
POLYMERI	ZATION	WILL NOT OCC	K NU:	None

#### SECTION VII-SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Dike spill - clean up promptly with place in impervious container 011 absorbent -WASTE DISFOSAL METHOD Reclaim, incinerate or transport to ligensed disposal facility per applicable regulations.

#### SECTION VIII-SPECIAL PROTECTION INFORMATION

ASSPIRATORY PROTECTION (spenty type) Use with adequate ventilation. LOCAL EXHAUST (Southy Rate) None required in normal use SFECIAL VENTILATION MECHANICAL (General) (Specify Aate) OTHER PROTECTIVE GLOVES (specify type) Not required Always recommende THE PROTECTION (soudly type) OTHER FROTESTIVE EQUIPMENT

## SECTION IX-SPECIAL PRECAUTIONS

Store neatly to detect leaks.

Haintain cleanliness

THE INFORMATION PRESENTED HER UN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE DEPENDABLE AND IR ACCURATE TO THE EST OF SELLER'S KNOWLEDGE, HOWEVER, SELLER MAKES NO WARRANTY WHATECEVER, EXPRESSED, IMPLIED ON OF MERCHANTABILITY RESARCING THE ACCURACY OF SUCH DATA OR THE RESULTS TO BE DETAINED FROM THE USE THEREOF, SELLER ASSUMES NO RESPONSIBILITY FOR INJURY TO SUVEN OR TO THING PERSONS OR FOR ANY DAMAGE TO ANY PROPERTY AND SUVER ASSUMES ALL SUCK RISKS,"

Name 18	MICHATI BOWLHOV DE D	
Siçratur	Michael Remark	)
Title	Environmencel Chemist	1
Care	JAHUARY 7,1986	

MATERIAL SAFETY DATA SHEET

Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400 Product Code: 87792 Page: 1 Product Name: TRIETHYLENE GLYCOL - TECHNICAL Effective Date: 06/08/90 Date Printed: 06/27/90 MSDS:000271

1. INGREDIENTS: (% w/w, unless otherwise noted)

Triethylene glycol CAS# 000112-27-6 99%

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

#### 2. PHYSICAL DATA:

BOILING POINT: 545.9F; 286C VAP PRESS: < 1.0 mmHg @ 20C VAP DENSITY: 5.18 SOL. IN WATER: Completely miscible SP. GRAVITY: 1.1 @ 25/25C APPEARANCE: Colorless liquid. ODOR: Mild odor.

3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: 350F; 177C METHOD USED: PMCC

FLAMMABLE LIMITS LFL: 0.9% UFL: 9.2%

EXTINGUISHING MEDIA: Water fog, alcohol resistant foam, CO2, dry chemical.

FIRE & EXPLOSION HAZARDS: Not available.

FIRE-FIGHTING EQUIPMENT: Wear positive pressure self-contained

(Continued on Page 2) (R) Indicates a Trademark of The Dow Chemical Company

#### MA'TERIAL SAFETY DATA SHEET

Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 87792 Page: 2

Product Name: TRIETHYLENE GLYCOL - TECHNICAL

Effective Date: 06/08/90 Date Printed: 06/27/90 MSDS:000271

3. FIRE AND EXPLOSION HAZARD DATA: (CONTINUED)

breathing apparatus.

#### 4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) Will ignite in air at 700F.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Oxidizing material.

HAZARDOUS DECOMPOSITION PRODUCTS: Burning produces normal products of combustion, including carbon monoxide, carbon dioxide, and water.

HAZARDOUS POLYMERIZATION: Will not occur.

#### 5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Small spills: Soak up with absorbent material and collect for disposal. Large spills: dike to prevent contamination of waterways, then pump into suitable containers for disposal.

DISPOSAL METHOD: Burn in an approved incinerator in accordance with all local, state, and federal laws and regulations.

#### 6. HEALTH HAZARD DATA:

EYE: Essentially nonirritating to eyes.

SKIN CONTACT: Prolonged or repeated exposure may cause skin irritation. May cause more severe response if skin is abraded (scratched or cut).

SKIN ABSORPTION: A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful

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MATERIAL SAFETY DATA SHEET

Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 87792 Page: 3

Product Name: TRIETHYLENE GLYCOL - TECHNICAL

Effective Date: 06/08/90 Date Printed: 06/27/90 MSDS:000271

#### 6. HEALTH HAZARD DATA: (CONTINUED)

amounts. The dermal LD50 has not been determined.

INGESTION: Single dose oral toxicity is low. The oral LD50 for rats is 16,800-22,060 mg/kg.

INHALATION: No adverse effects are anticipated from inhalation.

SYSTEMIC & OTHER EFFECTS: Based on available data, repeated exposures are not anticipated to cause any significant adverse effects. Did not cause cancer in long-term animal studies. Birth defects are unlikely. Exposures having no adverse effects on the mother should have no effect on the fetus. In animal studies, has been shown not to interfere with reproduction.

#### 7. FIRST AID:

EYES: Irrigate immediately with water for at least five minutes.

SKIN: Wash off in flowing water or shower.

INGESTION: Induce vomiting if large amounts are ingested. Consult medical personnel.

INHALATION: Remove to fresh air if effects occur. Call a physician.

NOTE TO PHYSICIAN: No specific antidote. Supportive care. Treatment based on judgment of the physician in response to the patient.

#### 8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE: AIHA WEEL is 10 mg/m3 for polyethylene glycols.

VENTILATION: Provide general and/or local exhaust ventilation to

(Continued on Page 4) (R) Indicates a Trademark of The Dow Chemical Company

MATERIAL SAFETY DATA SHEET

Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 87792 Page: 4

Product Name: TRIETHYLENE GLYCOL - TECHNICAL

Effective Date: 06/08/90 Date Printed: 06/27/90 MSDS:000271

#### 8. HANDLING PRECAUTIONS: (CONTINUED)

control airborne levels below the exposure guidelines.

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use an approved air-purifying respirator. In misty atmospheres, use an approved mist respirator.

SKIN PROTECTION: For brief contact, no precautions other than clean body-covering clothing should be needed. When prolonged

or frequently repeated contact could occur, use protective clothing impervious to this material. Selection of specific items such as gloves, boots, apron or full-body suit will depend on operation. If hands are cut or scratched, use impervious gloves even for brief exposures.

EYE PROTECTION: Use safety glasses.

#### 9. ADDITIONAL INFORMATION:

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Practice reasonable care to avoid exposure.

Trace quantities of ethylene oxide (E0) may be present in this product. While these trace quantities could accumulate in headspace areas of storage and transport vessels, they are not expected to create a condition which will result in E0 concentrations greater than 0.5 ppm (8 hour TWA) in the breathing zone of the workplace for appropriate applications. OSHA has established a permissible exposure limit of 1.0 ppm 8 hr TWA for E0. (Code of Federal Regulations Part 1910.1047 of Title 29).

MSDS STATUS: Revised section 9 and regsheet.

(Continued on Page 5) (R) Indicates a Trademark of The Dow Chemical Company

«MATERIAL SAFETY DATA SHEET

Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 87792 Page: 5

Product Name: TRIETHYLENE GLYCOL - TECHNICAL

Effective Date: 06/08/90 Date Printed: 06/27/90 MSDS:000271

REGULATION INFORMATION: (Not meant to be all-inclusive--selected regulations represented.)

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations. See MSD Sheet for health and safety information.

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title 111) and

is considered, under applicable definitions, to meet the following categories:

Not to have met any hazard category

(R) Indicates a Trademark of The Dow Chemical Company The Information Herein Is Given In Good Faith, But No Warranty, Express Or Implied, Is Made. Consult The Dow Chemical Company For Further Information.



NICHE

## PRODUCT BULLETIN

#### DESCRIPTION

UNICHEM 1000 is an organic dispersant designed to be utilized with a biocide treatment program.

UNICHEM 1000 will loosen and disperse dead slime and/or algae deposits for easy removal of blowdown in a cooling water recirculating system. This dispersant action will allow better contact between the biocide and the bacteria or algae.

#### APPLICATION

UNICHEM 1000 is normally used between 20-100 ppm depending on the severity of foulant present in the system. UNICHEM 1000 normally should be added to the system after biocide treatment or between biocide additions in heavily fouled systems.

#### TYPICAL PROPERTIES

Appearance	
Freeze Point.	-20 ⁰ F
Flash Point (TCC)	

#### HANDLING

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Do not expose this product to open flame or extreme heat. Avoid contact with eyes, skin, or clothing. In case of eye contact, flush with water for at least fifteen minutes. Seek medical help if irritation persists. For skin contact, flush with water and wash throughly with soap and water. Remove contaminated clothing and wash before reuse. Avoid breathing fumes or vapors.

Refer to the material safety data sheet for more information regarding the safe use and handling of this product.

#### PACKAGING

UNICHEM 1000 is normally sold in 55 gallon drums or in bulk quantities.

Section: 01 PRODUCT	IDENTIFICATIO	N	
UNICHEM INTERNATIO		Emergency Telephone	EAE_303_7751
P.O. BOX 1499	JNAG INC.	Previous Version Date	
707 N. LEECH		Date Prepared	2/10/91
HOBBS		Version: 0000001	
NM	88241-1499		
Product Name: UNIC	CHEM 1000		
Chemical Descript Proprietary dispen			
Section: 02 HAZARD	OUS INGREDIENTS		
Component Name		<u><u>C</u></u>	AS <b>t <u>* Range</u></b>
isopropyl alcohol		00067-	-63-0 < 55%
			، نہ کہ ہم نے نے کا کر بی جابا نے ورو رند نے نے کا کر پر
Freezing Point: - Specific Gravity()	20 Deg.F. H2O=1) : .8	Boiling Point, 760 52 Solubility in 5 n liquid; slight ammonia	mm Hg: init 180 Deg. water: Soluble odor.
Freezing Point: - Specific Gravity() Appearance and Odd Section: 04 FIRE A	20 Deg.F. H2O=1) : .8 or: Tan to brow ND EXPLOSION HA	n liquid; slight ammonia ZARD DATA	mm Hg: init 180 Deg. water: Soluble odor.
Freezing Point: - Specific Gravity() Appearance and Odd Section: 04 FIRE A Flash Point (Test	20 Deg.F. H2O=1) : .8 or: Tan to brow ND EXPLOSION HA <u>Method):</u> 60	n liquid; slight ammonia ZARD DATA	odor.
Freezing Point: - Specific Gravity() Appearance and Odd Section: 04 FIRE A Flash Point (Test Extinguishing Med:	20 Deg.F. H2O=1) : .8 or: Tan to brow ND EXPLOSION HA <u>Method):</u> 60 ia	n liquid; slight ammonia ZARD DATA Deg.F TCC	odor.
Appearance and Odd Section: 04 FIRE Al Flash Point (Test Extinguishing Med: CO2, dry chemical	20 Deg.F. H2O=1) : .8 or: Tan to brow ND EXPLOSION HA <u>Method):</u> 60 ia 1, water spray	n liquid; slight ammonia ZARD DATA Deg.F TCC or fog, or foam. Use wate	odor.
Freezing Point: - Specific Gravity() Appearance and Odd Section: 04 FIRE A Flash Point (Test <u>Extinguishing Med</u> : CO2, dry chemical keep containers of	20 Deg.F. H2O=1) : .8 or: Tan to brow ND EXPLOSION HA <u>Method):</u> 60 ia 1, water spray cool. Isolate "	n liquid; slight ammonia ZARD DATA Deg.F TCC	odor.
Freezing Point: - Specific Gravity() Appearance and Odd Section: 04 FIRE A Flash Point (Test Extinguishing Med: CO2, dry chemical keep containers of Contain fire fight	20 Deg.F. H2O=1) : .8 or: Tan to brow ND EXPLOSION HA <u>Method):</u> 60 ia 1, water spray cool. Isolate " hting liquids f ting Procedures	n liquid; slight ammonia ZARD DATA Deg.F TCC or fog, or foam. Use wat fuel" supply from fire. or proper disposal.	odor.
Freezing Point: - Specific Gravity() Appearance and Odd Section: 04 FIRE Al Flash Point (Test Extinguishing Med: CO2, dry chemical keep containers of Contain fire fight Do not enter container	20 Deg.F. H2O=1) : .8 or: Tan to brow ND EXPLOSION HA <u>Method):</u> 60 ia 1, water spray cool. Isolate " hting liquids f ting Procedures fined fire spac	n liquid; slight ammonia ZARD DATA Deg.F TCC or fog, or foam. Use wat fuel" supply from fire. or proper disposal. e without proper persona	odor.
Freezing Point: - Specific Gravity() Appearance and Odd Section: 04 FIRE Al Flash Point (Test Extinguishing Med: CO2, dry chemical keep containers of Contain fire fight Do not enter cont protective equipt	20 Deg.F. H2O=1) : .8 or: Tan to brow ND EXPLOSION HA <u>Method):</u> 60 ia 1, water spray cool. Isolate " hting liquids f ting Procedures fined fire spac ment including	n liquid; slight ammonia ZARD DATA Deg.F TCC or fog, or foam. Use wat fuel" supply from fire. or proper disposal. e without proper personal NIOSH approved self-cont	odor.
Freezing Point: - Specific Gravity() Appearance and Odd Section: 04 FIRE A Flash Point (Test Extinguishing Med: CO2, dry chemical keep containers of Contain fire fight Do not enter cont protective equipt breathing appara	20 Deg.F. H2O=1) : .8 or: Tan to brow ND EXPLOSION HA <u>Method):</u> 60 ia 1, water spray cool. Isolate " hting liquids f ting Procedures fined fire spac ment including tus with full f	n liquid; slight ammonia ZARD DATA Deg.F TCC or fog, or foam. Use wath fuel" supply from fire. or proper disposal. NIOSH approved self-conta acepiece operated in the	odor.
Freezing Point: - Specific Gravity() Appearance and Odd Section: 04 FIRE A Flash Point (Test Extinguishing Med: CO2, dry chemical keep containers of Contain fire fight Do not enter cont protective equipt breathing apparate positive pressure	20 Deg.F. H2O=1) : .8 or: Tan to brow ND EXPLOSION HA <u>Method):</u> 60 ia 1, water spray cool. Isolate " hting liquids f ting Procedures fined fire spac ment including tus with full f e demand mode.	n liquid; slight ammonia ZARD DATA Deg.F TCC or fog, or foam. Use wath fuel" supply from fire. or proper disposal. NIOSH approved self-conta acepiece operated in the Do not inject a solid sti	odor.
Freezing Point: - Specific Gravity() Appearance and Odd Section: 04 FIRE A Flash Point (Test Extinguishing Med: CO2, dry chemical keep containers of Contain fire fight Do not enter cont protective equipt breathing apparate positive pressure	20 Deg.F. H2O=1) : .8 or: Tan to brow ND EXPLOSION HA <u>Method):</u> 60 ia 1, water spray cool. Isolate " hting liquids f ting Procedures fined fire spac ment including tus with full f e demand mode. into hot, burn	n liquid; slight ammonia ZARD DATA Deg.F TCC or fog, or foam. Use wath fuel" supply from fire. or proper disposal. NIOSH approved self-conta acepiece operated in the Do not inject a solid sta ing pools; this may cause	odor.
Freezing Point: - Specific Gravity() Appearance and Odd Section: 04 FIRE Al Flash Point (Test Extinguishing Med: CO2, dry chemical keep containers of Contain fire fight Do not enter cont protective equipt breathing apparate positive pressure of water or foam splattering and is	20 Deg.F. H2O=1) : .8 or: Tan to brow ND EXPLOSION HA <u>Method):</u> 60 ia 1, water spray cool. Isolate " hting liquids f ting Procedures fined fire spac ment including tus with full f e demand mode. into hot, burn increase fire i Explosion Hazar	n liquid; slight ammonia ZARD DATA Deg.F TCC or fog, or foam. Use wata fuel" supply from fire. or proper disposal. e without proper persona NIOSH approved self-conta acepiece operated in the Do not inject a solid straing pools; this may cause ntensity. ds	odor. er to l ained ream e
Freezing Point: - Specific Gravity() Appearance and Odd Section: 04 FIRE Al Flash Point (Test Extinguishing Med: CO2, dry chemical keep containers of Contain fire fight Do not enter cont protective equipt breathing apparate positive pressure of water or foam splattering and it Unusual Fire and I Treat as an extre	20 Deg.F. H2O=1) : .8 or: Tan to brow ND EXPLOSION HA <u>Method):</u> 60 ia 1, water spray cool. Isolate " hting liquids f ting Procedures fined fire spac nent including tus with full f e demand mode. into hot, burn increase fire i Explosion Hazar emely flammable	n liquid; slight ammonia ZARD DATA Deg.F TCC or fog, or foam. Use wata fuel" supply from fire. or proper disposal. e without proper persona NIOSH approved self-conta acepiece operated in the Do not inject a solid sta ing pools; this may cause ntensity. ds liquid. This material is	odor. er to l ained ream e
Freezing Point: - Specific Gravity() Appearance and Odd Section: 04 FIRE Al Flash Point (Test Extinguishing Med: CO2, dry chemical keep containers of Contain fire fight Do not enter cont protective equipt breathing apparate positive pressure of water or foam splattering and it Unusual Fire and 1 Treat as an extre highly volatile at	20 Deg.F. H2O=1) : .8 or: Tan to brow ND EXPLOSION HA <u>Method):</u> 60 <u>ia</u> 1, water spray cool. Isolate " hting liquids f <u>ting Procedures</u> fined fire spac ment including tus with full f e demand mode. into hot, burn increase fire i <u>Explosion Hazar</u> emely flammable and readily giv	n liquid; slight ammonia ZARD DATA Deg.F TCC or fog, or foam. Use wath fuel" supply from fire. or proper disposal. re without proper persona NIOSH approved self-conta acepiece operated in the Do not inject a solid strain ing pools; this may cause ntensity. ds liquid. This material is es off vapors which may	odor. er to l ained ream e
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Freezing Point: - Specific Gravity() Appearance and Odd Section: 04 FIRE Al Flash Point (Test Extinguishing Med: CO2, dry chemical keep containers of Contain fire figh Do not enter cont protective equipt breathing apparat positive pressure of water or foam splattering and is Unusual Fire and M Treat as an extra highly volatile a travel along the ignited by pilot smoking, electric	20 Deg.F. H2O=1) : .8 or: Tan to brow ND EXPLOSION HA <u>Method):</u> 60 ia 1, water spray cool. Isolate " hting liquids f ting Procedures fined fire spac ment including tus with full f e demand mode. into hot, burn increase fire i <u>Explosion Hazar</u> emely flammable and readily giv ground or be m lights, other cal motors, sta	n liquid; slight ammonia ZARD DATA Deg.F TCC or fog, or foam. Use wath fuel" supply from fire. or proper disposal. e without proper personal NIOSH approved self-conta acepiece operated in the Do not inject a solid striing pools; this may cause ntensity. ds liquid. This material is es off vapors which may oved by ventilation and	odor. er to l ained ream e

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#### Product Name: UNICHEM 1000

Section: 04 FIRE AND EXPLOSION HAZARD DATA CONTINUED

explosively. Containers may explode from internal pressure if confined to fire. Keep containers cool. Keep unnecessary people away.

#### Section: 05 HEALTH HAZARD DATA

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#### Effects of Overexposure

Eye Contact: the liquid is irritating to the eyes and produces intense stinging and burning. May cause eye damage.

Skin Contact: repeated or prolonged contact with the skin may cause irritation and dermatitis.

Inhalation: vapors may cause mild irritation of the eyes, nose, and throat. Prolonged exposures may cause nausea, headache, and mild narcosis.

Ingestion: will cause burning of the gastrointestinal tract, nausea, vomiting, bleeding, CNS depression, hemolysis, and pulmonary damage. May cause serious injury and can be fatal.

#### Emergency and First Aid Procedures

#### SKIN

Wash with soap and water. Remove contaminated clothing and launder contaminated clothing before reuse. Get medical attention if redness or irritation develops.

#### EYES

Flush eyes immediately with large amounts of water for at least 15 minutes. Lift lower and upper lids occasionally. Get medical attention.

#### INHALATION

Remove victim to fresh air. Give artificial respiration if not breathing. If breathing is difficult, administer oxygen. Keep person warm, quiet and get medical attention.

#### INGESTION

Call a physician immediately. Give victim a glass of water. Do NOT induce vomiting unless instructed by a physician or poison control center. Never give anything by mouth to an unconscious person.

Section: 06 REACTIVITY DATA

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Stable (Y=Yes/N=No): Y

Stability -- Conditions to Avoid

None known.

ection: 06 REACTIVITY DATA	<u>CONTINUED</u>	
Incompatibility (Materials to Avoid)		
Avoid contact with strong oxidizing and strong mineral acids.	agents, strong alkalies,	
Hazardous Decomposition Products		<del></del>
Thermal decomposition or combustion carbon monoxide and carbon dioxide.		
Hazardous Polymerization May Occur (Y	<u>'=Yes/N=No):</u> <u>N</u>	
<u> Hazardous Polymerization Conditio</u>	ns to Avoid	<u> </u>
None		
ection: 07 SPILL OR LEAK PROCEDURES		
Steps to be Taken if Material is Rel	eased or Spilled	
Eliminate sources of ignition. Pers personal protective equipment shoul		
of spill until clean-up has been co	mpleted. Shut off source	
of spill if possible to do so witho		
from entering sewers or watercourse ilation. Contain spilled liquid wit		
undamaged and minimally contaminate		
reclamation. Place all collected ma	terial and spill	
absorbents into DOT approved contai		
Advise authorities. If this product substance (see Section 10), notify		
National Response Center. Additiona		
to SARA Section 302/304 (40 CFR 355		
Waste Disposal Method		<u>.</u>
Treatment, storage, transportation accordance with EPA or State regula		
the Resource Conservation and Recov		
ection: 08 SPECIAL PROTECTIVE INFORM	ATION	
Respiratory Protection		<del></del>
If workplace exposure limit(s) of p is exceeded, an NIOSH/MSHA approved		
is advised in absence of proper env		
regulations also permit other NIOSH	/MSHA respirators	
(negative pressure organic vapor ty		
conditions. Engineering or administ be implemented to reduce exposure.	rative controls should	
Ventilation		
The use of mechanical dilution vent		
whenever this product is used in co		

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Product Name: UNICHEM 1000

#### Section: 08 SPECIAL PROTECTIVE INFORMATION CONTINUED

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sufficient local ventilation should be provided to maintain employee exposures below safe working limits (TWA's).

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#### Protective Gloves

Neoprene, nitrile, polyvinyl alcohol (PVA), polyvinyl chloride (PVC)

#### Eye Protection

Chemical splash goggles or face shield in compliance with OSHA regulations is advised; however OSHA regulations also permits safety glasses under certain conditions. The use of contact lenses is not recommended.

#### Other Protective Equipment

Eye wash and safety shower

Section: 09 SPECIAL PRECAUTIONS

<u>Precautions to be Taken in Handling and Storing</u> Avoid contact with eyes, skin or clothing. Avoid breathing vapors or mist. Keep away from heat, sparks, and open flames and never use a cutting torch on or near container (even empty) or explosion may result.

#### Other Precautions

Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in the data sheet must be observed. Do not transfer to improperly marked container. Do not use pressure to empty container. Do not cut, heat, weld, or expose containers to flame or other sources of ignition. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling.

#### Section: 10 REGULATORY INFORMATION

#### Superfund Amendments and Reauthorization Act Of 1986(SARA) Title III

Section 302/304-Extremely Hazardous Substances (40 CFR 355)

SARA requires emergency planning based on Threshold Planning Quantities (TPQs) and release reporting based on Reportable Quantities (RQs) in 40 CFR 355 (used for SARA 302, 304, 311 and 312). These values are subject to change and the regulations should be consulted to verify current statutory requirements.

Components present in this product at a level which could require reporting under the statute are:

#### Component Name

**NONE**

Saction 211/212 Chanical	1 Inventory Reporting Requirements (40 CFR 370)
	ts and Reauthorization Act (SARA) may
	reports (chemical list, MSDS, Tier I &
	Emergency Response Commission, Local
	mittee and the local fire department.
	health hazards related to this product
are:	
X Acute Health Hazard	_ Sudden Release of Pressure X Fire
$\overline{\mathbf{X}}$ Chronic Health Hazard	d _ Reactive
	ic Chemicals (40 CFR 372)
	the following toxic chemicals subject
	rements of Section 313 of the
	Community Right-to-Know Act of 1986
• ,	ormation should be included in all
MSDSS that are copied a	and distributed for this material.
Component Name	CAS 🛔 🐂 🐴 Range
**NONE**	
CERCLA, 40 CFR 261 AND	
The Comprehensive Envir	ronmental Response, Compensation, and
	(CERCLA) requires notification of the
	er 1-800-424-8802 of any release of a
Hazardous Substances ed	qual to or greater than the reportable
Hazardous Substances ec quantities (RQs) listed	qual to or greater than the reportable d in 40CFR 302.4. Values are given in
Hazardous Substances ed quantities (RQs) listed pounds for the componen	qual to or greater than the reportable d in 40CFR 302.4. Values are given in nt and not the mixture, if applicable.
Hazardous Substances ed quantities (RQs) listed pounds for the componen (These values are subje	qual to or greater than the reportable d in 40CFR 302.4. Values are given in nt and not the mixture, if applicable. ect to change and the regulations
Hazardous Substances ed quantities (RQs) listed pounds for the componen (These values are subje	qual to or greater than the reportable d in 40CFR 302.4. Values are given in nt and not the mixture, if applicable.
Hazardous Substances ed quantities (RQs) listed pounds for the componen (These values are subje should be consulted to <u>Component Name</u>	qual to or greater than the reportable d in 40CFR 302.4. Values are given in nt and not the mixture, if applicable. ect to change and the regulations
Hazardous Substances ed quantities (RQs) listed pounds for the componen (These values are subje should be consulted to	qual to or greater than the reportable d in 40CFR 302.4. Values are given in nt and not the mixture, if applicable. ect to change and the regulations verify current statutory levels.}
Hazardous Substances ed quantities (RQs) listed pounds for the componer (These values are subje should be consulted to <u>Component Name</u> **NONE**	qual to or greater than the reportable d in 40CFR 302.4. Values are given in nt and not the mixture, if applicable. ect to change and the regulations verify current statutory levels.}
Hazardous Substances ed quantities (RQs) listed pounds for the componen (These values are subje should be consulted to <u>Component Name</u>	qual to or greater than the reportable d in 40CFR 302.4. Values are given in nt and not the mixture, if applicable. ect to change and the regulations verify current statutory levels.}
Hazardous Substances ed quantities (RQs) listed pounds for the componer (These values are subject should be consulted to <u>Component Name</u> **NONE** HA Exposure Limits	qual to or greater than the reportable d in 40CFR 302.4. Values are given in nt and not the mixture, if applicable. ect to change and the regulations verify current statutory levels.}
Hazardous Substances ed quantities (RQs) listed pounds for the componen (These values are subject should be consulted to <u>Component Name</u> **NONE** <u>A Exposure Limits</u> poponent Name sopropyl alcohol	qual to or greater than the reportable d in 40CFR 302.4. Values are given in nt and not the mixture, if applicable. ect to change and the regulations verify current statutory levels.}
Hazardous Substances ed quantities (RQs) listed pounds for the componen (These values are subject should be consulted to <u>Component Name</u> **NONE** HA Exposure Limits <u>opponent Name</u> sopropyl alcohol WA ppm: 400.0 TWA MG/M cional Fire Protection A	qual to or greater than the reportable d in 40CFR 302.4. Values are given in nt and not the mixture, if applicable. ect to change and the regulations verify current statutory levels.) <u>CAS # CERCLA RO</u> M3: 980.0 STEL ppm: 500.0 STEL MG/M3: 1225.0 Agency
Hazardous Substances ed quantities (RQs) listed pounds for the componen (These values are subject should be consulted to <u>Component Name</u> **NONE** <u>IA Exposure Limits</u> <u>omponent Name</u> sopropyl alcohol TWA ppm: 400.0 TWA MG/M <u>cional Fire Protection A</u> <u>2</u> Health	qual to or greater than the reportable d in 40CFR 302.4. Values are given in nt and not the mixture, if applicable. ect to change and the regulations verify current statutory levels.) <u>CAS # CERCLA RO</u> M3: 980.0 STEL ppm: 500.0 STEL MG/M3: 1225.0 Agency <u>3</u> Fire
Hazardous Substances ed quantities (RQs) listed pounds for the componen (These values are subject should be consulted to <u>Component Name</u> **NONE** HA Exposure Limits <u>opponent Name</u> sopropyl alcohol WA ppm: 400.0 TWA MG/M cional Fire Protection A	qual to or greater than the reportable d in 40CFR 302.4. Values are given in nt and not the mixture, if applicable. ect to change and the regulations verify current statutory levels.) <u>CAS # CERCLA RO</u> M3: 980.0 STEL ppm: 500.0 STEL MG/M3: 1225.0 Agency
Hazardous Substances ed quantities (RQs) listed pounds for the component (These values are subject should be consulted to <u>Component Name</u> **NONE** <u>A Exposure Limits</u> <u>Somponent Name</u> Sopropyl alcohol TWA ppm: 400.0 TWA MG/M <u>2 Health</u> <u>Q</u> Reactive <u>Content of Transportati</u>	qual to or greater than the reportable         d in 40CFR 302.4. Values are given in         nt and not the mixture, if applicable.         ect to change and the regulations         verify current statutory levels.)         CAS # CERCLA RO         M3: 980.0 STEL ppm: 500.0 STEL MG/M3: 1225.0         Agency <u>3</u> Fire         Other         ion Shipping Information
Hazardous Substances ed quantities (RQs) listed pounds for the component (These values are subject should be consulted to <u>Component Name</u> **NONE** <u>IA Exposure Limits</u> <u>omponent Name</u> sopropyl alcohol TWA ppm: 400.0 TWA MG/M <u>ional Fire Protection A</u> <u>2</u> Health <u>0</u> Reactive <u>Component of Transportati</u> soper Shipping Name: Flat	qual to or greater than the reportable         d in 40CFR 302.4. Values are given in         nt and not the mixture, if applicable.         ect to change and the regulations         verify current statutory levels.)         CAS # CERCLA RO         M3: 980.0 STEL ppm: 500.0 STEL MG/M3: 1225.0         Agency <u>3</u> Fire         Other         ion Shipping Information         ammable liquid, n.o.s.
Hazardous Substances ed quantities (RQs) listed pounds for the componen (These values are subject should be consulted to <u>Component Name</u> **NONE** HA Exposure Limits <u>oppopyl alcohol</u> WA ppm: 400.0 TWA MG/M <u>cional Fire Protection A</u> <u>2 Health</u> <u>0 Reactive</u> <u>Partment of Transportati</u> coper Shipping Name: Flat arard Class: Flammable 1	qual to or greater than the reportable         d in 40CFR 302.4. Values are given in         nt and not the mixture, if applicable.         ect to change and the regulations         verify current statutory levels.)         CAS # CERCLA RO         M3: 980.0 STEL ppm: 500.0 STEL MG/M3: 1225.0         Agency <u>3 Fire</u> Other         ion Shipping Information         ammable liquid, n.o.s.         liquid Identification: UN 1993
Hazardous Substances ed quantities (RQs) listed pounds for the component (These values are subject should be consulted to <u>Component Name</u> **NONE** <u>IA Exposure Limits</u> <u>omponent Name</u> sopropyl alcohol TWA ppm: 400.0 TWA MG/M <u>ional Fire Protection A</u> <u>2</u> Health <u>0</u> Reactive <u>Component of Transportati</u> soper Shipping Name: Flat	qual to or greater than the reportable         d in 40CFR 302.4. Values are given in         nt and not the mixture, if applicable.         ect to change and the regulations         verify current statutory levels.)         CAS # CERCLA RO         M3: 980.0 STEL ppm: 500.0 STEL MG/M3: 1225.0         Agency <u>3 Fire</u> Other         ion Shipping Information         ammable liquid, n.o.s.         liquid Identification: UN 1993
Hazardous Substances ed quantities (RQs) listed pounds for the component (These values are subject should be consulted to <u>Component Name</u> **NONE** <u>IA Exposure Limits</u> <u>omponent Name</u> sopropyl alcohol TWA ppm: 400.0 TWA MG/M <u>cional Fire Protection A</u> <u>2 Health</u> <u>0 Reactive</u> <u>Partment of Transportati</u> coper Shipping Name: Flat is product contains: is uzardous Substance RQ: *	qual to or greater than the reportable d in 40CFR 302.4. Values are given in nt and not the mixture, if applicable. ect to change and the regulations verify current statutory levels.) <u>CAS # CERCLA RO</u> M3: 980.0 STEL ppm: 500.0 STEL MG/M3: 1225.0 Agency <u>3 Fire</u> Other ion Shipping Information ammable liquid, n.o.s. liquid Identification: UN 1993 sopropyl alcohol *NONE* Emergency Response Guide Number: 27
Hazardous Substances ed quantities (RQs) listed pounds for the component (These values are subject should be consulted to <u>Component Name</u> **NONE** <u>A Exposure Limits</u> <u>omponent Name</u> sopropyl alcohol TWA ppm: 400.0 TWA MG/M <u>cional Fire Protection A</u> <u>2 Health</u> <u>0 Reactive</u> <u>Partment of Transportation</u> coper Shipping Name: Flat is product contains: is	qual to or greater than the reportable d in 40CFR 302.4. Values are given in nt and not the mixture, if applicable. ect to change and the regulations verify current statutory levels.) <u>CAS # CERCLA RO</u> M3: 980.0 STEL ppm: 500.0 STEL MG/M3: 1225.0 Agency <u>3 Fire</u> Other ion Shipping Information ammable liquid, n.o.s. liquid Identification: UN 1993 sopropyl alcohol *NONE* Emergency Response Guide Number: 27

#### Product Name: UNICHEM 1000

#### Section: 10 REGULATORY INFORMATION

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#### CONTINUED

compliance with TSCA.

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Section 10 information is to remain attached to the material safety data sheet for this product.

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While UNICHEM INTERNATIONAL believes that the above data is correct, UNICHEM INTERNATIONAL expressly disclaims liability for any loss or injury arising out of the use of this information or the use of any materials designated.

	UNICHEM 1300	PRODUCT BULLETIN
DESCRIPTION:	UNICHEM 1309 is an organic scale and dispersant for use in cooling tower recirc UNICHEM 1300 contains specific compo- scale and corrosion inhibition. UNICHEM 13 anti-precipitant for calcium phosphate, ca calcium sulfate. In addition, it contains and copper alloy corrosion inhibitions. UNIC inhibits iron deposition at inhibition pe - 100%. It is an excellent dispersant for p as mud, silt and dead bacteria (slime) com water systems.	ulating water systems. unds proportioned for 300 is a highly effective alcium carbonate, and tolytriazole for copper CHEM 1300 additionally ercentages approaching particulate matter such
APPLICATION:	UNICHEM 1300 should be fed to the sys amount of UNICHEM 1300 normally used ppm. The amount of UNICHEM 1300 fed to controlled by an orthophosphate residual or total phosphate residual should be maintain	should be 80 to 140 the system is normally f 8 to 16 ppm. The
PROPERTIES:	Appearance:Clear AmberForm:LiquidDensity:11.2 pounds/gallonFreeze Point:0°FFlash Point:None	· · · · · · · · · · · · · · · · · · ·
HANDLING:	UNICHEM 1300 is low in toxicity; howe be exercised in the handling of any wate in its concentrated form. If spilled, wash t quantities of water. If irritation persists	r treatment compound thoroughly with copious
PACKAGING:	UNICHEM 1300 is available in 55 gallon dr	ums or bulk quantities.
	P. O. Box 14	499 – Hobbs, N. M. 88240 – Pho. (505) 393-7

		Super	sedes Pr	evious Sheet	Dared <u>05/2</u> Dated <u>10/3</u>	
4	Ι.	PRODUCT	IDENTIF			•
Unichem Internat	ional 707	· · ·		x 1499/Hobbs, IONE NUMBER (		
Trade Name UNICHER	1 1300				······	<u>,,,,,,</u>
Chemical Descrip		ietary Scale	and Corro	sion Inhibitor E	lend	
	· · · II				ant party sets of a set	<u> </u>
Ma	terial			TLV	(Units)	
Potassium Hyd Proprietary C Proprietary C	orrosion Inhi	bitor	- : · · · ·	· 10 m	y/m² 1g/m² Established	··· ·
Neither this produ 1910.1200 sources		ic.	e listed	In any of OSHA SI	andard, Sec	tion.
·		EIII. 🗉 PH	IYSICAL I	ATA	· · · · · · · · · · · · · · · · · · ·	
Boiling Point, 7				ng Point	0°F	
Specific Gravity	L	3 g/m1	- Solubi	lity in Water	Complete	· · · ·
Appearance and O	dor Ambe	er, Clear Liq	uid; Slig	nt Sweet Odor .	· .·	
·				HAZARD DATA		
Flash Point (Tes	t Method)				ar a companya	به -
Extinguishing Me water spray to coo	dia Carbon 1 fire-expose	d containers	y Chemica.	l, Water Spray of	r Fog, Foam	• Use a
- Special Fire Fig spparatus and full mature of this che	protective c	lothing. Fir	efighters	should be made	f-contained aware of th	breathing e corrosive
-Unusual Fire and	Explosion	Hazards		ار این این این این این این این این این این		· · · · · · · · · · · · · · · · · · ·
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Product UNICHEM 1300

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#### V. HEALTH HAZARD DATA

#### Threshold Limit Value Not Determined

Effects of OVEREXPOSURE Contact will cause burns to the skin and severe damage to the eyes. Inhalation of vapors or mists will irritate the entire respiratory tract. Ingestion will cause irritation and burning of the digestive tract.

Emergency and First Aid Procedures Eyes: Flush promptly with copious quantities of water for at least fifteen minutes. Seek medical attention. Skin: Flush area with water. Wash with soap and remove contaminated clothing. Inhalation: Remove to fresh air. Apply artifical respiration if necessary. Ingestion: Call a physician. Do not induce vomiting. Dilute with water or milk.

	VI. REACTIVITY DATA
Stability	Stable X Conditions to Avoid None Unstable
Incompatibi	lity (Materials to Avoid) Strongly acidic materials, oxidizers.
Hazardous D	ecomposition of Products Oxides of Carbon and Nitrogen
Hazardous P	Olymerization May Occur Conditions to Avoid Will Not Occur X None
	VII. SPILL OR LEAK PROCEDURES
-	Taken if Material is Released or Spilled Provide adequate ventilat ces of ignition. Contain and absorb spill.
Waste Dispo	Sal Method Dispose via a licensed waste disposal company. Follow local federal regulations.
-	VIII. SPECIAL PROTECTION INFORMATION
	<b>Protection (Specify Type)</b> Use min-supplied or melf-contained breathing f exposure levels exceed TLV for this product or its ingredients.
Ventilation	Local Exhaust As needed to prevent Special None
	Mechanical (General) vapors above Other None
Protective	Gloves Rubber Eye Protection Safety Glasses, Goggles, and/or Face Shield
Other Prote	CTIVE Equipment Overalls, Rubber Boots, Eyewash Stations, Safety Showers
	IX. SPECIAL PRECAUTIONS
low fire-ri	to be Taken in Handling and Storing Store in cool, well-ventilated, sk area away from ignition sources and incompatible materials. Keep containe not in use. Do not transfer or store in improperly marked containers.
Other Preca Do not inge	

UNICHEM 1700 is an organic scale and corrosion inhibitor for use in recirculating cooling tower systems. UNICHEM 1700 is a highly effective anti-precipitant for calcium phosphate, calcium carbonate and calcium sulfate. In addition, UNICHEM 1700 is an excellent dispersant for particulate matter such as mud, silt, and dead bacteria (slime) commonly found in cooling water systems.

PRODUCT BULLETIN

UNICHEM 1700 additionally inhibits iron deposition (transports iron) at inhibition percentages approaching 100%.

UNICHEM 1700 is extremely stable even under conditions of high temperature and pH. After heating for four hours at a pH of 12 and 400° F, the antiprecipitant activity of UNICHEM 1700 is still excellent. Other comparative polymers and copolymers are relatively ineffective after exposure to the same conditions as a result of hydrolysis.

UNICHEM 1700 should be fed continously to the cooling tower recirculating water. The amount of UNICHEM 1700 required normally is approximately 50 ppm.

Appearance: Form: Density: pH: Pour Point: Flash Point:

UNICHEM 1700

Water white clear Liquid 9.1 lbs/gal 1.6 Below - 10⁰F None

UNICHEM 1700 is low in toxicity; however, due care should be exercised in the handling of any water treatment compound in its concentrated form. If spilled, wash thoroughly with copious quantities of water. If irritation persists, contact a physician.

UNICHEM 1700 is available in 55 gallon drums or in bulk quantities.

	•.			TA SHEET pared_05/22/86
INTERNATIONAL	Supers	edes Prev	ious Sheet	Dated_02/26/85
i	I. PRODUCT	IDENTIFIC	ATION	
Unichem International 7	07 N. Leech/P EMERGENCY			New Mexico 882 505) 393-7751
Trade Name UNICHER*1700+				
Chemical Description	roprietary Scale	Inhibitor	and Dispersant	2
· • •	II. HAZARDOU	IS INGREDI	ENTS	
Material			TLV	(Units)
Proprietary Scale/Corrosion I	nhibitor (Acid, Corr	osive)	None (	Established
	777 000	/87/2AL 847		
Boiling Point, 760 mm Hg Specific Gravity (H ₂ O=1)	III. PHY 212°F 1.1 g/m1	SICAL DAT	والنابج منتشف بملافيه ومخالفها والمتأل	-10°F Complete
Specific Gravity (H ₂ O=1)	212°F 1.1 g/ml	Freezing	Point ty in Water	
Specific Gravity (H ₂ O=1)	212°F 1.1 g/ml	Freezing Solubili Slight Od	Point ty in Water	
Specific Gravity (H ₂ O=1) Appearance and Odor	212°F 1.1 g/m1 eter White Clear FIRE AND EXP	Freezing Solubili Slight Od	Point ty in Water	
Specific Gravity (H ₂ O=1) Appearance and Odor IV. Flash Point (Test Method)	212°F 1.1 g/m1 eter White Clear FIRE AND EXP None None	Freezing Solubilit Slight Od LOSION HA	Point ty in Water or ZARD DATA	Complete
Specific Gravity (H ₂ O=1) Appearance and Odor w IV. Flash Point (Test Method) Extinguishing Media Cat water approy to cool fire-exp	212°F 1.1 g/m1 eter White Clear FIRE AND EXP None None rbon Dioxide, Dry posed containers Cedures Fin	Freezing Solubilit Slight Od LOSION HA	Point ty in Water or ZARD DATA Water Spray of	Complete or Fog, foam. Use a
Specific Gravity (H ₂ O=1) Appearance and Odor wirk IV. Flash Point (Test Method) Extinguishing Media Car water apray to cool fire-exp Special Fire Fighting Pro-	212°F 1.1 g/m1 ster White Clear FIRE AND EXP None rbon Dioxide, Dry posed containers CCEDURES Fin ve clothing. Fire	Freezing Solubilit Slight Od LOSION HA	Point ty in Water or ZARD DATA Water Spray of	Complete or Fog, foam. Use a

Page 1 of 2

Page 2 of 2	Product UNICHEM 1700
	V. HEALTH HAZARD DATA
Threshold Limi	t Value Not Determined
Effects of Over eyes. Inhelst will cause irr	<b>TEXPOSITE</b> Contact will cause burns to the skin and severe damage to the ion of vapors or mists will irritate the entire respiratory tract. Ingestion itation and burning of the digestive tract.
water for at 1 Wash with soap artifical resp Dilute with wa	
<u>.</u>	VI. REACTIVITY DATA
Stabilitý Sta Und	table X Conditions to Avoid None
Incompatibilit	y (Materials to Avoid) Highly Alkaline Materials, Oxidizers
lazardous Deco	MPOSITION OF Products Oxides of Carbon and Nitrogen
Hazardous Poly	merization May Occur Conditions to Avoid Will Not Occur X None
	VII. SPILL OR LEAK PROCEDURES
Remove 'sources Waste Disposal	ken if Material is Released or Spilled Provide adequate ventilation. of ignition. Contain and absorb spill. Method Dispose via a licensed waste disposal company. Follow local deral regulations.
	VIII. SPECIAL PROTECTION INFORMATION
	Otection (Specify Type) Use sir-supplied or self-contained breathing exposure levels exceed TLV for this product or its ingredients.
Ventilation	Local Exhaust As needed to prevent Special None
	Mechanical (General) vapors above Other None
Protective Glo	
Other Protecti	Ve Equipment Overalls, Rubber Boots, Eyewash Stations, Safety Showers
	IX. SPECIAL PRECAUTIONS
	be Taken in Handling and Storing Store in cool, well-ventilated,

#### DESCRIPTION

UNICHEM 1705

UNICHEM 1705 is a scale and corrosion inhibitor for use in open recirculating cooling water systems. UNICHEM 1705 is a highly effective antiprecipitant for calcium phosphate, calcium and magnesium carbonate and calcium sulfate. In addition, UNICHEM 1705 is an excellent dispersant for particulates, such as mud, silt and biomass. UNICHEM 1705 is stable even under conditions of high temperature and pH. UNICHEM 1705 contains specific corrosion inhibitors for copper alloys.

UNICHEM 1705 is designed to be used in alkaline cooling water systems. UNICHEM 1705 contains a small amount of ortho phosphate. This primarily provides a convenient way to monitor the level of UNICHEM 1705 in the recirculating water.

#### **APPLICATION**

UNICHEM 1705 should be injected continuously into the cooling water system at a rate sufficient to maintain 80 to 120 ppm in the recirculating water. The rate of addition can be controlled by maintaining an ortho phosphate residual of 3 to 4 ppm in the recirculating water.

#### **TYPICAL PROPERTIES**

Appearance	Amber Clear Liquid
Density	10.5 lbs/gal
Freeze Point	25°F
Flash Point (TCC).	None

#### HANDLING

UNICHEM 1705 is an alkaline compound. Avoid contact with eyes, skin, and clothing by wearing the proper safety equipment including eye protection, rubber gloves, and protective clothing. In case of eye contact, flush thoroughly with water for at least fifteen minutes. Consult a physician. For skin contact, rinse with copious quantities of water and wash with soap. Remove contaminated clothing and wash thoroughly. Seek medical attention if irritation persists. Avoid breathing vapors or fumes.

Refer to the material safety data sheet for more information regarding the safe use and handling of this product.

#### PACKAGING

UNICHEM 1705 is available in 55 gallon drums or in bulk quantities.

PRODUCT

BULLETIN

	MATERI	AL :	SAFETY	DA	TA SHE	ET
UNICHEM			Date	Pre	pared	2/89
INTERNATIONAL	Supers	edes	Previous Sh	leet I	Dated <u>Non</u>	e
I	PRODUCT	IDENT	IFICATION			
Unichem International 707	7 N. Leech/P EMERGENCY		Box 1499/Ho Phon <mark>e numb</mark> e		New Mexic 505) 393-7	
Trade Name UNICHEM 1705						<u> </u>
Chemical Description	rietary Scale	and Cor	rosion Inhib:	itor 8	lend	
I	I. HAZARDOU	IS ING	REDIENTS			
Material				TLV (	(Units)	
Potassium Hydroxide CAS# 1 	ibitor	25%)		2 mg 10 m Not		 • .
Neither this product nor its in 1910.1200 sources as carcinogen	-	listed	in any of OS	SHA SE	andard, Sec	tion
SARA Hazard Catagory Acute Health Hazard		_		_		•
F1.	III. PHY	SICAL	DATA			
Boiling Point, 760 mm Hg 21	12°F Freezing Point 25°F					
Specific Gravity (H ₂ O=1) 1.	(H ₂ O=1) 1.3 g/m1 Solub		ility in Water Complete			
Appearance and Odor Ambe	er, Clear Liqui	d; Sli	ght Sweet Odo		ي ال ال ال الم الم الم الم الم الم	والمراسية والموارية
IV. F	IRE AND EXPL	OSION	HAZARD DA	ATA		
Flash Point (Test Method)	None	<u> </u>				
Extinguishing Media Carbon water spray to cool fire-expose	Dioxide, Dry d container <del>s.</del>	Chemic	al, Water Spr	ay or	Fog, Foam.	Use a
Special Fire Fighting Proce apparatus and full protective c nature of this chemical.			s should wear s should be m			
Unusual Fire and Explosion	Hazards	None				
iability is expressly disc the use of this information			loss or i y materials	-	-	out of

Page 1 of 2

V.         HEALTH HAZARD DATA           Threshold Limit Value         Not beterained           Effects of Overexposure         Contact will cause burns to the skin and severe demage to bi ever. Inhelation of vapors or mists will initiate the entire respiratory tract. Ingest will cause irriteriation and burning of the digestive tract.           Emergency and First Aid Procedures         Ever. Flush promptly with copious quantities or meter for at least fifteen minutes. Seek addict attention. Skins Flush area with weth wash with scap and resour contaminated clothing. Inhelation: Remove to free hit. Appl artifical respiration if necessary. Ingestions Call a physician. Do not induce vomitic Dilute with meter or alls.           VI.         REACTIVITY DATA           Stability         Stability           VI.         REACTIVITY DATA           Stability         Materials to Avoid           Mazardous Decomposition of Products         Oxides of Carbon and Nitrogen           Hazardous Polymerization         May Occur         Conditions to Avoid None           VI.         SPILL OR LEAK PROCEDURES         Steps to be Taken if Material is Released or Spilled Provide adequate ventil Remove sources of ignition. Contain and absorb spill.           CERCLA Ro: 8089 lbs of product (due to potensium hydroxide content)         Waste suffered regulations.           VIII.         SPECIAL PROTECTION INFORMATION           Respiratory Protection (Specify Type)         Use str-suppiled or sti ingredients.           Ven	Page 2 of 2	Product UNICHEM 1705
Effects of Overexposure contact will cause burne to the skin and severe damage to the sees. Inhelation of vapots or mists will irritate the entire respiratory tract. Ingest will cause irritation and burning of the digestive tract. Emergency and First Aid Procedures Eyee: Fluen promptly with copious quantities of water for at least fifteen minutes. Seek medical attention. Skins Fluen area with water week with each with sees and remove contamined of chains. Inhelation: Skins Fluen area with weth week with sees and remove contamined clothing. Inhelation: Skins Fluen area with weth week with each of the easesty. Ingestion: Call a physicien. Do not induce vomitine of the with water or milk. VI. REACTIVITY DATA Stability Stable X Conditions to Avoid None Incompatibility (Materials to Avoid) strongly scide materials, oxidizers. Hazardous Decomposition of Products Oxides of Carbon and Nitrogen Hazardous Polymerization X May Occur Conditions to Avoid None VII. SPILL OR LEAK PROCEDURES Steps to be Taken if Material is Released or Spilled Provide adequate ventil Remove sources of ignition. Cantain and absorb spill. CERLA RD: 8899 lbs of product (due to potensium hydroxide content) Waste Disposal Method VII. SPECIAL PROTECTION INFORMATION Respiratory Protection (Specify Type) Use sir-supplied or self-contained breathing apparatus if exposure levels exceed TLV for this product or its ingredients. Ventilation Local Extension As needed to prevend Special None TLV Protective Gloves Rubber Eye Protection Safety Glasses, Goggles, and/or None IX. SPECIAL PRECAUTIONS Precautions to be Taken in Handling and Storing Store in cool, well-ventilated,		V. HEALTH HAZARD DATA
ayes. Inhelation of vapors or mists will irritate the entire respiratory tract. Ingest         will cause irritation and burning of the digestive tract.         Emergency and First Aid Procedures Eyes: Flush promptly with copious quantities of water for at least fifteen minutes. Seek medical stention. Skins flush area with wate Wash with seep and resour contaminated clothing. Inhelation: Remove to fresh sir. Appliant irrespiration if necessary. Ingestion: Call a physician. Do not induce vomitine Dilute with water or milt.         VI.       REACTIVITY DATA         Stability       Stable         Incompatibility (Materials to Avoid)       Strongly scidic materials, exiditers.         Hazardous Decomposition of Products       Oxides of tarbon and Nitrogen         Hazardous Polymerization       May Occur       Conditions to Avoid         Wail Most Cocur       None         VII.       SPILL OR LEAK PROCEDURES         Steps to be Taken if Material is Released or Spilled Provide adequate ventil         Remove sources of ignition. Contain and absorb spill.         CERLA R0: 8889 Iss of product (due to potassium hydroxide content)         Waste Disposal Method       Dispose vis a licensed waste disposal company. Follew lo state, and federal regulations.         VIII.       SPECIAL PROTECTION INFORMATION         Respiratory Protection (Specify Type) Use air-supplied or self-contained breathing apparatus if expoare levels exceed TLV for this product or its ingredients.         Ventilation	Threshold Limit Val:	Not Determined
weter for at least fifteen minutes. Seek medical attention. Skin: Flush area with mathematical containated clothing. Inhalation: Remove to freeh air: Appiarting to anot induce containated clothing.           WI. REACTIVITY DATA           Stability           VI. REACTIVITY DATA           Stability           Stability           WI. REACTIVITY DATA           Stability           Stability           Mathematical Conditions to Avoid           Incompatibility (Materials to Avoid)           Stability (Materials to Avoid)           May Occur           Conditions to Avoid           Ma	eyes. Inhalation of	pors or mists will irritate the entire respiratory tract. Ingest
Stability       Stable       X       Conditions to Avoid       None         Incompatibility       (Materials to Avoid)       Strongly acidic materials, exidizers.         Hazardous Decomposition of Products       Dxides of Carbon and Nitrogen         Hazardous Polymerization       May Occur x       Conditions to Avoid None         Hazardous Polymerization       May Occur x       Conditions to Avoid None         Hazardous Polymerization       May Occur x       None         VII.       SPILL OR LEAK PROCEDURES         Steps to be Taken if Material is Released or Spilled Provide adequate ventil Remove sources of ignition. Contain and absorb spill.         TERCLA R0:       BB89 lbs of product (due to potassium hydroxide content)         Waste Disposal Method       Dispose vis a licensed waste disposal company. Follaw log state, and federal regulations.         VIII.       SPECIAL PROTECTION INFORMATION         Respiratory Protection (Specify Type)       Use sir-supplied or self-contained breathing apparatus if exposure levels exceed TLV for this product or its ingredients.         Ventilation       Local Estause       As needed to prevent Special None TLV         Protective Gloves       Rubber       Eye Protection Safety Glasses, Goggles, and/or Face Shield         Other Protective Equipment Overalls, Rubber Boots, Eyemash Stations, Safety Showers       IX.         IX.       SPECIAL PRECAUTI	water for at least fi Wash with soap and repartifical respiration	een minutes. Seek medical attention. Skin: Flush area with wat ve contaminated clothing. Inhalation: Remove to fresh air. App f necessary. Ingestion: Call a physician. Do not induce vomiti
Stability       Stable       Conditions to Avoid       None         Incompatibility (Materials to Avoid)       Strongly scidic materials, exidizers.         Hazardous Decomposition of Products       Oxides of Carbon and Nitrogen         Hazardous Polymerization       May Occur       Conditions to Avoid         Wall Noc Occur       None         VII.       SPILL OR LEAK PROCEDURES         Steps to be Taken if Material is Released or Spilled Provide adequate ventil         Remove sources of ignition. Contain and absorb spill.         TERCLA R0:       8889 lbs of product (dus to potassium hydroxide content)         Waste DisDosal Method       Dispose vis a licensed waste disposal company. Follaw log state, and federal regulations.         VIII.       SPECIAL PROTECTION INFORMATION         Respiratory Protection (Specify Type) Use air-supplied or self-contained breathing apparatus if exposure levels exceed TLV for this product or its ingredients.         Ventilation       Local Exhaust       As needed to prevent Special       None TUV         Protective Gloves       Rubber       Eye Protection       Safety Glasses, Goggles, and/or Face Shield         Other Protective Equipment       Overalis, Rubber Boots, Eyewash Stations, Safety Showers         IX.       SPECIAL PRECAUTIONS         Precautions to be Taken in Handling and Storing       Store in cool, weil-ventilated, <td></td> <td>VI. REACTIVITY DATA</td>		VI. REACTIVITY DATA
Hazardous Decomposition of Products       Oxides of Carbon and Nitrogen         Hazardous Polymerization       May Occur X       Conditions to Avoid None         VII.       SPILL OR LEAK PROCEDURES         Steps to be Taken if Material is Released or Spilled Provide adequate ventil Remove sources of ignition. Contain and absorb spill.       CERCLA R0: 8889 lbs of product (due to potassium hydroxide content)         Waste Disposal Method       Dispose vis a licensed waste disposal company. Follow log state, and Federal regulations.         VIII.       SPECIAL PROTECTION INFORMATION         Respiratory Protection (Specify Type)       Use air-supplied or self-contained breathing apparatus if exposure levels exceed TLV for this product or its ingredients.         Ventilation       Local Exhaust As needed to prevent Special None TLV         Protective Gloves Rubber       Eye Protection Safety Glasses, Goggles, and/or Face Shield         Other Protective Equipment Overalls, Rubber Boots, Eyewash Stations, Safety Showers       IX.         IX.       SPECIAL PRECAUTIONS         Precautions to be Taken in Handling and Storing       Store in cool, well-ventilated,		X Conditions to Avoid None
Hazardous Polymerization       May Occur Will Not Occur x       Conditions to Avoid None         VII.       SPILL OR LEAK PROCEDURES         Steps to be Taken if Material is Released or Spilled Provide adequate ventil Remove sources of ignition. Contain and absorb spill.       Provide adequate ventil         CERCLA R0:       B889 lbs of product (dus to potassium hydroxide content)       Provide adequate ventil         Waste Disposal Method       Dispose vis a licensed waste disposal company. Follaw log state, and federal regulations.       Follaw log         VIII.       SPECIAL PROTECTION INFORMATION       Respiratory Protection (Specify Type) Use air-supplied or self-contained breathing apparatus if exposure levels exceed TLV for this product or its ingredients.       None         Ventilation       Local Exhaust As needed to prevent Special       None         TUV       Protective Gloves Rubber       Eye Protection       Safety Glasses, Goggles, and/or face Shield         Other Protective Equipment       Oversils, Rubber Boots, Eyewash Stations, Safety Showers       IX.         IX.       SPECIAL PRECAUTIONS	Incompatibility (Mat	rials to Avoid) Strongly acidic materials, oxidizers.
Will Not Occur x       None         VII.       SPILL OR LEAK PROCEDURES         Steps to be Taken if Material is Released or Spilled Provide adequate ventil         Remove sources of ignition. Contain and absorb spill.         CERCLA RO: 8889 lbs of product (dus to potassium hydroxide content)         Waste DisDosal Method       Dispose vis a licensed waste disposal company. Follaw log state, and federal regulations.         VIII.       SPECIAL PROTECTION INFORMATION         Respiratory Protection (SDecify Type) Use air-supplied or self-contained breathing apparatus if exposure levels exceed TLV for this product or its ingredients.         Ventilation       Local Exhause: As needed to prevent Special None TUV for this product or its ingredients.         Protective Gloves Rubber       Eye Protection Safety Glasses, Goggles, and/or Face Shield         Other Protective Equipment Oversils, Rubber Boots, Eyewash Stations, Safety Showers         IX.       SPECIAL PRECAUTIONS         Precautions to be Taken in Handling and Storing       Store in cool, well-ventilated,	Hazardous Decomposit	ON OF Products Oxides of Carbon and Nitrogen
Steps to be Taken if Material is Released or Spilled Provide adequate ventil         Remove sources of ignition. Contain and absorb spill.         CERCLA RO: 8889 lbs of product (due to potassium hydroxide content)         Waste Disposal Method       Dispose via a licensed waste disposal company. Follow log state, and federal regulations.         VIII. SPECIAL PROTECTION INFORMATION         Respiratory Protection (Specify Type) Use air-supplied or self-contained breathing apparatus if exposure levels exceed TLV for this product or its ingredients.         Ventilation         Local Exhaust       As needed to prevent accumulation of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state	Hazardous Polymeriza	
Steps to be Taken if Material is Released or Spilled Provide adequate ventil         Remove sources of ignition. Contain and absorb spill.         CERCLA R0: 8889 lbs of product (due to potassium hydroxide content)         Waste Disposal Method       Dispose via a licensed weste disposal company. Follow logates, and federal regulations.         VIII.       SPECIAL PROTECTION INFORMATION         Respiratory Protection (Specify Type)       Use air-supplied or self-contained breathing apparatus if exposure levels exceed TLV for this product or its ingredients.         Ventilation       Local Exhause:       As needed to prevent accumulation of TLV         Protective Gloves       Rubber       Eye Protection       Safety Glasses, Goggles, and/or Face Shield         Other Protective Equipment       Overalls, Rubber Boots, Eyewash Stations, Safety Showers       IX.       SPECIAL PRECAUTIONS         Precautions to be Taken in Handling and Storing       Store in cool, well-ventilated,		VII. SPILL OR LEAK PROCEDURES
Waste Disposal Method       Dispose via a licensed waste disposal company. Follow losatate, and federal regulations.         VIII.       SPECIAL PROTECTION INFORMATION         Respiratory Protection (Specify Type)       Use air-supplied or self-contained breathing apparatus if exposure levels exceed TLV for this product or its ingredients.         Ventilation       Local Exhause       As needed to prevent accumulation of         Mechanical (General)       vapors above       Other         None       TLV         Protective Gloves       Rubber       Eye Protection         Safety Glasses, Goggles, and/or Face Shield       Other Protective Equipment         Other Protective Equipment       Oversils, Rubber Boots, Eyewash Stations, Safety Showers         IX.       SPECIAL PRECAUTIONS         Precautions to be Taken in Handling and Storing       Store in cool, well-ventilated,	Remove sources of igni	ion. Contain and absorb spill.
Respiratory Protection (Specify Type) Use sir-supplied or self-contained breathing apparatus if exposure levels exceed TLV for this product or its ingredients.         Ventilation       Local Exhaust As needed to prevent accumulation of       Special       None         Wentilation       Local Exhaust (General)       As needed to prevent special       None         Wentilation       Local Exhaust (General)       Vspors above other       None         Protective Gloves       Rubber       Eye Protection       Safety Glasses, Goggles, and/or face Shield         Other       Protective Equipment       Overalls, Rubber Boots, Eyewash Stations, Safety Showers         IX.       SPECIAL PRECAUTIONS         Precautions to be Taken in Handling and Storing       Store in cool, well-ventilated,	Waste Disposal Metho	Dispose via a licensed waste disposal company. Follow l
apparatus if exposure levels exceed TLV for this product or its ingredients.         Ventilation       Local Exhaust As needed to prevent accumulation of       Special       None         Model       Model       Model       None       None         Mechanical (General)       vspors above TLV       Other       None         Protective Gloves       Rubber       Eye Protection       Safety Glasses, Goggles, and/or Face Shield         Other Protective Equipment       Overalls, Rubber Boots, Eyewash Stations, Safety Showers         IX.       SPECIAL PRECAUTIONS         Precautions to be Taken in Handling and Storing       Store in cool, well-ventilated,	· ·	III. SPECIAL PROTECTION INFORMATION
Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference       Interference <td< td=""><td>Respiratory Protecti apparatus if exposure</td><td>1 (Specify Type) Use mir-supplied or self-contained breathing evels exceed TLV for this product or its ingredients.</td></td<>	Respiratory Protecti apparatus if exposure	1 (Specify Type) Use mir-supplied or self-contained breathing evels exceed TLV for this product or its ingredients.
Mechanical (General)       vapors above ILV       Other       None         Protective Gloves       Rubber       Eye Protection       Safety Glasses, Goggles, and/or Face Shield         Other       Protective Equipment       Overalls, Rubber Boots, Eyewash Stations, Safety Showers         IX.       SPECIAL PRECAUTIONS         Precautions to be Taken in Handling and Storing       Store in cool, well-ventilated,	Ventilation Local	
Protective Gloves Rubber Eye Protection Safety Glasses, Goggles, and/or Face Shield Other Protective Equipment Overalls, Rubber Boots, Eyewash Stations, Safety Showers IX. SPECIAL PRECAUTIONS Precautions to be Taken in Handling and Storing Store in cool, well-ventilated,	Mechan	al (General) vapors above Other None
Other Protective Equipment Overalls, Rubber Boots, Eyewash Stations, Safety Showers IX. SPECIAL PRECAUTIONS Precautions to be Taken in Handling and Storing Store in cool, well-ventilated,	Protective Gloves	ther Eve Protection Safety Glasses, Goggles, and/or
Precautions to be Taken in Handling and Storing Store in cool, well-ventilated,	Other Protective Equ	
		IX. SPECIAL PRECAUTIONS
closed when not in use. Do not transfer or store in improperly marked containers.	low fire-risk area away	from ignition sources and incompatible materials. Keep container

	MATERI	AL S	AFETY	DA.	TA S	HEET	۲ ۱۹۹۵ - ۲
UNICHEM		• •	Dat	e Pre	pared	07/06/8	7
INTERNATIONAL	Supers	edes Pi	revious S	-		Nòne	· · ·
I	. PRODUCT	IDENTIF	ICATION				······································
Unichem International 70	7 N. Leech/P EMERGENCY						88240
Trade Name "UNICHEN 2100"		۰.	•		:14 .	•••••••••••••••••••••••••••••••••••••••	
Chemical Description	roprietary Cooling	Water Cor	rosion and Sc	ale Inhi	bitor	e . 	ر میلید به است. در میلید به است. در میلید به میلید ا
	II. HAZARDOU	IS INGR	EDIENTS				· (
Material				TLV (	(Units)		
Potassium Hydroxide CAS# 13	10-58-3			2	mg/m³	,	
Neither this product nor its ingredi carcinogenic.	ents are listed in	any of	OSHA Stender	d, Sect	ion 1910	.1200 sou	17C68 88 v.
·							•.
	III. PHY	SICAL	DATA				
Boiling Point, 760 mm Hg	212ºF (Initial)	Freez	ing Point		5°F		
Specific Gravity (H ₂ O=1)	1.06 g/mł	Solubi	lity in N	later	Complet	e	
Appearance and Odor	Straw Yellow Clear	Liquid; S	lightly Sweet	Odor			
IV.	FIRE AND EXPL	LOSION	HAZARD	DATA			
Flash Point (Test Method)	None						
Extinguishing Media Carbo fire-exposed containers.	n Dioxide, Dry Chem	nical, Wat	er Sprøy or f	og, Foam	n. Use a w	ater spray	to cool
Special Fire Fighting Proc and full protective clothing. Firefigh			should wear the corrosiv				apparatus
Unusual Fire and Explosion	Hazards Nor	ne . `					
Liability is expressly dis the use of this informatio		•	•		· •		ut of

Page 1 of 2

Page 2 of 2	Product UNICHEM 2100	Ċ
. 1	V. HEALTH HAZARD DATA	
hreshold Limit Value	Not Determined	· · · ·
<b>Inhalation of Overexposure</b> Inhalation of vapors or mists will purning of the digestive tract.		
least fifteen minutes. Seek medica	<b>Procedures</b> EYES: Flush promptly with copious quantit 1 attention. SKIN: Flush area with water. Wash with soap and esh air. Apply artifical respiration if necessary. INGESTION: h water or milk.	remove contaminated
	VI. REACTIVITY DATA	chart is triada
tability <u>Stable x</u> Unstable	Conditions to Avoid to None was made and	1966 - 1967 - 1978 - 197 <b>8</b> - 19 <b>8</b>
ncompatibility (Materia	IS to AVOID) Strongly Acidic Materials; Oxidizers	N N.
azardous Decomposition	OF Products Oxides of Carbon and Nitrogen	······································
azardous Polymerization	May OccurConditions to AvoidWill Not OccurX	None
	VII. SPILL OR LEAK PROCEDURES	
teps to be Taken if Mat move sources of ignition. Contain Iste Disposal Method Federal regulations.		dequate ventilation.
VII	I. SPECIAL PROTECTION INFORMATION	
<b>ESPIRATORY Protection (</b> Deratus if exposure levels exceed	Specify Type) Use sir-supplied or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self-or self	contained breathing
entilation Local Exhan	As Needed to Prevent Special None None	·····
Mechanical	(General) Vapors Other None	
ptective Gloves	Rubber Eye Protection Safety Glasses, and/or Face Shiel	
ther Protective Equipme	Overalls, Rubber Boots, Eyewash Stations, Safety	Showers
	IX. SPECIAL PRECAUTIONS	
	ources and incompatable materials. Keep containers closed	ell-ventilsted, low when not in use. Do
ther Precautions	Avoid prolonged or repeated breathing of vapors or conta	ct with skin. Do not

•

# **DESCRIPTION**

UNICHEM 2310

UNICHEM 2310 is a nitrite based corrosion inhibitor. UNICHEM 2310 contains buffering agents and other inorganic compounds which act together with the nitrite to form a highly effective corrosion inhibitor. UNICHEM 2310 also contains specific inhibitors for the protection of copper, copper alloys, and other metals in mixed metal systems.

PRODUCT

BULLETIN

# USES

UNICHEM 2310 is recommended for use in closed water systems. UNICHEM 2310 may be used in systems utilizing glycol or alcohol as antifreeze without adversely affecting the inhibitor or the antifreeze. UNICHEM 2310 should be used in systems with low to moderate hardness levels.

# APPLICATION

UNICHEM 2310 should be applied to the system at the rate of two to three gallons per one thousand gallons of contained water or makeup. The system pH should be maintained above a pH of 7.5 to prevent degradation of the nitrite. A sodium nitrite residual should be maintained at 400-600 ppm as sodium nitrite.

# **TYPICAL PROPERTIES**

Appearance	Light Yellow Clear Liquid
Density	. 9.70 lbs/gallon
Pour Point	. 22 ⁰ F
Flash Point (TCC)	None

# HANDLING

Due care should be taken when handling any industrial compound. Avoid contact with eyes, skin, and clothing. If contact occurs, flush thoroughly with water. If irritation persists, seek medical aid. Use with adequate ventilation.

Refer to the material safety data sheet for more information regarding the safe use and handling of this product.

# PACKAGING

UNICHEM 2310 is available in 55 gallon drums or in bulk quantities.

UNICHEM			😓 Date I			
INTERNATIONAL	Super	sedes I	Previous Shee	et Dat	ed <u>Not</u> D	eted
[	. PRODUCT	IDENTI	FICATION			
Unichem International 70			Box 1499/Hobb Phone Number			
Trade Name UNICHEM 2310						
Chemical Description	Letary Corrosid	n Inhib	itor Blend			
	-		REDIENTS			
Material				V (Un	its)	
Sodium Nitrite (Oxidizer	• • •			e Estab	,	
_CAS#7632-00-0 CERCLA_Reportable_Quanti		roduct		g Latev	113066	
	III. PH	YSICAL	DATA			
Boiling Point, 760 mm Hg			zing Point	22	•F	
Specific Gravity (H ₂ O=1)			ility in Wat		mplete	
Appearance and Odor Light	Yellow to Wate	r White	Clear Liquid;	Slight	Odor	
	FIRE AND EXP	PLOSION	HAZARD DAT	<u>A</u>		· .
Flash Point (Test Method)	None .		•			
Extinguishing Media carbo water spray to cool fire-expos			al, Water Spra	y ar Fo	g, Foam.	Use a
Special Fire Fighting Proc	edures Et	efinher	e chould weer		entained by	
apparatus and full protective	clothing.		- Ausaya Medi			· • • •
			··· 2		· · · · · · · · ·	
The second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second secon	1 Hazards	None		a •,•		
Unusual Fire and Explosion						

Page 2 of 2

P	r	0	d	U	C	t			

UNICHEM 2310

# V. HEALTH HAZARD DATA

# Threshold Limit Value Not Determined

Effects of OVEREXDOSURE Prolonged skin contact will cause dryness and irritation. Ingestion may cause cathersis. Inheletion of mist may cause respiratory irritation. Eye Contact will cause irritation.

Emergency and First Aid Procedures Eyes: Flush promptly with copious quantities of water for at least fifteen minutes. Seek medical attention. Skin: Flush area with water. Wash with soap and remove contaminated clothing. Inhalation: Remove to fresh air. Apply artifical respiration if necessary. Ingestion: Call a physician. Do not induce vomiting. Dilute with water or milk.

	•	VI. RE	ACTIVITY	DATA
Stability Stabi		Conditions	to Avoid	None
Incompatibility	(Materials	to Avoid)	Acid	s, Reducing Agents
Hazardous Decom	position of	Products	Oxides of	Carbon and Nitrogen
Hazardous Polyme		May Occur Will Not Occu	ur X	Conditions to Avoid None
	VII	. SPILL	OR LEAK I	PROCEDURES
Steps to be Take Remove sources of				Spilled Provide adequate ventils .on.
Waste Disposal I state, and federa			a a license	ed waste disposal company. Follow local
	VIII.	SPECIAL I	PROTECTIO	N INFORMATION
				supplied or self-contained breathing luct or its ingredients.
Ventilation	Local Exhaust	As needed accumulation	· ·	Special None
2	fechanical (Ge	netal]	ors above TLV	Other None
Protective Glove	ES Rubber	Eye	Protect	ION Safety Glasses, Goggles, and/or Face Shield
Other Protective	e Equipment	Overalls, (	Rubber Bool	s, Eyewash Stations, Safety Showers
• •• •• ••		IX. SPEC	IAL PREC	AUTIONS
low fire-risk are	a away from ig	nition sourc	es and inc	IG Store in cool, well-ventilated, compatible materials. Keep contai a improperly marked containers.
Other Precaution Do not ingest.	15 Avoid pr	olonged or r	epeated bro	sathing of vapors or contact with skin.

# Froduct Name: UNICHEM 3030

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ephone 505-393-7751 ion Date 5/22/86 2/10/91 001 hibitor
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CAS# % Range
07631-99-4 < 15%
lt 00064-02-8 < 10% 01310-58-3 < 5%
05064-31-3 < 1%
oint, 760 mm Hg: 212 Deg.F ility in water: Complete nificant odor.
col. Contain
r personal
self-contained ed in the
ed in the
ed in the solid stream

# -----

ection: 05 HEALTH HAZARD DATA	CONTINUED
Eye contact: vapors, liquid, and mi	ists are extremely
corrosive to the eyes. Brief cor	
be severely irritating. Brief co	
mists will severely damage the e	
contact may cause permanent eye	injury which may be
followed by blindness.	
Skin contact: vapors, mists, and li	
corrosive to the skin. Vapors wi	
skin and liquid and mists will s	
Prolonged liquid contact will bu	
surrounding tissue and death may	
extend over large portions of th	
Inhalation: vapors and mists are ex	
nose, throat; and mucous membran	
pulmonary edema, and chemical pr Irritation, coughing, chest pair	
breathing may occur with brief (	
exposure may result in more seve	
damage. Breathing high concentra	
death.	ittons may result in
Ingestion: vapors, mists, and liqu:	id are extremely
corrosive to the mouth and throat	
burns the tissues, causes sever	
vomiting, and collapse. Swallow	
cause death.	rug tutge daaneteere ean
Chronic effects of exposure: may re	esult in area of
destruction of skin tissue or p	
dermatitis. Similarly, inhalati	
cause varying degrees of damage	
and also increasing susceptibil:	
illness.	• • •
Systemic & Other Effects: very small	11 amounts of
nitrilotriacetic acid acid (NTA)	) are present in this
product. NTA is a component lis	
possible human carcinogen (Group	
regarding human exposures to NT.	A is inadequate, large
dietary doses of NTA have caused	d urinary tumors in
laboratory animals.	-

Emergency and First Aid Procedures

#### SKIN

Wash with soap and water. Remove contaminated clothing and launder contaminated clothing before reuse. Get medical attention if redness or irritation develops.

#### EYES

Flush eyes immediately with large amounts of water for at least 15 minutes. Lift lower and upper lids occasionally. Get medical attention.

#### INHALATION

Remove victim to fresh air. Give artificial respiration if

ection: 05 HEALTH HAZARD DATA <u>CONTINUED</u>	
not breathing. If breathing is difficult, administer o	
Keep person warm, quiet and get medical attention.	
INGESTION	
Call a physician immediately. Give victim a glass of w Do NOT induce vomiting unless instructed by a physicia	
poison control center. Never give anything by mouth to	
unconscious person.	
ction: 06 REACTIVITY DATA	
table (Y=Yes/N=No): Y	
tability Conditions to Avoid	
None known.	
ncompatibility (Materials to Avoid) Avoid contact with strong oxidizers or acidic materials.	
<u>azardous Decomposition Products</u> Smoke, carbon dioxide, carbon monoxide, oxides of nitrog	en.
azardous Polymerization May Occur(Y=Yes/N≈No): N	
azardous Polymerization Conditions to Avoid	<u></u>
<u>azardous Polymerization Conditions to Avoid</u> None	
None	
None 	
None ction: 07 SPILL OR LEAK PROCEDURES teps to be Taken if Material is Released or Spilled	
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None ction: 07 SPILL OR LEAK PROCEDURES <u>teps to be Taken if Material is Released or Spilled</u> Persons not wearing suitable personal protective equipme should be excluded from area of spill until clean-up has been completed. Shut off source of spill if possible to so without hazard. Prevent liquid from entering sewers of watercourses. Provide adequate ventilation. Contain spil	nt do r led
None ction: 07 SPILL OR LEAK PROCEDURES <u>teps to be Taken if Material is Released or Spilled</u> Persons not wearing suitable personal protective equipme should be excluded from area of spill until clean-up has been completed. Shut off source of spill if possible to so without hazard. Prevent liquid from entering sewers of watercourses. Provide adequate ventilation. Contain spill liquid with sand or earth. Recovered undamaged or minima contaminated material for reuse or reclamation. Place al	nt do r led lly l
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None ction: 07 SPILL OR LEAK PROCEDURES <u>teps to be Taken if Material is Released or Spilled</u> Persons not wearing suitable personal protective equipme should be excluded from area of spill until clean-up has been completed. Shut off source of spill if possible to so without hazard. Prevent liquid from entering sewers of watercourses. Provide adequate ventilation. Contain spill liquid with sand or earth. Recovered undamaged or minima contaminated material for reuse or reclamation. Place al collected material and spill absorbents into DOT approve containers. Advise authorities. If this product is an EPA hazardous substance (see Section 10), notify the U.S.EPA or the National Response Center. Additional notification pursua	nt do r led lly l d
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None 	in in of

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# Section: 08 SPECIAL PROTECTIVE INFORMATION CONTINUED

#### ______

used with adequate ventilation.

#### Ventilation

The use of mechanical dilution ventilation is recommended whenever this product is used in confined spaces, is heated above ambient temperatures or is agitated. When applicable, sufficient local ventilation should be provided to maintain employee exposures below safe working limits (TWA's).

#### Protective Gloves

Neoprene, nitrile, polyvinyl alcohol (PVA), polyvinyl chloride (PVC)

#### Eye Protection

Chemical splash goggles or face shield in compliance with OSHA regulations is advised; however OSHA regulations also permits safety glasses under certain conditions. The use of contact lenses is not recommended.

#### Other Protective Equipment

Eye wash and safety shower

#### Section: 09 SPECIAL PRECAUTIONS

# Precautions to be Taken in Handling and Storing

Avoid contact with eyes, skin or clothing. Avoid breathing vapors or mist.

#### Other Precautions

Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in the data sheet must be observed. Do not transfer to improperly marked container. Do not use pressure to empty container. Do not cut, heat, weld, or expose containers to flame or other sources of ignition. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling.

## Section: 10 REGULATORY INFORMATION

<u>Superfund Amendments and Reauthorization Act Of 1986(SARA) Title III</u>

#### Section 302/304-Extremely Hazardous Substances (40 CFR 355)

SARA requires emergency planning based on Threshold Planning Quantities (TPQs) and release reporting based on Reportable Quantities (RQs) in 40 CFR 355 (used for SARA 302, 304, 311 and 312). These values are subject to change and the regulations should be consulted to verify current statutory requirements.

Components present in this product at a level which

ction: 10 REGULATORY INFORMATION	CONTINUED			
could require reporting under the	statute are:			
<u>Component Name</u> **NONE**		RO	<u>TPO</u>	Range
Section 311/312 Chemical Inventory	Reporting Require	ments (40	CFR	370)
The Superfund Amendments and Reau require submission of reports (ch				
Tier II) to the State Emergency R				
Emergency Response Committee and				
The SARA physical and health haza are:	irds related to thi	s product		
W Laute Realth Remark	Guiden Delega	of Droce		Fire
<u>X</u> Acute Health Hazard <u>X</u> Chronic Health Hazard	_ Sudden Release _ Reactive	e ol press	ure	~ III6
Section 313-List of Toxic Chemical	s (40 CFR 372)			
This product contains the follows	ing toxic chemicals			
to the reporting requirements of				
Emergency Planning and Community (40 CFR 372). This information sh				
MSDSs that are copied and distril				
<u>Component_Name</u>		CAS_#		* Range
**NONE**				
CERCLA, 40 CFR 261 AND 302				
The Comprehensive Environmental I				
Liability Act of 1980 (CERCLA) re				
		R TA APR		
National Response Center 1-800-42				
National Response Center 1-800-42 Hazardous Substances equal to or	greater than the r	eportable		
National Response Center 1-800-42 Hazardous Substances equal to or quantities (RQs) listed in 40CFR	greater than the r 302.4. Values are	eportable given in		
National Response Center 1-800-42 Hazardous Substances equal to or	greater than the r 302.4. Values are the mixture, if ar	eportable given in plicable.		
National Response Center 1-800-42 Hazardous Substances equal to or quantities (RQs) listed in 40CFR pounds for the component and not	greater than the r 302.4. Values are the mixture, if ar age and the regulat	eportable given in plicable. tions		·
National Response Center 1-800-42 Hazardous Substances equal to or quantities (RQs) listed in 40CFR pounds for the component and not (These values are subject to char	greater than the r 302.4. Values are the mixture, if ar age and the regulat	eportable given in plicable. tions		CLA_RQ
National Response Center 1-800-42 Hazardous Substances equal to or quantities (RQs) listed in 40CFR pounds for the component and not (These values are subject to chan should be consulted to verify cur <u>Component Name</u> ethylenediaminetetraacetic acid,	greater than the r 302.4. Values are the mixture, if ar nge and the regulat crent statutory leg	eportable given in oplicable. tions vels.) <u>CAS #</u> 00064-02	<u>CEF</u> -8	5000
National Response Center 1-800-42 Hazardous Substances equal to or quantities (RQs) listed in 40CFR pounds for the component and not (These values are subject to chan should be consulted to verify cur <u>Component Name</u>	greater than the r 302.4. Values are the mixture, if ar nge and the regulat crent statutory leg	eportable given in oplicable. tions yels.) <u>CAS</u>	<u>CEF</u> -8	
National Response Center 1-800-42 Hazardous Substances equal to or quantities (RQs) listed in 40CFR pounds for the component and not (These values are subject to chan should be consulted to verify cur <u>Component Name</u> ethylenediaminetetraacetic acid, potassium hydroxide <u>SHA Exposure Limits</u>	greater than the r 302.4. Values are the mixture, if ar nge and the regulat crent statutory leg	eportable given in oplicable. tions vels.) <u>CAS #</u> 00064-02	<u>CEF</u> -8	5000
National Response Center 1-800-42 Hazardous Substances equal to or quantities (RQs) listed in 40CFR pounds for the component and not (These values are subject to chan should be consulted to verify cur <u>Component Name</u> ethylenediaminetetraacetic acid, potassium hydroxide	greater than the r 302.4. Values are the mixture, if ar nge and the regulat crent statutory leg	eportable given in oplicable. tions vels.) <u>CAS #</u> 00064-02	<u>CEF</u> -8	5000
National Response Center 1-800-42 Hazardous Substances equal to or quantities (RQs) listed in 40CFR pounds for the component and not (These values are subject to chan should be consulted to verify cur <u>Component Name</u> ethylenediaminetetraacetic acid, potassium hydroxide <u>SHA Exposure Limits</u> <u>Component Name</u> **NONE**	greater than the r 302.4. Values are the mixture, if ar nge and the regulat crent statutory leg	eportable given in oplicable. tions vels.) <u>CAS #</u> 00064-02	<u>CEF</u> -8	5000
National Response Center 1-800-42 Hazardous Substances equal to or quantities (RQs) listed in 40CFR pounds for the component and not (These values are subject to chan should be consulted to verify cur <u>Component Name</u> ethylenediaminetetraacetic acid, potassium hydroxide <u>SHA Exposure Limits</u> <u>Component Name</u> **NONE**	greater than the r 302.4. Values are the mixture, if ap nge and the regular trent statutory lev tetrasodium salt	eportable given in oplicable. tions vels.) <u>CAS #</u> 00064-02	<u>CEF</u> -8	5000
National Response Center 1-800-42 Hazardous Substances equal to or quantities (RQs) listed in 40CFR pounds for the component and not (These values are subject to chan should be consulted to verify cur <u>Component Name</u> ethylenediaminetetraacetic acid, potassium hydroxide <u>SHA Exposure Limits</u> <u>Component Name</u> **NONE**	greater than the r 302.4. Values are the mixture, if ar nge and the regulat crent statutory leg	eportable given in oplicable. tions vels.) <u>CAS #</u> 00064-02	<u>CEF</u> -8	5000
National Response Center 1-800-42 Hazardous Substances equal to or quantities (RQs) listed in 40CFR pounds for the component and not (These values are subject to chan should be consulted to verify cun <u>Component Name</u> ethylenediaminetetraacetic acid, potassium hydroxide <u>SHA Exposure Limits</u> <u>Component Name</u> **NONE** ational Fire Protection Agency <u>2</u> Health <u>Q</u> Reactive	greater than the r 302.4. Values are the mixture, if ar inge and the regular crent statutory lev tetrasodium salt <u>Q</u> Fire <u>CORR</u> Other	eportable given in oplicable. tions vels.) <u>CAS #</u> 00064-02	<u>CEF</u> -8	5000
National Response Center 1-800-42 Hazardous Substances equal to or quantities (RQs) listed in 40CFR pounds for the component and not (These values are subject to chan should be consulted to verify cur <u>Component Name</u> ethylenediaminetetraacetic acid, potassium hydroxide <u>SHA Exposure Limits</u> <u>Component Name</u> **NONE** <u>ational Fire Protection Agency</u> <u>2</u> Health	greater than the r 302.4. Values are the mixture, if an one and the regular crent statutory lev tetrasodium salt <u>Q</u> Fire <u>CORR</u> Other <u>hg Information</u> hid, n.o.s.	ceportable given in oplicable. tions vels.) <u>CAS #</u> 00064-02 01310-58	<u>CEF</u> -8	5000

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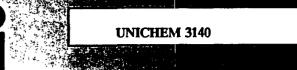
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#### Product Name: UNICHEM 3030

Section: 10 REGULATORY INFORMATION	CONTINUED
Hazardous Substance RQ: 20000 Labels: Corrosive	Emergency Response Guide Number: 60
Toxic Substances Control Act (TSCA This product (or components if pro	

Section 10 information is to remain attached to the material safety data sheet for this product.

While UNICHEM INTERNATIONAL believes that the above data is correct, UNICHEM INTERNATIONAL expressly disclaims liability for any loss or injury arising out of the use of this information or the use of any materials designated.



# PRODUCT BULLETIN

# DESCRIPTION

UNICHEM 3140 is a water soluble stabilized solution of sulfite.

#### USES

UNICHEM 3140 is used for the removal of dissolved oxygen in boilers and other closed system water heating installations.

#### **APPLICATION**

Add UNICHEM 3140 continuously to the boiler feedwater at a rate sufficient to maintain a sulfite residual of 20-40 ppm.

#### TYPICAL PROPERTIES

Appearance	White Water Clear Liquid
Solubility	Completely Soluble in Water
Density	. 10.0 lbs/gal
Freeze Point	13 ⁰ F
рН	4.3

#### HANDLING

Do not spill UNICHEM 3140 on the skin or in the eyes. If spilled, wash with copious quantities of water and consult a physician if irritation of redness persists.

Wear chemical worker's goggies, gloves, and apron when handling UNICHEM 3140.

#### PACKAGING

UNICHEM 3140 is normally packaged in 55 gallon steel drums or in bulk quantities.

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ection: 01 PRODUCT IDENTIFICAT		
UNICHEM INTERNATIONAL INC. P.O. BOX 1499 707 N. LEECH HOBBS NM 88241-149	Emergency Telephone Previous Version Date Date Prepared Version: 0000001	505-393-7751
Product Name: UNICHEM 3140		
Chemical Description: Proprietary boiler water oxyge		
ection: 02 HAZARDOUS INGREDIEN	TS	
<u>Component Name</u> sodium bisulfite	CAS	<u># % Range</u> 0-5 < 30%
Section: 03 PHYSICAL DATA		
Freezing Point: 13 Deg.F. Specific Gravity(H2O=1) : 1	Boiling Point, 760 m .200 Solubility in wa	m Hg: 212 Deg.F ter: Complete
Freezing Point: 13 Deg.F. Specific Gravity(H2O=1) : 1 Appearance and Odor: Water whi Section: 04 FIRE AND EXPLOSION : Flash Point (Test Method): None	Boiling Point, 760 m .200 Solubility in wa te, clear liquid; slight mus HAZARD DATA	m Hg: 212 Deg.F ter: Complete ty odor.
Appearance and Odor: Water whi Section: 04 FIRE AND EXPLOSION 1 Flash Point (Test Method): Non Extinguishing Media	Boiling Point, 760 m .200 Solubility in wa te, clear liquid; slight mus HAZARD DATA e	m Hg: 212 Deg.F ter: Complete ty odor.
Appearance and Odor: Water whi Section: 04 FIRE AND EXPLOSION 1 Flash Point (Test Method): Non-	Boiling Point, 760 m .200 Solubility in wa te, clear liquid; slight mus HAZARD DATA e Keep containers cool. Contai	m Hg: 212 Deg.F ter: Complete ty odor.
Appearance and Odor: Water whi Section: 04 FIRE AND EXPLOSION Flash Point (Test Method): Non Extinguishing Media Material is not combustible. fire fighting liquids for prop Special Fire Fighting Procedur. Do not enter confined fire sp protective equipment including breathing apparatus with full	Boiling Point, 760 m .200 Solubility in wa te, clear liquid; slight mus HAZARD DATA e Keep containers cool. Contai per disposal. es ace without proper personal g NIOSH approved self-contai facepiece operated in the	m Hg: 212 Deg.F ter: Complete ty odor. n n
Appearance and Odor: Water whi Section: 04 FIRE AND EXPLOSION ( Flash Point (Test Method): Non Extinguishing Media Material is not combustible. fire fighting liquids for prop Special Fire Fighting Procedury Do not enter confined fire sp protective equipment including	Boiling Point, 760 m .200 Solubility in wa te, clear liquid; slight mus HAZARD DATA e Keep containers cool. Contai per disposal. es ace without proper personal g NIOSH approved self-contai facepiece operated in the . Do not inject a solid stre rning pools; this may cause	m Hg: 212 Deg.F ter: Complete ty odor. n n
Appearance and Odor: Water whi Section: 04 FIRE AND EXPLOSION Flash Point (Test Method): Non Extinguishing Media Material is not combustible. fire fighting liquids for prop Special Fire Fighting Procedure Do not enter confined fire sp protective equipment including breathing apparatus with full positive pressure demand mode of water or foam into hot, bu	Boiling Point, 760 m .200 Solubility in wa te, clear liquid; slight mus HAZARD DATA e Keep containers cool. Contai per disposal. es ace without proper personal g NIOSH approved self-contai facepiece operated in the . Do not inject a solid stre rning pools; this may cause intensity.	m Hg: 212 Deg.F ter: Complete ty odor. n n
Appearance and Odor: Water whi Section: 04 FIRE AND EXPLOSION Flash Point (Test Method): Non Extinguishing Media Material is not combustible. fire fighting liquids for prop Special Fire Fighting Procedure Do not enter confined fire sp protective equipment including breathing apparatus with full positive pressure demand mode of water or foam into hot, bu splattering and increase fire Unusual Fire and Explosion Haz: None	Boiling Point, 760 m .200 Solubility in wa te, clear liquid; slight mus HAZARD DATA e Keep containers cool. Contai per disposal. es ace without proper personal g NIOSH approved self-contai facepiece operated in the . Do not inject a solid stre rning pools; this may cause intensity.	m Hg: 212 Deg.F ter: Complete ty odor. n n
Appearance and Odor: Water whi Section: 04 FIRE AND EXPLOSION Flash Point (Test Method): Non Extinguishing Media Material is not combustible. fire fighting liquids for prop Special Fire Fighting Procedur Do not enter confined fire sp protective equipment including breathing apparatus with full positive pressure demand mode of water or foam into hot, bu splattering and increase fire Unusual Fire and Explosion Haze None	Boiling Point, 760 m .200 Solubility in wa te, clear liquid; slight mus HAZARD DATA e Keep containers cool. Contai per disposal. es ace without proper personal g NIOSH approved self-contai facepiece operated in the . Do not inject a solid stre rning pools; this may cause intensity. ards	m Hg: 212 Deg.H ter: Complete ty odor.

# UNICHEM 3140 Product Name: Section: 07 SPILL OR LEAK PROCEDURES CONTINUED should be excluded from area of spill until clean-up has been completed. Shut off source of spill if possible to do so without hazard. Prevent liquid from entering sewers or watercourses. Provide adequate ventilation. Contain spilled liquid with sand or earth. Recovered undamaged or minimally contaminated material for reuse or reclamation. Place all collected material and spill absorbents into DOT approved containers. Advise authorities. If this product is an EPA hazardous substance (see Section 10), notify the U.S.EPA or the National Response Center. Additional notification pursuant to SARA Section. 302/304 (40 CFR 355) may also be required. Waste Disposal Method Treatment, storage, transportation and disposal must be in accordance with EPA or State regulations under authority of the Resource Conservation and Recovery Act (40 CFR 260-271). Section: 08 SPECIAL PROTECTIVE INFORMATION _____ **Respiratory Protection** A respirator is normally not required if this product is used with adequate ventilation. Ventilation The use of mechanical dilution ventilation is recommended whenever this product is used in confined spaces, is heated above ambient temperatures or is agitated. When applicable, sufficient local ventilation should be provided to maintain employee exposures below safe working limits (TWA's). Protective Gloves Neoprene, nitrile, polyvinyl alcohol (PVA), polyvinyl chloride (PVC) Eye Protection Chemical splash goggles or face shield in compliance with OSHA regulations is advised; however OSHA regulations also permits safety glasses under certain conditions. The use of contact lenses is not recommended. Other Protective Equipment Eye wash and safety shower Section: 09 SPECIAL PRECAUTIONS Precautions to be Taken in Handling and Storing Avoid contact with eyes, skin or clothing. Avoid breathing vapors or mist.

ection: 09 SPECIAL PRECAUTIONS	CONTINUED	
Other Precautions	بن ہے کہ سے ہے جن بن جن ہے ہے تھ بن بن بن بن ہے ہے تھ بن ہے جن ہ	
Containers of this material may be ha	zardous when emptied.	
Since emptied containers retain produ	ct residues (vapor,	
liquid, and/or solid), all hazard pre		
data sheet must be observed. Do not	÷	
marked container. Do not use pressure		
Do not cut, heat, weld, or expose con other sources of ignition. Keep conta		
adequate ventilation. Wash thoroughly		
	alter manufing.	
ection: 10 REGULATORY INFORMATION		
Superfund Amendments and Reauthorizati	on Act Of 1986(SARA) Title	
Section 302/304-Extremely Hazardous	Substances (40 CFR 355)	
SARA requires emergency planning ba		<b></b>
Quantities (TPQs) and release repor		
Quantities (RQs) in 40 CFR 355 (use	d for SARA 302, 304, 311	
and 312). These values are subject		
regulations should be consulted to	verify current statutory	
requirements.		
Components present in this prod		
could require reporting under the s	tatute are:	
Component Name	RQ	TPO <b>% Range</b>
**NONE**	<u></u>	
Section 311/312 Chemical Inventory R		CFR 370)
The Superfund Amendments and Reauth		
require submission of reports (chem		
Tier II) to the State Emergency Res	ponse Commission, Local	
Emergency Response Committee and th		
The SARA physical and health hazard	s related to this product	
are:		
X Acute Health Hazard	_ Sudden Release of Pressu	re Fire
-	_ Reactive	
Section 313-List of Toxic Chemicals		·
This product contains the following	toxic chemicals subject	
to the reporting requirements of Sec	ction 313 of the	
Emergency Planning and Community Ri		
(40 CFR 372). This information should		
MSDSs that are copied and distribut	ed for this material.	
Component Name	<u>CAS</u>	* Range
**NONE**		

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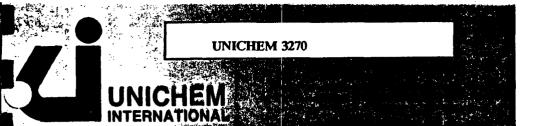
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100:	10 REGULATORY INFORMATION	CONTINUED	
Hazar quant pound (Thes	nal Response Center 1-800-4 dous Substances equal to or ities (RQs) listed in 40CFR s for the component and not e values are subject to cha d be consulted to verify cu	greater than the report 302.4. Values are given the mixture, if applican nge and the regulations	able in
	<u>nent Name</u> m bisulfite	<u>CAS</u> 0763	<u># <u>CERCLA_RO</u> 1-90-5 5000</u>
SHA Exp	osure Limits		
	nt Name bisulfite TWA MG/M3: 5.0		
ational	Fire Protection Agency		
<u>2</u> Hea	lth	<u>O</u> Fire	
<u>O</u> Rea	ctive	Other	
Hazardo	oduct contains: sodium bisu us Substance RQ: 16700#		e Number: NA
This pr	bstances Control Act (TSCA) oduct (or components if pro nce with TSCA.		
oxic Su This pr complia  Section	bstances Control Act (TSCA) oduct (or components if pro	duct is a mixture) is in n attached to the materi	



# PRODUCT BULLETIN

# DESCRIPTION

UNICHEM 3270 is a volatile neutralizing amine corrosion inhibitor.

#### USES

UNICHEM 3270 is used for corrosion protection in steam and condensate lines and in auxiliary equipment of boiler plants. This compound volatilizes and quickly neutralizes carbon dioxide and other acidic components in steam at the point of condensation. In addition to corrosion prevention in the return condensate system, this compound effectively reduces the iron content of the condensate return and thus minimizes boiler deposits due to iron.

# APPLICATION

UNICHEM 3270 should be fed continuously to the boiler feed water in proportion to the quantity of make-up water. A pH of 6.8 to 8.5 should be maintained in the condensate return.

# **TYPICAL PROPERTIES**

Appearance	Clear Brown Liquid 15 ^o F
Flash Point, Closed Cup	120 ^o F
Density	

# HANDLING

UNICHEM 3270 is an alkaline compound. Avoid contact with eyes, skin, and clothing by wearing the proper safety equipment including eye protection, rubber gloves, and protective clothing. In case of eye contact, flush thoroughly with water for at least fifteen minutes. Consult a physician. For skin contact, rinse with copious quantities of water and wash with soap. Remove contaminated clothing and wash thoroughly. Seek medical attention of irritation persists. Avoid breathing vapors or fumes.

Refer to the Material Safety Data Sheet for more information regarding the safe use of this product.

# PACKAGING

UNICHEM 3270 is normally sold in 55 gallon drums or in bulk quantities.

Product Name: UNICHEM 3270

Section: 01 PRODUCT IDENTIFICATION Emergency Telephone505-393-7751Previous Version Date5/22/86 UNICHEM INTERNATIONAL INC. P.O. BOX 1499 707 N. LEECH Date Prepared 2/10/91 HOBBS Version: 0000001 NM 88241-1499 Product Name: UNICHEM 3270 Chemical Description: Proprietary neutralizing amine blend Section: 02 HAZARDOUS INGREDIENTS CAS# * Range Component Name 00108-91-8 ( 25% cyclohexylamine Section: 03 PHYSICAL DATA Freezing Point:15 Deg.F.Boiling Point, 760 mm Hg: init 212 Deg.FSpecific Gravity(H2O=1):.970Solubility in water: Complete Appearance and Odor: Water white to light yellow, clear liquid; amine odor. Section: 04 FIRE AND EXPLOSION HAZARD DATA Flash Point (Test Nethod): 120 Deg.F TCC Extinguishing Media CO2, dry chemical, water spray or fog, or foam. Use water to keep containers cool. Isolate "fuel" supply from fire. Contain fire fighting liquids for proper disposal. Special Fire Fighting Procedures Do not enter confined fire space without proper personal protective equipment including NIOSH approved self-contained breathing apparatus with full facepiece operated in the positive pressure demand mode. Do not inject a solid stream of water or foam into hot, burning pools; this may cause splattering and increase fire intensity. Unusual Fire and Explosion Hazards This material is volatile and readily gives off vapors that may travel along the ground or be moved by ventilation and ignited by pilot lights, other flames, sparks, heaters, smoking, electrical motors, static discharge, or other ignition sources at locations distant from material handling point. Never use welding or cutting torch on or near drum (even empty) because product (even just residue) can ignite explosively. Containers may explode from internal pressure

PAGE 1

Section: 04 FIRE AND EXPLOSION HAZARD DATA <u>CONTINUED</u>	
if confined to fire. Keep containers cool. Keep unnecessary people away.	
Section: 05 HEALTH HAZARD DATA	
Effects of Overexposure	
Eye Contact: contact with the eyes causes severe irritation and burns.	
Skin Contact: severely irritating and corrosive upon skin	
contact. Can cause dermatitis. Material is well absorbed	
through skin. Inhalation: excessive inhalation of vanors can cause masal	
Inhalation: excessive inhalation of vapors can cause nasal and respiratory irration.	
Inhalation: excessive inhalation of vapors can cause nasal and respiratory irration. Ingestion: toxic; can cause severe gastrointestinal	
Inhalation: excessive inhalation of vapors can cause nasal and respiratory irration. Ingestion: toxic; can cause severe gastrointestinal irritation, vomiting, diarrhea, sweating, weakness,	
Inhalation: excessive inhalation of vapors can cause nasal and respiratory irration. Ingestion: toxic; can cause severe gastrointestinal	

#### SKIN

Wash with scap and water. Remove contaminated clothing and launder contaminated clothing before reuse. Get medical attention if redness or irritation develops.

#### EYES

Flush eyes immediately with large amounts of water for at least 15 minutes. Lift lower and upper lids occasionally. Get medical attention.

#### INHALATION

Remove victim to fresh air. Give artificial respiration if not breathing. If breathing is difficult, administer oxygen. Keep person warm, quiet and get medical attention.

#### INGESTION

Call a physician immediately. Give victim a glass of water. Do NOT induce vomiting unless instructed by a physician or poison control center. Never give anything by mouth to an unconscious person.

Section: 06 REACTIVITY DATA

<u>Stable (Y=Yes/N=No): Y</u>

Stability -- Conditions to Avoid

_____

None known.

<u>Incompatibility (Materials to Avoid)</u> Avoid contact with strong oxidizers or acidic materials.

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Product Name:	UNICHEM 3270		
Section: 06 REACT	TIVITY DATA	<u>CONTINUED</u>	
Hazardous Decomp Smoke, carbon d	position Products dioxide, carbon monoxide,	oxides of nitrogen.	
Hazardous Polyme	erization Nay Occur(Y=Yes	<u>/N=No):</u> <u>N</u>	
<u>Razardous Polyme</u> None	<u>erization Conditions t</u>	o Avoid	
	L OR LEAK PROCEDURES		
Eliminate source personal protect of spill until of spill if pose from entering s ilation. Contai undamaged and m reclamation. Pl absorbents into Advise authorite substance (see National Resport to SARA Section <u>Waste Disposal M</u> Treatment, stor accordance with the Resource Co	rage, transportation and h EPA or State regulation onservation and Recovery	d or Spilled not wearing suitable excluded from area eted. Shut off source azard. Prevent liquid Provide adequate vent- and or earth. Recover aterial for reuse or al and spill an EPA hazardous U.S.EPA or the tification pursuant by also be required. disposal must be in s under authority of Act (40 CFR 260-271).	
Respiratory Prot If workplace es is exceeded, an	IAL PROTECTIVE INFORMATIC <u>tection</u> xposure limit(s) of produ n NIOSH/MSHA approved air absence of proper environ	ict or any component supplied respirator	
regulations als (negative press conditions. Eng	so permit other NIOSH/MSH sure organic vapor type) gineering or administrati to reduce exposure.	A respirators under specified	
whenever this r above ambient t sufficient loca	hanical dilution ventilat product is used in confin temperatures or is agitat al ventilation should be ures below safe working l	ed spaces, is heated ed. When applicable, provided to maintain	
<u>Protective Glove</u> Neoprene, nitri	e <b>s</b> ile, polyvinyl alcohol (F	VA), polyvinyl	

tion: 08 SPECIAL PROTECTIVE INFORMATIO	N <u>CONTINUED</u>	
hloride (PVC)		
e Protection	·	-
hemical splash goggles or face shield	in compliance with	
SHA regulations is advised; however OS ermits safety glasses under certain co		
ontact lenses is not recommended.		
her Protective Equipment		-
ye wash and safety shower		
tion: 09 SPECIAL PRECAUTIONS		
ecautions to be Taken in Handling and	Storing	-
void contact with eyes, skin or cloth apors or mist. Keep away from heat, sp		
nd never use a cutting torch on or nea		
mpty) or explosion may result.		
her Precautions		-
ontainers of this material may be haza ince emptied containers retain product		
iquid, and/or solid), all hazard preca		
ata sheet must be observed. Do not tr		
arked container. Do not use pressure t		
o not cut, heat, weld, or expose conta ther sources of ignition. Keep contain		
dequate ventilation. Wash thoroughly a		
tion: 10 REGULATORY INFORMATION	***************************************	
perfund Amendments and Reauthorization	Act Of 1986(SARA) Title III	
		•
<u>Section 302/304-Extremely Hazardous Su</u> SARA requires emergency planning base		
Quantities (TPQs) and release reporti		
Quantities (RQs) in 40 CFR 355 (used	for SARA 302, 304, 311	
and 312). These values are subject to		
regulations should be consulted to ve requirements.	rily current statutory	
Components present in this produc	t at a level which	
could require reporting under the sta		
Component Name	RO TPO & Range	
cyclohexylamine	1 10000 < 25%	

Product Name: UNICHEM 3270

ction: 10 REGULATORY	INFORMATION	CONTINUED		
Emergency Response The SARA physical a are:_				
X Acute Health Haza X Chronic Health Ha		_ Sudden Release _ Reactive	of Pressu	nre <u>X</u> Fire
Section 313-List of	Toxic Chemicals	(40 CFR 372)		
This product contain to the reporting reporting reporting Emergency Planning (40 CFR 372). This MSDSs that are copi	ins the followin equirements of S and Community R information sho	g toxic chemicals ection 313 of the ight-to-Know Act uld be included in	of 1986 n all	
Component Name **NONE**			<u>CAS</u>	* Range
National Response (				
Hazardous Substance quantities (RQs) li pounds for the comp (These values are s should be consulted	es equal to or g isted in 40CFR 3 ponent and not t subject to chang	reater than the r 02.4. Values are he mixture, if ap e and the regulat	eportable given in plicable. ions els.)	
Hazardous Substance quantities (RQs) li pounds for the comp (These values are s	es equal to or g isted in 40CFR 3 ponent and not t subject to chang	reater than the r 02.4. Values are he mixture, if ap e and the regulat	eportable given in plicable. ions	CERCLA RO
Hazardous Substance quantities (RQs) li pounds for the comp (These values are s should be consulted <u>Component Name</u> **NONE**	es equal to or g isted in 40CFR 3 ponent and not t subject to chang i to verify curr	reater than the r 02.4. Values are he mixture, if ap e and the regulat	eportable given in plicable. ions els.)	<u>CERCLA RO</u>
Hazardous Substance quantities (RQs) li pounds for the comp (These values are s should be consulted <u>Component Name</u> <u>**NONE**</u> SHA Exposure Limits <u>Component Name</u>	es equal to or g isted in 40CFR 3 ponent and not t subject to chang i to verify curr	reater than the r 02.4. Values are he mixture, if ap e and the regulat	eportable given in plicable. ions els.)	<u>CERCLA RQ</u>
Hazardous Substance quantities (RQs) li pounds for the comp (These values are s should be consulted <u>Component Name</u> **NONE** <u>SHA Exposure Limits</u> <u>Component Name</u> cyclohexylamine TWA ppm: 10.0 TWA ational Fire Protecti	es equal to or g isted in 40CFR 3 ponent and not t subject to chang 1 to verify curr MG/M3: 40.0	reater than the r 02.4. Values are he mixture, if ap e and the regulat ent statutory lev	eportable given in plicable. ions els.)	<u>CERCLA RQ</u>
Hazardous Substance quantities (RQs) li pounds for the comp (These values are s should be consulted <u>Component Name</u> **NONE** <u>OSHA Exposure Limits</u> <u>Component Name</u> cyclohexylamine	es equal to or g isted in 40CFR 3 ponent and not t subject to chang 1 to verify curr MG/M3: 40.0	reater than the r 02.4. Values are he mixture, if ap e and the regulat	eportable given in plicable. ions els.)	<u>CERCLA RQ</u>
Hazardous Substance quantities (RQs) li pounds for the comp (These values are s should be consulted <u>Component Name</u> **NONE** SHA Exposure Limits <u>Component Name</u> cyclohexylamine TWA ppm: 10.0 TWA ational Fire Protecti <u>2</u> Health <u>0</u> Reactive epartment of Transpor Proper Shipping Name: Hazard Class: Corrosi	es equal to or g isted in 40CFR 3 ponent and not t subject to chang i to verify curr MG/M3: 40.0 ion Agency tation Shipping Alkaline liqui ive material	reater than the r 02.4. Values are he mixture, if ap e and the regulat ent statutory lev <u>2</u> Fire <u>CORR</u> Other <u>Information</u> d, n.o.s. Identification:	eportable given in plicable. ions els.) <u>CAS #</u>	<u>CERCLA RO</u>
Hazardous Substance quantities (RQs) li pounds for the comp (These values are s should be consulted <u>Component Name</u> **NONE** <u>SHA Exposure Limits</u> <u>Component Name</u> cyclohexylamine TWA ppm: 10.0 TWA <u>ational Fire Protecti</u> <u>2</u> Health	es equal to or g isted in 40CFR 3 ponent and not t subject to chang i to verify curr MG/M3: 40.0 ion Agency : tation Shipping : Alkaline liqui ive material s: alkylamines,	reater than the r 02.4. Values are he mixture, if ap e and the regulat ent statutory lev <u>2</u> Fire <u>CORR</u> Other <u>Information</u> d, n.o.s. Identification:	eportable given in plicable. ions els.) <u>CAS #</u> NA 1719	

Section 10 information is to remain attached to the material

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Product Name: UNICHEM 3270

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# Section: 99 REGULATORY INFORMATION

#### CONTINUED

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safety data sheet for this product.

While UNICHEM INTERNATIONAL believes that the above data is correct, UNICHEM INTERNATIONAL expressly disclaims liability for any loss or injury arising out of the use of this information or the use of any materials designated.



# JNICHEM S

# **PRODUCT BULLETIN**

# DESCRIPTION

UNICHEM 4000 is a homogeneous blend of organic polyols, surface active compounds, and other active ingredients. UNICHEM 4000 is used for the emulsification and removal of oil deposits in cooling water systems.

# APPLICATION

UNICHEM 4000 should be added to the cooling water system as soon as possible after an oil spill or leak is experienced. The use rate of UNICHEM 4000 will vary dependent upon the severity of the hydrocarbon leak. In open recirculating systems a slug dose of 25-100 ppm is typically required. In closed systems, a dosage of 1-3 gallons per 1,000 gallons may be required in some cases. UNICHEM 4000 can also be applied before cleaning and flushing in severely fouled systems to loosen oily deposits.

# TYPICAL PROPERTIES

Appearance	. Brown Liquid
Density	
Pour Point	
Flash Point (TCC)	. 94 ⁰ F
pH	3.8

# HANDLING

Do not expose this product to open flame or extreme heat. Avoid contact with skin, eyes or clothing. In case of eye contact, flush with water for at least fifteen minutes. Seek medical help if irritation persists. For skin contact, flush with water and wash thoroughly with soap and water. Remove contaminated clothing and wash before reuse. Avoid breathing fumes or vapors.

Refer to the Material Safety Data Sheet for more information regarding the safe use of this product.

# PACKAGING

UNICHEM 4000 is available in 55 gallon drums or in bulk quantities.

		Date Pre	pared_05/22/86
INTERNATIONAL	Supersedes	Previous Sheet	Dated Not Dated
	I. · PRODUCT IDENT	IFICATION	
Unichem International 7	O7 N. Leech/P. O. EMERGENCY TELE		New Mexico 88240 505) 393-7751
Trade Name UNICHEM 4	600		
Chemical Description	rietary Surfactant in	an Aqueous Solutio	n
	II. HAZARDOUS ING	REDIENTS	
Material		TLV	(Units)
Isopropanol CAS# 67-	-63-0	400	ррm.
Boiling Point, 760 mm Hg Specific Gravity (H ₂ O=1)	and the second second second second second second second second second second second second second second secon		17°F Complete
			ldor
Appearance and Odor Light	Yellow Clear Liquid;	Slight Alcoholic (	
Appearance and Odor Light IV.	FIRE AND EXPLOSIO		
	FIRE AND EXPLOSIO		
IV.	FIRE AND EXPLOSION 94°F TCC	N HAZARD DATA	
IV. Flash Point (Test Method) Extinguishing Media carb	FIRE AND EXPLOSION 94°F TCC on Dioxide, Dry Chemic used containers.	N HAZARD DATA	

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Page 2 of 2	Product UNICHEM 4000
	V. HEALTH HAZARD DATA
Threshold Limit	Value Not Determined
Effects of Over Ingestion may cau contact will caus	se cathersis. Inhalation of mist may cause respiratory irritation. Eye
water for at leas Wash with soap an	<b>ITST AID PROCEDURES</b> Eyes: Flush promptly with copious quantities of t fifteen minutes. Seek medical attention. Skin: Flush area with water. d remove contaminated clothing. Inhalation: Remove to fresh air. Apply tion if necessary. Ingestion: Call a physician. Do not induce vomiting.
	VI. REACTIVITY DATA
Stability Stat	ale X Conditions to Avoid table None
Incompatibility	(Materials to Avoid) Oxidizers, Alkalis
	MOSITION OF Products Oxides of Carbon, Nitrogen, Sulfur, and Ammonia. ng caustics may liberate amine fumes.
Hazardous Polym	Nerization May Occur Conditions to Avoid
<b>A <u>an an an an an an an an an an an an a</u>n an an an an an an an an an an an an an</b>	VII. SPILL OR LEAK PROCEDURES
	VIII. SPECIAL PROTECTION INFORMATION
Respiratory Pro	DECTION (Specify Type) Use air-supplied or self-contained breathing sure levels exceed TLV for this product or its ingredients.
Ventilation	Local Exhaust As needed to prevent Special None
	Mechanical (General) vapors above Other None
Protective Glov	
Other Protectiv	
	IX. SPECIAL PRECAUTIONS
Precautions to low fire-risk are closed when not in	be Taken in Handling and Storing Store in cool, well-ventilated, a away from ignition sources and incompatible materials. Keep containers n use. Do not transfer or store in improperly marked containers.
Other Precautio	INS Avoid prolonged or repeated breathing of vapors or contact with skin.

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# DESCRIPTION

UNICHEM 7227

UNICHEM 7227 is a blend of demulsifiers, wetting agents, and other surface active agents.

PRODUCT

BULLETIN

#### USES

UNICHEM 7227 improves the efficiency of the desalting process by promoting fast and complete water separation. It also assists in the removal of salts and solids which are dispersed in the crude oil.

#### APPLICATION

UNICHEM 7227 is injected ahead of the crude oil charge pump to ensure proper distribution of the chemical. Normal dosages will range between 3-12 ppm depending upon the severity of the emulsion formed in the desalting process.

#### TYPICAL PROPERTIES

Appearance Amber liquid
Density 8.04 lbs/gal
Pour Point
Flash Point (TCC)

#### HANDLING

Do not expose this product to open flame or extreme heat. Avoid contact with skin, eyes, or clothing. In case of eye contact, flush with water for at least fifteen minutes. Seek medical help if irritation persists. For skin contact, flush with water and wash thoroughly with soap and water. Remove contaminated clothing and wash before reuse. Avoid breathing fumes or vapors.

Refer to the material safety data sheet for more information regarding the safe use and handling of this product.

#### PACKAGING

UNICHEM 7227 is normally sold in 55 gallon drums or in bulk quantities.

Product Name: UNICHEM 7227 Section: 01 PRODUCT IDENTIFICATION UNICHEM INTERNATIONAL INC. Emergency Telephone 505-393-7751 P.O. BOX 1499 Previous Version Date 10/02/87 707 N. LEECH Date Prepared 2/06/91 HOBBS Version: 0000001 NM 88241-1499 Product Name: UNICHEM 7227 Chemical Description: Proprietary blend of anionic and nonionic surfactants. Section: 02 HAZARDOUS INGREDIENTS Component Name CAS Range 64742-94-5 < 60% aromatic hydrocarbon solvent petroleum distillate 64742-06-9 < 30% 00067-63-0 < 10% isopropyl alcohol 00091-20-3 < 5% naphthalene Section: 03 PHYSICAL DATA Freezing Point: - 40 Deg.F.Boiling Point, 760 mm Hg: init. 325 Deg.FSpecific Gravity(H2O=1) : .890Solubility in water: Dispersible Appearance and Odor: Amber to brown, clear liquid; aromatic odor. Section: 04 FIRE AND EXPLOSION HAZARD DATA Flash Point (Test Method): 78 Deg.F TCC Extinguishing Media CO2, dry chemical, water spray or fog, or foam. Use water to keep containers cool. Isolate "fuel" supply from fire. Contain fire fighting liquids for proper disposal. Special Fire Fighting Procedures Do not enter confined fire space without proper personal protective equipment including NIOSH approved self-contained breathing apparatus with full facepiece operated in the positive pressure demand mode. Do not inject a solid stream of water or foam into hot, burning pools; this may cause splattering and increase fire intensity. Unusual Fire and Explosion Hazards Treat as an extremely flammable liquid. This material is highly volatile and readily gives off vapors which may travel along the ground or be moved by ventilation and ignited by pilot lights, other flames, sparks, heaters, smoking, electrical motors, static discharge, or other

Product Name: UNICHEM 7227

Section: 04 FIRE AND EXPLOSION HAZARD DATA CONTINUED ignition sources at locations distant from material handling point. Never use welding or cutting torch on or near drum (even empty) because product (even just residue) can ignite explosively. Containers may explode from internal pressure if confined to fire. Reep containers cool. Reep unnecessary people away. Section: 05 HEALTH HAZARD DATA Effects of Overexposure Eye Contact: the liquid is irritating to the eyes and produces intense stinging and burning. If not promptly removed, may cause eye damage. Skin Contact: repeated or prolonged contact with the skin may cause irritation and dermatitis. Inhalation: prolonged vapor concentrations are irritating to the eyes and the respiratory tract, may cause nausea, headaches, mild narcosis, dizziness, and are anesthetic. May also cause convulsions, loss of consciousness and may have other central nervous system effects. Inhalation or aspiration into the lungs may result in lipoid pneumonitis. Ingestion: may result in gastric disturbances, nausea, vomiting, bleeding, CNS depression, hemolysis, and

#### Emergency and First Aid Procedures

pulmonary damage. Can be fatal.

#### SKIN

Wash with soap and water. Remove contaminated clothing and launder contaminated clothing before reuse. Get medical attention if redness or irritation develops.

#### EYES

Flush eyes immediately with large amounts of water for at least 15 minutes. Lift lower and upper lids occasionally. Get medical attention.

#### INHALATION

Remove victim to fresh air. Give artificial respiration if not breathing. If breathing is difficult, administer oxygen. Keep person warm, quiet and get medical attention.

#### INGESTION

Call a physician immediately. Give victim a glass of water. Do NOT induce vomiting unless instructed by a physician or poison control center. Never give anything by mouth to an unconscious person.

# Section: 06 REACTIVITY DATA

<u>Stable (Y=Yes/N=No): Y</u>

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ction: 06 REACTIVITY DATA	<u>CONTINUED</u>
	d
ncompatibility (naterials to A) Avoid contact with strong oxid:	void) izing agents, strong alkalies,
and strong mineral acids.	
azardous Decomposition Products	<u>s</u>
Thermal decomposition or combus carbon monoxide and carbon dios	
azardous Polymerization May Oct	cur(Y=Yes/N=No): N
azardous Polymerization Conc	ditions to Avoid
None	· · ·
ction: 07 SPILL OR LEAK PROCED	
<u>teps to be Taken if Material is</u> Eliminate sources of ignition.	
personal protective equipment a	should be excluded from area
of spill until clean-up has be	
of spill if possible to do so	
from entering sewers or waterco	
ilation. Contain spilled liquid	
undamaged and minimally contam reclamation. Place all collect	
absorbents into DOT approved co	
Advise authorities. If this pro	
substance (see Section 10), no	
National Response Center. Addi	
to SARA Section 302/304 (40 CF)	
aste Disposal Method	·
Treatment, storage, transporta	
accordance with EPA or State re the Resource Conservation and 1	
the Resource Conservation and	Recovery Act (40 CFR 260-271).
ction: 08 SPECIAL PROTECTIVE I	NFORMATION
espiratory Protection	
If workplace exposure limit(s)	of product or any component
is exceeded, an NIOSH/MSHA appr	
is advised in absence of proper	
requistions also permit other	NIOSH/HSHA respirators
(negative pressure organic vap	iniskuskius senkusla skauld
(negative pressure organic vap conditions. Engineering or adm	
(negative pressure organic vap	

Product Name: UNICHEM 7227

Section: 08 SPECIAL PROTECTIVE INFORMATION CONTINUED

whenever this product is used in confined spaces, is heated above ambient temperatures or is agitated. When applicable, sufficient local ventilation should be provided to maintain

employee exposures below safe working limits (TWA's).

#### Protective Gloves

Neoprene, nitrile, polyvinyl alcohol (PVA), polyvinyl chloride (PVC)

Eye Protection

Chemical splash goggles or face shield in compliance with OSHA regulations is advised; however OSHA regulations also permits safety glasses under certain conditions. The use of contact lenses is not recommended.

Other Protective Equipment

Eye wash and safety shower

Section: 09 SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing

Avoid contact with eyes, skin or clothing. Avoid breathing vapors or mist. Keep away from heat, sparks, and open flames and never use a cutting torch on or near container (even empty) or explosion may result.

#### Other Precautions

Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in the data sheet must be observed. Do not transfer to improperly marked container. Do not use pressure to empty container. Do not cut, heat, weld, or expose containers to flame or other sources of ignition. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling.

Section: 10 REGULATORY INFORMATION

Superfund Amendments and Reauthorization Act Of 1986 (SARA) Title III

Section 302/304-Extremely Hazardous Substances (40 CFR 355)

SARA requires emergency planning based on Threshold Planning Quantities (TPQs) and release reporting based on Reportable Quantities (RQs) in 40 CFR 355 (used for SARA 302, 304, 311 and 312). These values are subject to change and the regulations should be consulted to verify current statutory requirements.

Components present in this product at a level which could require reporting under the statute are:

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MATERIAL SAFETY DATA SHEET PAGE 5

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Component Name **NONE**       RO TFO % Rande         Section 311/312 Chemical Inventory Reporting Requirements (40 CFR 370)       The Superfund Amendments and Reauthorization Act (SARA) may require submission of reports (chemical list, MSDS, Tier I & Tier II) to the State Emergency Response Commission, Local Emergency Response Committee and the local fire department. The SARA physical and health hazards related to this product are:         X Acute Health Hazard       _Sudden Release of Pressure X Fire         Section 313-List of Toxic Chemicals (40 CFR 372)         This product contains the following toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (40 CFR 372). This information should be included in all MSDSs that are copied and distributed for this material.         Component Name naphthalene       CAS § Rande 00091-20-3 (5%         CFRCLA, 40 CFR 261 AMD 302       The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center 1-800-424-8802 of any release of a Hazardous Substances equal to or greater than the reportable quantities (RQs) listed in 40CFR 302.4. Values are given in pounds for the component and not the aixture, if applicable. (These values are subject to change and the regulations should be consulted to verify current statutory levels.)         Component Name naphthalene       CAS § CERCLA RO 00091-20-3 100         FHA Exposure Limits Component Name naphthalene       CAS § CERCLA RO 00091-20-3 100         FHA Exposure Limits Component Name naphthalene       CAS § CERCLA RO 00091-20-3 100 <th>tion: 10 REGULATORY INFORMATIC</th> <th></th>	tion: 10 REGULATORY INFORMATIC	
The Superfund Amendments and Reauthorization Act (SARA) may require submission of reports (chemical list, MSDS, Tier I & Tier II) to the State Emergency Response Committee and the local fire department.         The SARA physical and health hazards related to this product are:         X Acute Health Hazard       _Sudden Release of Pressure X Fire A Chronic Health Hazard         Section 313-List of Toxic Chemicals (40 CFR 372)         This product contains the following toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (40 CFR 372). This information should be included in all MSDSs that are copied and distributed for this material.         Component Name CAS 4       CAS 4         naphthalene       CAS 4         CERCLA, 40 CFR 261 AND 302       The Component Name A component and not the aixture, if applicable.         These values are subject to change and the regulations should be consulted to verify current statutory levels.)       Component Name CAS 4         Component Name Subject to change and the regulations should be consulted to verify current statutory levels.)       100         Component Name Subject to change and the regulations should be consulted to verify current statutory levels.)       100         Ciff Cas 4       CERCLA RO 00091-20-3       100         Ratardous Substances equal to or greater than the reportable quantities (ROS) listed in 40CFR 302.4. Values are given in pounds for the component and not the aixture, if applicable.         (These values are subject to change		<u>RO TPO % Range</u>
require submission of reports (chemical list, MSDS, Tier I & Tier II) to the State Emergency Response Commission, Local Emergency Response Committee and the local fire department. The SARA physical and health hazards related to this product are: X Acute Health Hazard Reactive Section 313-List of Toxic Chemicals (40 CFR 372) This product contains the following toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (40 CFR 372). This information should be included in all MSDSs that are copied and distributed for this material. Component Name naphthalene CERCLA, 40 CFR 261 AND 302 The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center 1-800-424-8802 of any release of a Hazardous Substances equal to or greater than the reportable quantities (RQs) listed in 40 CFR 302.4. Values are given in pounds for the component and not the mixture, if applicable. (These values are subject to change and the regulations should be consulted to verify current statutory levels.) Component Name naphthalene Sex Exposure Limits Component Name naphthalene Sex Exposure Limits Component Name naphthalene TWA ppm: 400.0 TWA MG/M3: 50.0 STEL ppm: 500.0 STEL MG/M3: 1225.0 naphthalene TWA ppm: 10.0 TWA MG/M3: 50.0 STEL ppm: 15.0 STEL MG/M3: 75.0 ational Fire Protection Agency 2 Health <u>1</u> Fire Q Reactive Other	Section 311/312 Chemical Inve	ntory Reporting Requirements (40 CFR 370)
Tier II) to the State Emergency Response Commission, Local         Emergency Response Committee and the local fire department.         The SRA physical and health hazards related to this product         are:         X Acute Health Hazard       _Sudden Release of Pressure       X Fire         X Chronic Health Hazard       _Sudden Release of Pressure       X Fire         Section 313-List of Toxic Chemicals (40 CFR 372)       This product contains the following toxic chemicals subject         to the reporting requirements of Section 313 of the       Emergency Planning and Community Right-to-Know Act of 1986         (40 CFR 372). This information should be included in all       MSDSs that are copied and distributed for this material.         Component Name       CAS #       A Range         naphthalene       CAS #       A Range         Ou091-20-3       54       Section 313 of the         CERCLA. 40 CFR 261 AND 302       The Comprehensive Environmental Response, Compensation, and       Liability Act of 1980 (CERCLA) requires notification of the         National Response Center 1-800-424-8802 of any release of a       Hazardous Substances equal to or greater than the reportable         quantities (RQs) listed in 40CFR 302.4. Values are given in       pounds for the component and not the mixture, if applicable.         (These values are subject to change and the regulations should be consulted to verify current statutory levels.)       Component N	The Superfund Amendments and	Reauthorization Act (SARA) may
Emergency Response Committée and the local fire department.         The SARA physical and health hazards related to this product are:         X Acute Health Hazard      Sudden Release of Pressure       X Fire         X Acute Health Hazard      Reactive         Section 313-List of Toxic Chemicals (40 CFR 372)       This product contains the following toxic chemicals subject to the reporting requirements of Section 313 of the         Emergency Planning and Community Right-to-Know Act of 1986 (40 CFR 372). This information should be included in all         MSDSs that are copied and distributed for this material.         Component Name naphthalene       CAS # Stance         Matter of 1980 (CERCLA) requires notification of the National Response Center 1-800-424-8802 of any release of a Hazardous Substances equal to or greater than the reportable quantities (RQ8) listed in 40CFR 302.4. Values are given in pounds for the component and not the mixture, if applicable. (These values are subject to change and the regulations should be consulted to verify current statutory levels.)         Component Name Septonse Limits       CAS # CERCLA RO 00091-20-3 100         SHA Exposure Limits       Component Name Septonse Septonse Septonse Septonse Septonse Septonse Septonse Septonse Septonse Septonse Septonse Septonse Septonse Septonse Septense Septonse Septense Septonse Septonse Septense Septonse Septense Septonse Septense Septonse Septense Septonse Septense Septense Septonse Septense Septonse Septense Septonse Septense Septense Septonse Septense Septonse Septense Septonse Septense Septonse Septense Septonse Septonse Septonse Septonse Septense Septonse Septonse Septense Septon		
The SARA physical and health hazards related to this product are: X Acute Health Hazard		
are: X Acute Health Hazard		
A Chronic Health Hazard      Reactive         Section 313-List of Toxic Chemicals (40 CFR 372)         This product contains the following toxic chemicals subject to the reporting requirements of Section 313 of the         Emergency Planning and Community Right-to-Know Act of 1986 (40 CFR 372). This information should be included in all         MSDSs that are copied and distributed for this material.         Component Name naphthalene       CAS # * Range 00091-20-3 ( 5%         CERCLA, 40 CFR 261 AND 302         The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center 1-800-424-8802 of any release of a Hazardous Substances equal to or greater than the reportable quantities (RQs) listed in 40CFR 302.4. Values are given in pounds for the component and not the mixture, if applicable. (These values are subject to change and the regulations should be consulted to verify current statutory levels.)         Component Name naphthalene       CAS # CERCLA RO 00091-20-3 100         SHA Exposure Limits       Cass # CERCLA RO 00091-20-3 100         SHA Exposure Limits       Cass # CERCLA RO 00091-20-3 100         SHA Exposure Limits       Cass # CercLA RO 00091-20-3 100         SHA Ppm: 400.0 TWA MG/M3: 980.0 STEL ppm: 500.0 STEL MG/M3: 1225.0 naphthalene         TWA ppm: 10.0 TWA MG/M3: 50.0 STEL ppm: 15.0 STEL MG/M3: 75.0         ational Fire Protection Agency       1 Fire         Q Reactive       1 Fire       0 Other <td></td> <td>hazards related to this product</td>		hazards related to this product
Section 313-List of Toxic Chemicals (40 CFR 372)         This product contains the following toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (40 CFR 372). This information should be included in all MSDSs that are copied and distributed for this material.         Component Name naphthalene       CAS # Rance 00091-20-3 (5%         CERCLA, 40 CFR 261 AND 302         The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center 1-800-424-8802 of any release of a Hazardous Substances equal to or greater than the reportable quantities (RQs) listed in 40CFR 302.4. Values are given in pounds for the component and not the mixture, if applicable. (These values are subject to change and the regulations should be consulted to verify current statutory levels.)         Component Name naphthalene       CAS # CERCLA RO 00091-20-3 100         SHA Exposure Limits Component Name isopropyl alcohol TWA ppm: 400.0 TWA MG/M3: 980.0 STEL ppm: 500.0 STEL MG/M3: 1225.0 naphthalene         TWA ppm: 10.0 TWA MG/M3: 50.0 STEL ppm: 15.0 STEL MG/M3: 75.0         ational Fire Protection Agency 2 Health       1 Fire 0 Reactive	$\underline{X}$ Acute Health Hazard	_ Sudden Release of Pressure X Fire
This product contains the following toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (40 CFR 372). This information should be included in all MSDSs that are copied and distributed for this material.         Component Name naphthalene       CAS # Stange 00091-20-3 < 5%	$\mathbf{X}$ Chronic Health Hazard	_ Reactive
This product contains the following toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (40 CFR 372). This information should be included in all MSDSs that are copied and distributed for this material.         Component Name naphthalene       CAS # Stange 00091-20-3 < 5%	Section 313-List of Toxic Cher	micals (40 CFR 372)
Emergency Planning and Community Right-to-Know Act of 1986         (40 CFR 372). This information should be included in all         MSDSs that are copied and distributed for this material.         Component Name naphthalene       CAS £       & Range 00091-20-3         CERCLA, 40 CFR 261 AND 302         The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center 1-800-424-8802 of any release of a Hazardous Substances equal to or greater than the reportable quantities (RQs) listed in 40CFR 302.4. Values are given in pounds for the component and not the mixture, if applicable. (These values are subject to change and the regulations should be consulted to verify current statutory levels.)         Component Name naphthalene       CAS £       CERCLA RO 00091-20-3         SHA Exposure Limits       Capponent Name isopropyl alcohol       CAS £       CERCLA RO 00091-20-3         SHA Exposure Limits       Component Name isopropyl alcohol       TWA ppm: 10.0 TWA MG/M3: 980.0 STEL ppm: 500.0 STEL MG/M3: 1225.0 naphthalene         TWA ppm:       10.0 TWA MG/M3: 50.0 STEL ppm: 15.0 STEL MG/M3: 75.0         ational Fire Protection Agency       2       Fire 0       0 ther	This product contains the fo	llowing toxic chemicals subject
(40 CFR 372). This information should be included in all MSDSs that are copied and distributed for this material.         Component Name naphthalene       CAS # 1 Range 00091-20-3 < 5%		
MSDSs that are copied and distributed for this material.         Component Name naphthalene       CAS # 00091-20-3 (5%         CERCLA, 40 CFR 261 AND 302         The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center 1-800-424-8802 of any release of a Hazardous Substances equal to or greater than the reportable quantities (RQs) listed in 40CFR 302.4. Values are given in pounds for the component and not the mixture, if applicable. (These values are subject to change and the regulations should be consulted to verify current statutory levels.)         Component Name naphthalene       CAS # (CERCLA RQ 00091-20-3)       CERCLA RQ 00091-20-3)         SHA Exposure Limits       Component Name isopropyl alcohol TWA ppm: 400.0 TWA MG/M3: 980.0 STEL ppm: 500.0 STEL MG/M3: 1225.0 naphthalene TWA ppm: 10.0 TWA MG/M3: 50.0 STEL ppm: 15.0 STEL MG/M3: 75.0         ational Fire Protection Agency       2 Health       2 Fire Q Reactive		
Component Name naphthalene       CAS # 00091-20-3       * Range 5%         CERCLA, 40 CFR 261 AND 302       The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center 1-800-424-8802 of any release of a Hazardous Substances equal to or greater than the reportable quantities (RQs) listed in 40CFR 302.4. Values are given in pounds for the component and not the mixture, if applicable. (These values are subject to change and the regulations should be consulted to verify current statutory levels.)         Component Name naphthalene       CAS # 00091-20-3       CERCLA RO 00091-20-3         SHA Exposure Limits       Component Name isopropyl alcohol TWA ppm: 400.0 TWA MG/M3: 980.0 STEL ppm: 500.0 STEL MG/M3: 1225.0 naphthalene         TWA ppm:       10.0 TWA MG/M3: 50.0 STEL ppm: 15.0 STEL MG/M3: 75.0         ational Fire Protection Agency       2 Fire Q Reactive       0 ther		
naphthalene       00091-20-3 ( 5%         CERCLA, 40 CFR 261 AND 302       The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center 1-800-424-8802 of any release of a Hazardous Substances equal to or greater than the reportable quantities (RQs) listed in 40CFR 302.4. Values are given in pounds for the component and not the mixture, if applicable. (These values are subject to change and the regulations should be consulted to verify current statutory levels.)         Component Name naphthalene       CAS # CERCLA RO 00091-20-3 100         SHA Exposure Limits       Component Name         Component Name       CAS # CERCLA RO 00091-20-3 100         SHA Exposure Limits       Component Name         Component Name       CAS # CERCLA RO 00091-20-3 100         SHA Exposure Limits       Component Name         Component Name       CAS # CERCLA RO 00091-20-3 100         SHA Exposure Limits       Component Name         Component Name       CAS # CERCLA RO 00091-20-3 100         SHA Exposure Limits       Component Name         Component Name       Solo STEL ppm: 500.0 STEL MG/M3: 1225.0         naphthalene       YA ppm: 10.0 TWA MG/M3: 50.0 STEL ppm: 15.0 STEL MG/M3: 75.0         Attional Fire Protection Agency       Yeath         Yeath       Yeath         Yeath       Yeath         Yeath       Yeath    <	MSDSs that are copied and di	stributed for this material.
CERCLA, 40 CFR 261 AND 302         The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center 1-800-424-8802 of any release of a Hazardous Substances equal to or greater than the reportable quantities (RQs) listed in 40CFR 302.4. Values are given in pounds for the component and not the mixture, if applicable. (These values are subject to change and the regulations should be consulted to verify current statutory levels.)         Component Name naphthalene       CAS # CERCLA RO 00091-20-3 100         SHA Exposure Limits         Component Name isopropyl alcohol         TWA ppm: 400.0 TWA MG/M3: 980.0 STEL ppm: 500.0 STEL MG/M3: 1225.0 naphthalene         TWA ppm: 10.0 TWA MG/M3: 50.0 STEL ppm: 15.0 STEL MG/M3: 75.0         ational Fire Protection Agency         2 Health       1 Fire Q Reactive	<u>Component Name</u>	
The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center 1-800-424-8802 of any release of a Hazardous Substances equal to or greater than the reportable quantities (RQs) listed in 40CFR 302.4. Values are given in pounds for the component and not the mixture, if applicable. (These values are subject to change and the regulations should be consulted to verify current statutory levels.)         Component Name naphthalene       CAS #       CERCLA RO 00091-20-3       COULD ROUTE 100         SHA Exposure Limits       Component Name isopropyl alcohol       COULD ROUTE State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State State St	naphthalene	00091-20-3 < 5%
The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center 1-800-424-8802 of any release of a Hazardous Substances equal to or greater than the reportable quantities (RQs) listed in 40CFR 302.4. Values are given in pounds for the component and not the mixture, if applicable. (These values are subject to change and the regulations should be consulted to verify current statutory levels.)         Component Name naphthalene       CAS #       CERCLA RO 00091-20-3       COULD ROUTE 100         SHA Exposure Limits       Component Name isopropyl alcohol       COULD RESULT SUBJECTION STEL PPM: 500.0 STEL MG/M3: 1225.0         SHA Exposure Limits       State Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subject Subj	CERCLA, 40 CFR 261 AND 302	
National Response Center 1-800-424-8802 of any release of a         Hazardous Substances equal to or greater than the reportable         quantities (RQs) listed in 40CFR 302.4. Values are given in         pounds for the component and not the mixture, if applicable.         (These values are subject to change and the regulations         should be consulted to verify current statutory levels.)         Component Name       CAS #       CERCLA RO         naphthalene       00091-20-3       100         SHA Exposure Limits       Component Name       CAS #       CERCLA RO         isopropyl alcohol       TWA ppm: 400.0 TWA MG/M3: 980.0 STEL ppm: 500.0 STEL MG/M3: 1225.0       naphthalene         TWA ppm: 10.0 TWA MG/M3: 50.0 STEL ppm: 15.0 STEL MG/M3: 75.0       ational Fire Protection Agency       2         Health       1       Fire       0         Q Reactive      0 Other      0	The Comprehensive Environmen	tal Response, Compensation, and
Hazardous Substances equal to or greater than the reportable quantities (RQs) listed in 40CFR 302.4. Values are given in pounds for the component and not the mixture, if applicable. (These values are subject to change and the regulations should be consulted to verify current statutory levels.) <u>Component Name naphthalene</u> <u>CAS # CERCLA RO 00091-20-3 100             <u>SHA Exposure Limits         <u>Component Name isopropyl alcohol         TWA ppm: 400.0 TWA MG/M3: 980.0 STEL ppm: 500.0 STEL MG/M3: 1225.0         naphthalene         TWA ppm: 10.0 TWA MG/M3: 50.0 STEL ppm: 15.0 STEL MG/M3: 75.0             <u>ational Fire Protection Agency         2 Health         <u>1</u> Fire         <u>0</u> Reactive         <u>Check Agency         </u> <u>Other         </u> <u>Check Agency         </u> <u>Check Agency         </u> <u>Check Agency         <u>Check Agency         <u>Check Agency         </u> <u>Check Agency         </u> <u>Check Agency         </u> <u>Check Agency         </u> <u>Check Agency         </u> <u>Check Agency         </u> <u>Check Agency         </u> <u>Check Agency         </u> <u>Check Agency         </u> <u>Check Agency         </u> <u>Check Agency         </u> <u>Check Agency         </u> <u>Check Agency         </u> <u>Check Agency         </u> <u>Check Agency         </u> <u>Check Agency         </u> <u>Check Agency         </u> <u>Check Agency         </u> <u>Check Agency         </u> <u>Check Agency         </u> <u>Check Agency         </u> <u>Check Agency         </u> <u>Check Agency         </u> <u>Check Agency         </u> <u>Check Agency         </u> <u>Check Agency         </u> <u>Check Agency         </u> <u>Check Agency         </u> <u>Check Agency         </u> <u>Check Agency         </u> <u>Check Agency         </u> <u>Check Agency         </u> </u></u></u></u></u></u>	Liability Act of 1980 (CERCL)	A) requires notification of the
quantities (RQs) listed in 40CFR 302.4. Values are given in pounds for the component and not the mixture, if applicable. (These values are subject to change and the regulations should be consulted to verify current statutory levels.)         Component Name naphthalene       CAS # CERCLA RO 00091-20-3 100         SHA Exposure Limits       Component Name 1000         isopropyl alcohol       TWA ppm: 400.0 TWA MG/M3: 980.0 STEL ppm: 500.0 STEL MG/M3: 1225.0         naphthalene       TWA MG/M3: 50.0 STEL ppm: 15.0 STEL MG/M3: 75.0         ational Fire Protection Agency       2 Health         Q Reactive       2 Fire	National Response Center 1-8	00-424-8802 of any release of a
pounds for the component and not the mixture, if applicable. (These values are subject to change and the regulations should be consulted to verify current statutory levels.)         Component Name naphthalene       CAS # CERCLA RO 00091-20-3 100         SHA Exposure Limits       Component Name isopropyl alcohol         TWA ppm: 400.0 TWA MG/M3: 980.0 STEL ppm: 500.0 STEL MG/M3: 1225.0 naphthalene         TWA ppm: 10.0 TWA MG/M3: 50.0 STEL ppm: 15.0 STEL MG/M3: 75.0         ational Fire Protection Agency         2 Health       3 Fire         Q Reactive       Other		
(These values are subject to change and the regulations should be consulted to verify current statutory levels.) <u>Component Name</u> naphthalene <u>CAS # CERCLA RO</u> 00091-20-3 100         SHA Exposure Limits <u>Component Name</u> <u>Component Name</u> <u>isopropyl alcohol</u> TWA ppm: 400.0 TWA MG/M3: 980.0 STEL ppm: 500.0 STEL MG/M3: 1225.0         naphthalene       TWA ppm: 10.0 TWA MG/M3: 50.0 STEL ppm: 15.0 STEL MG/M3: 75.0         ational Fire Protection Agency <u>3</u> Fire <u>0</u> Reactive <u>1</u> Fire		
should be consulted to verify current statutory levels.)         Component Name naphthalene       CAS # CERCLA RO 00091-20-3 100         SHA Exposure Limits         Component Name isopropyl alcohol         TWA ppm: 400.0 TWA MG/M3: 980.0 STEL ppm: 500.0 STEL MG/M3: 1225.0         naphthalene         TWA ppm: 10.0 TWA MG/M3: 50.0 STEL ppm: 15.0 STEL MG/M3: 75.0         ational Fire Protection Agency         2 Health       3 Fire         Q Reactive       Other	• •	
Component Name naphthaleneCAS # O0091-20-3CERCLA RO 00091-20-3SHA Exposure Limits Component Name isopropyl alcohol TWA ppm: 400.0 TWA MG/M3: 980.0 STEL ppm: 500.0 STEL MG/M3: 1225.0 naphthalene TWA ppm: 10.0 TWA MG/M3: 50.0 STEL ppm: 15.0 STEL MG/M3: 75.0ational Fire Protection Agency 2 Health Q Reactive2 Fire Other	(These values are subject to	
naphthalene00091-20-3100SHA Exposure LimitsComponent Name isopropyl alcoholTWA ppm: 400.0 TWA MG/M3: 980.0 STEL ppm: 500.0 STEL MG/M3: 1225.0naphthalene TWA ppm: 10.0 TWA MG/M3: 50.0 STEL ppm: 15.0 STEL MG/M3: 75.0ational Fire Protection Agency Q Reactive2 Health Q Reactive100		v current statutory levels.)
SHA Exposure Limits         Component Name         isopropyl alcohol         TWA ppm: 400.0 TWA MG/M3: 980.0 STEL ppm: 500.0 STEL MG/M3: 1225.0         naphthalene         TWA ppm: 10.0 TWA MG/M3: 50.0 STEL ppm: 15.0 STEL MG/M3: 75.0         ational Fire Protection Agency         2 Health       1 Fire         0 Reactive       Other		
Component Name         isopropyl alcohol         TWA ppm: 400.0 TWA MG/M3: 980.0 STEL ppm: 500.0 STEL MG/M3: 1225.0         naphthalene         TWA ppm: 10.0 TWA MG/M3: 50.0 STEL ppm: 15.0 STEL MG/M3: 75.0         ational Fire Protection Agency         2 Health       3 Fire         Q Reactive       Other	should be consulted to verify	<u>CAS # CERCLA RO</u>
isopropyl alcohol TWA ppm: 400.0 TWA MG/M3: 980.0 STEL ppm: 500.0 STEL MG/M3: 1225.0 naphthalene TWA ppm: 10.0 TWA MG/M3: 50.0 STEL ppm: 15.0 STEL MG/M3: 75.0 ational Fire Protection Agency <u>2 Health</u> <u>3 Fire</u> <u>0 Reactive</u> Other	should be consulted to verify	<u>CAS # CERCLA RO</u>
TWA ppm: 400.0 TWA MG/M3: 980.0 STEL ppm: 500.0 STEL MG/M3: 1225.0naphthaleneTWA ppm: 10.0 TWA MG/M3: 50.0 STEL ppm: 15.0 STEL MG/M3: 75.0ational Fire Protection Agency2 Health3 FireQ ReactiveOther	should be consulted to verify <u>Component Name</u> naphthalene SHA Exposure Limits	<u>CAS # CERCLA RO</u>
naphthalene         TWA ppm:       10.0 TWA MG/M3:       50.0 STEL ppm:       15.0 STEL MG/M3:       75.0         ational Fire       Protection Agency	should be consulted to verify <u>Component Name</u> naphthalene SHA Exposure Limits Component Name	<u>CAS # CERCLA RO</u>
TWA ppm:       10.0 TWA MG/M3:       50.0 STEL ppm:       15.0 STEL MG/M3:       75.0         ational Fire Protection Agency	should be consulted to verify <u>Component Name</u> naphthalene <u>SHA Exposure Limits</u> <u>Component Name</u> isopropyl alcohol	<u>CAS # CERCLA RO</u> 00091-20-3 100
ational Fire Protection Agency <u>2</u> Health <u>3</u> Fire <u>0</u> Reactive     Other	should be consulted to verify <u>Component Name</u> naphthalene <u>SHA Exposure Limits</u> <u>Component Name</u> isopropyl alcohol TWA ppm: 400.0 TWA MG/M3: 9	<u>CAS # CERCLA RO</u> 00091-20-3 100
2   Health   3   Fire     Q   Reactive  Other	should be consulted to verify <u>Component Name</u> naphthalene <u>SHA Exposure Limits</u> <u>Component Name</u> isopropyl alcohol TWA ppm: 400.0 TWA MG/M3: 9 naphthalene	<u>CAS # CERCLA RQ</u> 00091-20-3 100 80.0 STEL ppm: 500.0 STEL MG/M3: 1225.0
O Reactive Other	should be consulted to verify <u>Component Name</u> naphthalene <u>SHA Exposure Limits</u> <u>Component Name</u> isopropyl alcohol TWA ppm: 400.0 TWA MG/M3: 9 naphthalene	<u>CAS # CERCLA RQ</u> 00091-20-3 100 80.0 STEL ppm: 500.0 STEL MG/M3: 1225.0
-	should be consulted to verify <u>Component Name</u> naphthalene <u>SHA Exposure Limits</u> <u>Component Name</u> isopropyl alcohol TWA ppm: 400.0 TWA MG/M3: 9 naphthalene TWA ppm: 10.0 TWA MG/M3: ational Fire Protection Agency	<u>CAS # CERCLA RO</u> 00091-20-3 100 80.0 STEL ppm: 500.0 STEL MG/M3: 1225.0 50.0 STEL ppm: 15.0 STEL MG/M3: 75.0
epartment of Transportation Shipping Information	should be consulted to verify <u>Component Name</u> naphthalene <u>SHA Exposure Limits</u> <u>Component Name</u> isopropyl alcohol TWA ppm: 400.0 TWA MG/M3: 9 naphthalene TWA ppm: 10.0 TWA MG/M3: <u>ational Fire Protection Agency</u> <u>2</u> Health	<u>CAS # CERCLA RO</u> 00091-20-3 100 80.0 STEL ppm: 500.0 STEL MG/M3: 1225.0 50.0 STEL ppm: 15.0 STEL MG/M3: 75.0 <u>3</u> Fire
	should be consulted to verify <u>Component Name</u> naphthalene <u>SHA Exposure Limits</u> <u>Component Name</u> isopropyl alcohol TWA ppm: 400.0 TWA MG/M3: 9 naphthalene TWA ppm: 10.0 TWA MG/M3: <u>ational Fire Protection Agency</u> <u>2</u> Health	<u>CAS # CERCLA RO</u> 00091-20-3 100 80.0 STEL ppm: 500.0 STEL MG/M3: 1225.0 50.0 STEL ppm: 15.0 STEL MG/M3: 75.0 <u>3</u> Fire

Product Name: UNICHEM 7227

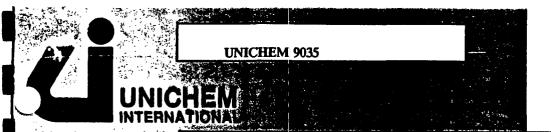
abels: Flammable liquid		Number: 27
xic Substances Control		
compliance with TSCA.	and II produce Is	

Section 10 information is to remain attached to the material safety data sheet for this product.

While UNICHEM INTERNATIONAL believes that the above data is correct, UNICHEM INTERNATIONAL expressly disclaims liability for any loss or injury arising out of the use of this information or the use of any materials designated. PAGE

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# PRODUCT BULLETIN

### DESCRIPTION

UNICHEM 9035 is a liquid cationic polyectrolyte.

#### USES

UNICHEM 9035 is used as a primary coagulant in water clarification. It is effective over a wide pH range and is unaffected by chlorine. UNICHEM 9035 is very effective on low turbidity waters. Dosage range (based on the volume of water to be treated) is generally 1 to 20 ppm.

# **TYPICAL PROPERTIES**

Appearance	Light Blue Viscous Liquid
Density	8.60
Freeze Point	30°F
Flash Point	>200 ⁰ F TCC

# HANDLING

UNICHEM 9035 must be kept above the freeze point. Approved protective clothing is recommended to prevent direct contact of the polymer with skin and/or eyes. If contact is made, wash immediately with copious quantities of water. Keep out of reach of children. Keep container closed when not in use. Do not transfer to improperly marked containers.

Refer to the Material Safety Data Sheet for more information regarding the safe use of this product.

# PACKAGING

UNICHEM 9035 is available in 55 gallon drums or in bulk quantities.

	Supara	Date Pre edes Previous Sheet.	pared <u>8-15-88</u>
MIENARA			
		IDENTIFICATION	
Unichem International 7		. O. Box 1499/Hobbs, TELEPHONE NUMBER (	New Mexico 882 505) 393-7751
Trade Name UNICHEM 9035			
Chemical Description Pro	oprietary blend of Po	olymers in an aqueous solution	,
•	II. HAZARDOU	IS INGREDIENTS	
Material		TLV	(Units)
Formaldehyde CAS#50-00-0 (contains	less than 1%)	5 pp	n PEL (8 hours) m ceiling n peak ( 30 min.) m ceiling
This product contains less than 1% carcinogen. Long-term hidh dosage	inhalation of formal		
Boiling Point, 760 mm Hg	ببرجيدان سادا والمواجع بواري والمراجع	Freezing Point	30°F
	ert i (rureta)		201
	·····		Complete (algulu)
Specific Gravity $(H_2 O=1)$	1.03 g/ml	Solubility in Water	Complete (slowly)
Specific Gravity (H ₂ O=1) Appearance and Odor Light	1.03 g/ml blue viscous liquid;	Solubility in Water	Complete (slowly)
Specific Gravity (H ₂ O=1) Appearance and Odor Light IV.	1.03 g/ml blue viscous liquid; FIRE AND EXPL	Solubility in Water	Complete (slowly)
Specific Gravity (H ₂ O=1) Appearance and Odor Light IV. Flash Point (Test Method)	1.03 g/ml blue viscous liquid; FIRE AND EXP( >200°F (TCC)	Solubility in Water	
Specific Gravity (H ₂ O=1) Appearance and Odor Light IV. Flash Point (Test Method) Extinguishing Media Cart	1.03 g/ml blue viscous liquid; FIRE AND EXPL >200°F (TCC) bon Dioxide, Dry Chem DCEdures	Solubility in Water slight ammonia odor LOSION HAZARD DATA nical, Water Spray or Fog, Foam	n. Use a water spray

Page 1 of 2

Page 2 of 2	Product UN	ICHEM 9035
	V. HEALTH HAZAR	D DATA
Threshold Limi	t Value Not Determined	
Effects of Ove Inhalation of vapo and burning of the	ors or mists will irritate the entire respirat	the skin and severe damage to the eyes. ory tract. Ingestion will cause irritation
least fifteen minu nated clothing. ]	utes. Seek medical attention. SKIN: Flush a	h promptly with copious quantities of water for at rea with water. Wash with soap and remove contami- icial respiration of necessary. INGESTION: Call a
	VI. REACTIVITY	' DATA
	able x Conditions to Avoid stable	None
Incompatibilit	y (Materials to Avoid) Strongly a	lkaline materials; Oxidizers
Hazardous Deco	mposition of Products Oxides of	Carbon and Nitrogen
Hazardous Poly	merization May Occur Will Not Occur X	Conditions to Avoid None
,	VII. SPILL OR LEAK	PROCEDURES
	ignition. Contain and absorb spill. Method Dispose via a licensed waste o	- Spilled Provide adequate ventilation
<u></u>	VIII. SPECIAL PROTECTI	ON INFORMATION
Respiratory Pr if exposure levels	Otection (Specify Type) Use air- exceeds TLV for this product or its ingredier	supplied or self-contained breathing apparatus its if applicable.
Ventilation	Local Exhaust As needed to prevent accumulation of	Special
······	Mechanical (General) vapors	Other none
Protective Glo	oves Rubber Eye Protect	LION Safety glasses, goggles and/or face shield
Other Protecti	Ve Equipment Overalls, rubber boots,	eyewash stations, safety showers
· · · · · · · · · · · · · · · · · · ·	IX. SPECIAL PREC	CAUTIONS
fire-risk area awa	) be Taken in Handling and Stor y from ignition sources and incompatable mater properly marked containers.	
Other Precauti	A	hing of vapors or contact with skin. Do not

I.

MATERIAL SAFETY DATA SHEET



1257

VARSOL 1

Date May 1982

No.

CORPORATE RESEARCH & DEVELOPMENT

SCHENECTADY, N. Y. 12305

			Date		
SECTION I. MATERIAL	DENTIFICATION				
MATERIAL NAME: VARSOL 1					
DESCRIPTION: Petroleum so	lvent or mineral spirits.				
OTHER DESIGNATIONS: GE Ma	terial D5B8, ASTM D235, ASTM D484	1, Type 1			
MANUFACTURER: Exxon Co.					1
P.O. Box 21	.80				1
Houston, Te	exas Tel: (713) 656-3424				
SECTION II. INGREDIEN	TS AND HAZARDS	×	H	ZARD U	ATA
Mixture of petroleum hydro	ocarbons	100	8-hr 1	WA 100	ppm*
Typical Composition:	Vol %				
Aromatics ( $C_{o}$ and highe					
Olefins	1		Rat, C		
Saturates	81		LD 50	>5 g∕kg	
Sulfur content 1 ppm					
	lard Solvent. Animal studies			:, Derma	
	research has shown that male		LD 50	>2 g/kq	,
rats exposed to similar	vapors at 100 ppm had		50		
kidney damage. Addition conducted to validate	onal studies are being				
determine if a revised	TLV should be recommended.				
SECTION III. PHYSICAL	. DATA				
Boiling range, 1 atm, deg	C 155-205 Specific grav	ity, 15.6	/15.6C	ca	a 0.79
Vapor pressure, 25C, mmHg	<10 Evaporation r	ate (nBuA	c=1)	<(	o.1
Vapor density (Air=1)	ca 4.8 Volatiles, %			10	00
Solubility in water	Negligible Molecular weig	sht (avg)		ca	140
		_			
Appearance & odor: Water-	-white liquid; mineral spirits odd	or (no lo	ng-las	ting odd	or
after evaporation).					
1					
SECTION IV. FIRE AND	EXPLOSION DATA			LOWER	UPPER
Flash Point and Method	Autoignition Temp. Flammability	y Limits	In Air		
ca 42C (108F) TCC	254C (ASTM D2155) % by Volu	me @ 25C		0.9	6.0
Extinguishing Media. Dry	chemical, carbon dioxide, foam,	wator onr		F.o.a.	
	to keep fire-exposed containers				rupture
	Class II Combustible Liquid. It i				
heated or sprayed in air					
	self-contained breathing apparatu	s for fig	hting :	fires in	n
enclosed areas.					
					1
SECTION V. REACTIVITY	DATA				
SECTION V. REACTIVITY		peraturo	under		toraco
This is a stable material	in closed containers at room temp	perature	under	normal	storage
This is a stable material and handling conditions	in closed containers at room temp. It does not polymerize.				
This is a stable material and handling conditions Incompatible with strong o	in closed containers at room tem . It does not polymerize. oxidizing agents such as chlorine				
This is a stable material and handling conditions Incompatible with strong of hypochlorite, nitric act	in closed containers at room tem . It does not polymerize. oxidizing agents such as chlorine id, etc.	, conc. o	xygen,	calciu	m
This is a stable material and handling conditions Incompatible with strong of hypochlorite, nitric act Thermal-oxidative degrada	in closed containers at room tem . It does not polymerize. oxidizing agents such as chlorine	, conc. o	xygen,	calciu	n
This is a stable material and handling conditions Incompatible with strong of hypochlorite, nitric act	in closed containers at room tem . It does not polymerize. oxidizing agents such as chlorine id, etc.	, conc. o	xygen,	calciu	n
This is a stable material and handling conditions Incompatible with strong of hypochlorite, nitric act Thermal-oxidative degrada	in closed containers at room tem . It does not polymerize. oxidizing agents such as chlorine id, etc.	, conc. o	xygen,	calciu	m
This is a stable material and handling conditions Incompatible with strong of hypochlorite, nitric act Thermal-oxidative degrada	in closed containers at room tem . It does not polymerize. oxidizing agents such as chlorine id, etc.	, conc. o	xygen,	calciu	m



WATER TRACING DYE

YELLOW/GREEN PRODUCTS



### **TECHNICAL DATA BULLETIN**

Formulabs Yellow/Green Products are especially formulated versions of the dye fluorescein. This dye is the traditional fluorescent water tracing and leak detection material and has been used for water labeling studies from the beginning of this century. It may be detected visually, by ultra-violet light and by appropriate fluoremetric equipment. Today it is most often used visually. Fluorescein is the dye used by the military to mark downed pilots for search-and-rescue operations over large water bodies. Visually the dye appears as yellow-to-green, depending on its concentration, and, under ultra-violet light, as a bright lime green.

The dye is resistant to adsorption on most suspended matter in fresh and salt water. However, compared to Formulabs FWT Red products it is significantly less resistant to degradation by sunlight; and when used in fluoremetry, stands out much less clearly against background fluorescence. Based on biochemical oxygen demand (BOD) studies, the dye is biodegradeable with 65% of the available oxygen consumed in 7 days. Fluorescein is not recommended for use in drinking water systems or near their intakes. The suitability of these products for any specific application should be evaluated by a qualified hydrologist or other industry professional.

#### **GENERAL PROPERTIES**

Detectability of active ingredient

Maximum absorbance/emission wavelengths

TABLET PROPERTIES

Appearance

**Tablet weight** 

Active ingredient

Dissolution time

In delonized water in 100 ml flask: - Visual < 100 ppb - U.V. (long wave) 10 ppb - Fluoremeter <0.1 ppb Actual detectability and coverage (below) In the field will vary with specific water conditions.

490/520 nm. - No significant change in fluorescence between 6.5 and 11 pH.

Orange approximately 1.6 cm in diameter.

 $1.35 \text{ gms} \pm 0.05.$ 

13.5% by weight.

One tablet in flowing, deionized water in a 10 gallon tank

50% <3 minutes 95% <6 minutes.

#### LIQUID PROPERTIES

Appearance

**Active Ingredient** 

Specific gravity

Viscosity

pH

#### POWDER PROPERTIES

Appearance

Active Ingredient

**Dissolution time** 

Reddish brown aqueous solution substantially free of insoluble matter.

7.5% by weight.

1.05±0.05 @ 25°C.

1.8 cps. measured on a Brookfield visometer, Model LV, UL adaptor, 60 rpm @ 25°C.

 $8.5 \pm 0.5 @ 25^{\circ}C.$ 

Orange fine powder.

75% by weight.

One gram in flowing deionized water in a 10 galion tank 50% < 5 minutes 95% < 10 minutes.

#### COVERAGE OF PRODUCTS

. Q	antities in Gallons	s of Water (K = 000	}
Product	Visual	U.V.	Fluoremeter
One tablet	605	6050	605K
One pint liquid	125K	1250K	125,000K
One lb. powder	1,200K	12,000K	12,000,000K

Formulabe also makes water soluble wax forms of this dye - cakes, cones and doughnuts - in 2 to 6 oz. sizes. These provide a slower, metered-like input to water bodies. Contact us for further information.

CAUTION: These products may cause irritation and/or staining if allowed to come in contact with the skin. The use of gloves and goggies is recommended when handling this product, as with any other dye or chemical.

Formulabs

Dye Tracing Divsion, P.O. Box 1116, Piqua, Ohio 45356 Phone: (513) 773-8933 FAX: (513) 773-7831

To our best knowledge, the information and recommendations contained herein are accurate and reliable. However, this information and our recommendations are furnished without warranty, representation, inducement, or license of any kind, including, but not limited to the implied warranties and fitness for a particular use or purpose. Customers are encouraged to conduct their own tests and to read the material safety data sheet carefully before using.

YGPROD-5/91



WATER TRACING DYES

**General User Information** 

## TECHNICAL DATA BULLETIN

Dye tracing products are used in many analytical applications. The unique needs of our customers seem almost unlimited. Some of the most common uses are:

-Plumbing tracing -Pollution studies

-Retention time studies

-Septic system analysis

-Flow mapping and rate of flow studies -Storm and sewer drain analyses -Condenser coll and tube studies -Source and output detection -Power plant piping tracing -Lake, river, and pond analyses -Leak detection in many fluid-carrying systems

#### How Flourescent Dye Tracing Products work:

The "visual" aspect of Formulabs' dye products refers to normal reflection of light as color. The "fluorescent" aspect refers to special properties of some chemicals to absorb certain wavelengths and then emit, rather than reflect, light in response. The emission can be seen by using a "black" uitra-violet light or precisely measured with a fluorometer. The reflected and emitted light have different wavelengths and are, therefore, not the same color.

Fluorescent properties are of greatest value when:

-Tracing must be done when there is no sun or sufficient artificial light (in a sewer or a cave, for instance) -Precise quantified data is required

- Very small amounts of tracing material is allowed

The maximum absorbance/emission wavelengths of our products are:

Product	Absorption	Emission
FWT Red	550 nm.	588 nm.
Industrial Red	550	588
Yellow/Green	490	520
- Clear	349	430
Blue	630	na

Normally, the blue products are for visual tracing only. However, some of our blue products have been enhanced with a fluoresent dye component.

#### What PPB means:

Most of our products contain fluorescent dyes which can be detected visually, or with the use of ultra-violet light or fluorometer.

As used in Formulabs' literature, "ppb" refers to one part of active dye per billion parts of water. Using a fluorometer, the active dye can often be detected at levels less than one ppb. All data is presented as reference points only and should not be regarded as a recommendation.

Users should make their own determination of appropriate dilution levels in any specific situation, which will vary with the nature, condition, and use of the water or liquid and the specific evaluation to be performed.

How to calculate the size of a body of water:

One gallon of water occupies .1337 cubic feet. For a rectangular tank, multiply depth in feet times width times length times the factor .1337 to establish the number of gallons. For more complicated bodies of water, formulas can be found in scientific texts on water utility management, hydrology, or related sciences.

#### Examples of Specific Projects

Test sewer lines for infiltration. Locate sewer lines. Check for illegal connections. Prove septic bypasses. Identify indirect cross-connections. Check drain pipes, downspouts, and gutters to assure drainage into proper channels. Use in inspection service for certification and reinspection documentation. Analyze travel times.

Detect toilet leaks; Drip Kits are frequently used by plumbers and salespeople; municipalities and utilities use them as part of public relations and user conservation programs.

Detect leaks in closed systems and cooling systems of steel manufacturers.

Study infiltration of industrial water and piping systems.

Trace acid coming through cooling systems.

Check pump systems flow in fleet trucks, and for preventative maintenance programs.

Detect sewer leaks into ponds, lagoons, and reservoir liners.

Check circulation through sludge beds and measure discharge flow from water tanks.

Illustrate the hydraulic characteristics of streams and other water bodies.

Identify and differentiate batches of slurry before the brick firing process.

Measure the speed and longevity of material passing through a system (i.e. retention time studies).

Other User Information

For stream tracing and pollution detection, introduce tracers into the water at the source or suspected source of pollution. Allow sufficient time, as calculated, to permit the dye tracer to reach the effluent or recipient location. Take samples of water for analysis.

Dye tablets may be dropped or flushed directly into dialns, sewers or other points in the system. However, it may be desirable to dissolve them in a small amount of water to form a calculated concentration prior to use.

Special larger shapes (cakes, cones, and donuts) have been designed to provide optimum dissolution rates in large systems. Donuts are frequently suspended from a line or string into the body of water. Cakes and donuts are sealed in a handy water soluble film for ease of use.

Blue has the highest degree of light stability and Red is recommended for yellow or green backgrounds such as algae rich water. FWT Red, Blue, or Yellow/green should be used in water bearing heavy sediment loads or when passing through soll with high clay content. Industrial Red will adsorb onto either.

Photo degradation takes place in sunlight at different rates for different dyes. Red takes from approximately five to seven days and yellow/green fades within two to three days. Blue, on the other hand, breaks down in three or four weeks.

The color of all dyes will disappear if the solution is mixed with chlorine. Add approximately 4 grams of 12 percent bleach for every gram of product in solution.



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Dye Tracing Division, P.O. Box 1116, Piqua, Ohio 45356 Phone: (513) 773-8933 FAX: (513) 773-7831

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To our best knowledge, the information and recommendations contained herein are accurate and reliable. However, this information and our recommendations are furnished without warranty, representation, inducement, or license of any kind, including, but not limited to the implied warranties and fitness for a particular use or purpose. Customers are encouraged to conduct their own tests and read the material safety data sheets carefully before using these products.

DTGUI-10/91

•	MATERIAL SAFETY DATA SHEET YELLOW/GREEN DYE TABLET PAGE 1 OF 4
· • • • • • • • • • • • • • • • • • • •	MSDS PREPARATION INFORMATION
PREPARED BY: M. (51 Date Prepared: 1	.3) 773-8933
	PRODUCT INFORMATION
CHEMICAL NAME CHEMICAL FORMULA	FORMULABS, INC. 1710 COMMERCE DRIVE PIQUA, OHIO 45356 (513) 773-8933 BUSINESS (800) 424-9300 CHEMTREC 24-HR EMERGENCY CONTACT NOT APPLICABLE WATER SOLUBLE DYE TABLET
• • • • • • • • • • • • • • • • • • •	HAZARDOUS INGREDIENTS
	LENT <b>*</b> T.L.V. C.A.S. <b>#</b>
IONE PER 29 CFR 1	PHYSICAL DATA
DOOR AND APPEARAN SPECIFIC GRAVITY VAPOR PRESSURE (N VAPOR DENSITY (A) EVAPORATION RATE BOILING POINT . FREEZING POINT .	NCE DRY TABLET NCE YELLOW-GREEN COLOR WITH NO APPARENT ODOR NOT APPLICABLE mm Hg @ 25 deg. C) NOT APPLICABLE IR = 1) NOT APPLICABLE (Butyl Acetate = 1) NOT APPLICABLE NOT APPLICABLE 
SOLUBILITY IN WAT	TER INFINITE SOLUBILITY
SOLUBILITY IN WAT	FIRE OR EXPLOSION HAZARD
SOLUBILITY IN WAT	۔ 

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	MATERIAL SAFETY DATA SHEET YELLOW/GREEN DYE TABLET PAGE 2 OF 4
LOWER FLAMMABLE LIMIT AUTO-IGNITION TEMPERA HAZARDOUS COMBUSTION	NOT APPLICABLE NOT APPLICABLE TURE NOT APPLICABLE PRODUCTS NOT APPLICABLE BURNING MAY PRODUCE CARBON MONOXIDE, CARBON DIOXIDE, OXIDES OF NITROGEN O AMMONIA, AND/OR HYDROGEN CHLORIDE GAS.
SENSITIVITY TO M	NOT APPLICABLE
	REACTIVITY DATA
PRODUCT INCOMPATIBILI CONDITIONS OF REACTIV	
	TOXICOLOGICAL PROPERTIES
INHALATION, AC INHALATION, CH SKIN CONTACT . SKIN ABSORPTIO EYE CONTACT . INGESTION EFFECTS OF ACUTE EXP EFFECTS OF CHRONIC E THRESHOLD LIMIT VALU	SURE FOR EACH POTENTIAL ROUTE OF ENTRY: JTE NO HARMFUL EFFECTS EXPECTED. RONIC . NO HARMFUL EFFECTS EXPECTED. WILL TEMPORARILY GIVE THE SKIN A YELLOW/GREEN COLOR. N NO HARMFUL EFFECTS EXPECTED. NO HARMFUL EFFECTS EXPECTED. NO HARMFUL EFFECTS EXPECTED. NO HARMFUL EFFECTS EXPECTED. URINE MAX HAVE A SLIGHT YELLOW/GREEN TINT UNTIL ALL DYE IS FLUSHED FROM THE SYSTEM. OSURE . NO HARMFUL EFFECTS EXPECTED. NO HARMFUL EFFECTS EXPECTED. NO HARMFUL EFFECTS EXPECTED. NO HARMFUL EFFECTS EXPECTED. NO HARMFUL EFFECTS EXPECTED. NOT APPLICABLE NONE KNOWN
TERATOGENICITY MUTAGENICITY TOXICOLOGICALLY SYNE	NONE KNOWN NONE KNOWN

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										· ·
	PROTECTI	VE EQ	UIP	ME	NT	2				*****
	VES	• • •	٠	٠	•	٠	٠	•	٠	RUBBER
										USE DUST MASK IF NECESSARY TO PREVENT INHALATION OF DUSTS.
CLO	THING .									PROTECTIVE CLOTHING WHERE SKIN CONTACT IS UNAVOIDABLE.
OTH	ER • • •	• • •	٠	٠	6	4	٠	٠	٠	HAVE ACCESS TO AN EMERGENCY EYEWASH.
ENGINEER	ING CONTR	ols .	٠	4	٠	6	•	٠	۵	SUFFICIENT TO PREVENT INHALATION OF DUSTS.
SPILL OF	LEAK RES	PONSE	•	٠	٠	٠	٠	•	•	SWEEP UP SPILLED MATERIAL AND DISCARD INTO PROPER WASTE CONTAINER. PROVIDE ADEQUATE VENTILATION DURING CLEAN UP. WEI PROPER RESPIRATORY PROTECTION.
WASTE DI	SPOSAL .	• • •	•	•	٠	٠	•	٠	ł	DISPOSE OF WASTE IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS.
HANDLING	<b>PROCEDUR</b>	ES AN	DI	EQU	IP	ME	ent	•	é	NO SPECIAL REQUIREMENTS.
STORAGE	REQUIREME	NTS .	٠	٠	٠	٨	6	•	۵	NOT APPLICABLE
SHIPPING	INFORMAT	NON .	٠	۵	•	٠	٠	٠	٠	NOT APPLICABLE
مغ هه بي مه مه بي الله الله الله	بت من هد ها الله الله الله عنه الله م	به سه منه منه خان ه	د هنه شه ه	1	a a a a	s ini si	<u>د د م</u>	£ 14 4	-	www.www.www.www.www.www.www.www.www.ww
					ΪÌ	ŔŚ	ŠŤ	A	ĽĎ	MEASURES
	ID EMERGEN E CONTACT							•	•	FLUSH EYES THOROUGHLY WITH LOW PRESSURE WATER. GET MEDICAL ATTENTION IF IRRITATION RESULTS.
SK	IN CONTACT	r	•	٠	٠	۵	٠	•	Ð	WASH SKIN THOROUGHLY WITH SOAP AND WATER.
IN	HALATION		•	٨	٠	•		•	٨	NO HARMFUL EFFECTS EXPECTED.
										DRINK PLENTY OF WATER. SEEK MEDICAL ATTENTION IF LARGE AMOUN
	e s									WERE INGESTED OR IF NAUSEA OCCUR
	ب جد جد شد نشا نشا شد جد جد ب				-		ہ جے ش		فعد هد:	یں جب ہے جب سے سے میں جن آپ جب جب جب میں دی کہ کہ کہ کہ کہ کہ دی سے میں جب میں جب بتر اپنے اپنے جب خب

All information, recommendations, and suggestions appearing herein concerning this product are based upon data obtained from the manufacturer and/or recognized technical sources; however, Formulabs, Incorporated makes no warranty, representation or guarantee as to the accuracy, sufficiency or completeness of the material set forth herein. It is the user's responsibility to determine the safety, toxicity and suitability of his own use, handling, and disposal of the product. Additional product literature may be available upon request. Since actual use by others is beyond our control, no warranty, express or

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## MATERIAL SAFETY DATA SHEET YELLOW/GREEN DYE TABLET PAGE 4 OF 4

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implied, is made by Formulabs, Incorporated as to the effects of such use, the results to be obtained or the safety and toxicity of the product, nor does Formulabs, Incorporated assume any liability arising out of use by others of the product referred to herein. The data in the MSDS relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

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	LND	OF	MATERIAL	SAFETY	DATA	SHEET	
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# MATERIAL SAFETY DATA SHEET

U. S. DEPARTMENT OF LABOR "ESSENTIALLY SIMILAR " TO FORM LSB-005-4

	SECTION I		
MANUFACTURERIS NA	Continental Products of	lexas	EMERGENCY TELEPHONE NO. (915) 337-4681
ADDRESS	Box 3627 - Odessa, Texas 79	760	
CHEMICAL NAME	Zine Organie Phosphonates		BYNONYME Antipol 662
CHEMICAL FAMILY	Metal Organic Fo	RMULA	$Z_{n_X} C_X H_X (PO_4)_X$

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POTENTIALI	_Ү Т	OXIC ING	REDIENTS			R	TLV (UNITS
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	•	•	•••••	t lug-li	· ·	•	•

SEC	TION III PI	HYSICAL DATA	• • •
BOILING POINT (97.)	None	SPECIFIC GRAVITY (H20=1)	No
VAPOR PRESSURE (MM HG.)	None	PERCENT VOLATILE By VOLUME (%)	No
VAPOR DENSITY (AIR =1)	None	EVAPORATION RATE	No.
SOLUBILITY IN WATER	100		
APPEARANCE AND ODON White Powde	F		•

SECTION IV FIR	E AND EX	PLOSION HAZARD DA	<b>T</b> A		
FLASH POINT (METHOD USED)	None	PLAMMABLE LIMITS	-	LEL	UEL
EXTINGUISHING MEDIA	None	•	•		•
SPECIAL FIRE FIGHTING PROCEDURES	None		۰.		
					-

UNUSUAL FIRE AND EXPLOSION HAZARDS None

	5	ECTION M	HEAL	TH HAZARD	DATA		
HRESHOLD LIM						<u>.</u>	
PRECTS OF OVE	·	Nlana				· · · ·	
		None		• •	• 		
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	FIRST AID PRO	CEDURES	None	· · · · · · · · · · · · · · · · · · ·		·	
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	<b>i</b> .	· · ·	- <u>.</u>	<u> </u>		· · ·	*: **
•		SECTION	VI RE	ACTIVITY DA	TA		
STABILITY	UNSTABLE	C C	ONDITIO	NS TO AVOID	······································		
	STABLE	X	• •		·		
NCOMPATABILI	TY (MATERIALS	TO AVOID)		•	•		
HAZARDOUS DEC	OMPOSITION PRO	DUCTS		· · · · · · · · · · · · · · · · · · ·			
	MAY OCC	UR	·	CONDITIONS	TO AVOID		
HAZARDOUS POLYMERIZATIO	N WILL NO	FIUDDO TO	T x				
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······································	SECT	ION VIL SF	PILL O	R LEAK PRC	CEDURES	••	• • • • • • • •
STEPS TO BE TA	KEN IN CASE MA	والمحي بالبجى والتوريف الكرزان المتع				<u></u>	•••
	None			<u> </u>	· · · ·	• • • •	موجد م ۲۸۰ م معرف
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WASTE DISPOSA	METHOD	•	• ••	<u>.</u>		an e e e	· .
WASTE DISPOSA						• 	
· .	<b>Regular</b> V	Vaste	·				
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				ROTECTION I	NFORMATI	ON	
PESPIRATORY PR				ROTECTION I	NFORMATI		11.20 (1.20) 11.10 (1.20)
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·	SECTION	ST		4.1.1.	74	• * * *	
PROTECTIVE GLC	SECTION NOTECTION (SPEC LOCAL EXHAUS MECHANICAL	ST		4.1.1.	SPECIAL OTHER		
VENTILATION	SECTION NOTECTION (SPEC LOCAL EXHAU MECHANICAL DVES NO	CIPY TYDE) St (General)		EYE PROTECT	SPECIAL OTHER	• • • • • • • •	
PROTECTIVE GLO	SECTION NOTECTION (SPEC LOCAL EXHAU MECHANICAL DVES NO	CIPY TYDE) St (General)		EYE PROTECT	SPECIAL OTHER		
PROTECTIVE GLO	SECTION NOTECTION (SPEC LOCAL EXHAU MECHANICAL DVES NO VE EQUIPMENT	(GENERAL)	CIAL Pr	EYE PROTECT	SPECIAL OTHER		
VENTILATION PROTECTIVE GLC	SECTION NOTECTION (SPEC LOCAL EXHAU MECHANICAL DVES NO VE EQUIPMENT	(GENERAL) Dust R ECTION IX	espirato	EYE PROTECT	SPECIAL OTHER		
PROTECTIVE GLO	SECTION NOTECTION (SPEC LOCAL EXHAU MECHANICAL DVES NO VE EQUIPMENT	(GENERAL) Dust R ECTION IX	espirato	EYE PROTECT	SPECIAL OTHER		
VENTILATION PROTECTIVE GLC OTHER PROTECTI	SECTION DOTECTION (SPEC LOCAL EXHAU MECHANICAL DVES NO VE EQUIPMENT SI DE TAKEN IN HA	(GENERAL) Dust R ECTION IX	espirato	EYE PROTECT	SPECIAL OTHER		
VENTILATION PROTECTIVE GLC	SECTION DOTECTION (SPEC LOCAL EXHAU MECHANICAL DVES NO VE EQUIPMENT SI D BE TAKEN IN HA	(GENERAL) Dust R ECTION IX	espirato	EYE PROTECT	SPECIAL OTHER		
VENTILATION PROTECTIVE GLC OTHER PROTECTI	SECTION NOTECTION (SPEC LOCAL EXHAU MECHANICAL NECHANICAL NECHANICAL NECHANICAL SI SE TAKEN IN HA	CIPY TYPE) ST (GENERAL) DUST R ECTION IX ANDLING AND	espirato	EYE PROTECT	SPECIAL OTHER		
VENTILATION PROTECTIVE GLC OTHER PROTECTI	SECTION NOTECTION (SPEC LOCAL EXHAU MECHANICAL NECHANICAL NECHANICAL NECHANICAL SI SE TAKEN IN HA	(GENERAL) Dust R ECTION IX	espirato	EYE PROTECT	SPECIAL OTHER ION Safe	ty Glasses	
VENTILATION PROTECTIVE GLC DTHER PROTECTI	SECTION NOTECTION (SPEC LOCAL EXHAUS MECHANICAL OVES NO VE EQUIPMENT SI DE TAKEN IN HA	CIPY TYPE) ST (GENERAL) DUST R ECTION IX ANDLING AND	espirato	EYE PROTECT	SPECIAL OTHER ION Safe		
VENTILATION PROTECTIVE GLC DTHER PROTECTI RECAUTIONS TO HER PRECAUTI	SECTION NOTECTION (SPEC LOCAL EXHAUS MECHANICAL OVES NO VE EQUIPMENT SI DE TAKEN IN HA	CIPY TYPE) ST (GENERAL) DUST R ECTION IX ANDLING AND	espirato	EYE PROTECT	SPECIAL OTHER ION Safet TIONS	ty Glasses	exas

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APPENDIX C FROPOSED SOIL REMEDIATION SITE PROCEDURES

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## Procedures for Operation of the SRS

- 1.) Soil containing hydrocarbons is generated and transported to the SRS. All sources of soils to be disposed of at the SRS must be approved by Compliance Engineering.
- 2.) Identify the cell and area within the cell where the activity will take place.
- 3.) Begin the site documentation, using the Soil Remediation Site Form.
- 4.) Perform the desired activity as follows:

Dumping--Soil is to be deposited on fresh ground. As the cell is filled, the occupied area shall be roped off or marked by some other approved means.

Spreading--Spread soil in a 6-inch layer on fresh ground.

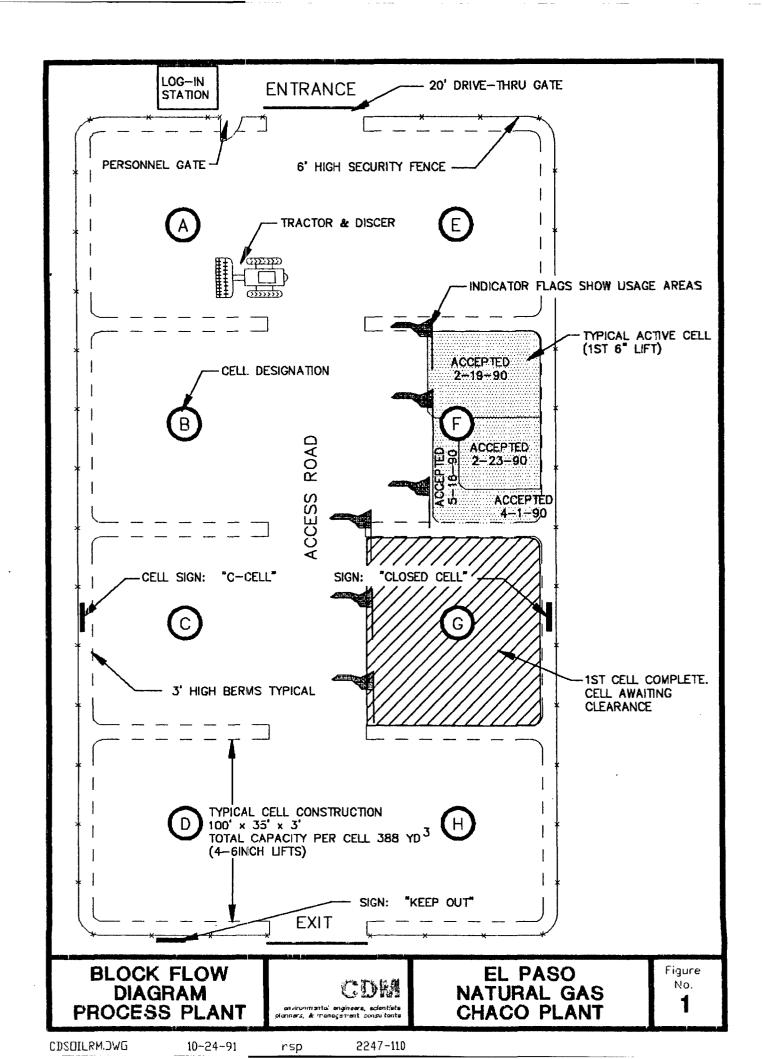
Discing--Soil is to be disced a minimum of twice a month, not to exceed 20 days from the previous discing.

Close--When the Administrator deems that a cell is full, it will be closed to further dumping. Compliance Engineering will be notified and will coordinate the sampling.

Sampling--Sampling is to occur after a cell has been deemed full and therefore closed. Sampling protocol will be according to the attached sampling plan.

Open--A cell will be reopened only after sample results have been received, evaluated, and approved by Compliance Engineering.

- 5.) Each cell will have a sign indicating its status (i.e. open, closed, etc.). In addition, the area within the cell will be marked to identify areas already occupied by contaminated soil.
- 6.) The SRS forms for each cell will be maintained on site. The forms will be forwarded to Compliance Engineering at the time of cell closure or the end of every month, whichever is sooner.
- 7.) The facility shall be audited by EPNG's Environmental Affairs department or an authorized representative.
- 8.) The SRS will have an administrator assigned to the facility. The administrator will be responsible for monitoring all of the activities listed in Item 4 and will be the main contact with Compliance Engineering.



## SOIL REMEDIATION SITE FORM

## **GENERAL INFORMATION**

DATE OF ACTIVITY_____

TIME OF ACTIVITY_____

PLACE OF ACTIVITY - CELL #:_____

ACTIVITY: DUMP - SPREAD - DISC - SAMPLE - CLOSE - OPEN

(circle)

**ACTIVITY PERFORMED BY:** 

NAME

DEPT

COMPANY

DESCRIPTION OF THE SOURCE OF THE SOIL:

LOCATION OF THE SOURCE OF THE SOIL:

AREA:_____

PIPELINE DISTRICT/PLANT:_____

WELL SITE/AREA WITHIN PLANT:_____

GEOGRAPHIC LOCATION:____SEC.___T.___R.

APPROXIMATE AMOUNT OF SOIL DISPOSED:_____yd³

WHERE WITHIN THE CELL THE SOIL WAS DUMPED: NW SW NE SE

WORK ORDER NUMBER:_____

# 

# SAMPLE NUMBER_____

DESCRIPTION OF SAMPLING EFFORT:

SITE MAP: IDENTIFY THE AREA WITHIN THE CELL WHERE THE ACTIVITY TOOK PLACE BY SHADING IN A DEFINED SPACE.

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CELL #:_____

Drawn to Scale: 1" = 10' (example)