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May 6, 1986

THE U.S. NUCLEAR REGULATORY COMMISSION
Before the Administrative Judge

In the Matter of	)	
	)	
TOLEDO EDISON COMPANY, et al.	)	Docket No. 50-346-ML
	)	
(Davis-Besse Nuclear Power Station, Unit No. 1)	)	

SERVED MAY 13 1986

PETITIONERS (SAVE OUR STATE FROM RADIOACTIVE WASTES, THE CONSUMERS LEAGUE OF OHIO, ARNOLD GLEISSER, AND GENEVIEVE S. COOK) FOR LEAVE TO INTERVENE IN THE DAVIS-BESSE SITE-DISPOSAL ISSUE RESPOND TO TOLEDO EDISON'S OPPOSING STATEMENTS.

Petitioners (Save Our State from Radioactive Wastes, The Consumers League of Ohio, Arnold Gleisser, and Genevieve S. Cook) for leave to intervene in the Davis-Besse radioactive sludge-resin site-disposal issue and the Adjudication Hearing, copies of which were filed with The Nuclear Regulatory Commission (NRC) on April 11, 1986, respond to Licensees' opposition to their being permitted to intervene in the hearing. Petitioners submit that they be granted leave to intervene in the hearing. Petitioners further submit that NRC authorization for site disposal of Davis-Besse sludge-resin waste be rescinded.

D503

MEMORANDUM--INTERVENOR

Additional facts on Petitioners' eligibility to intervene

A. Petitioner Save Our State from Radioactive Waste of 5005 S. Barton Rd., Lyndhurst, Ohio-44124 (Phone: 216-291-1385) has been active across the state of Ohio for 10 years. The SOS leader in the Toledo area is SOS member Mike Ferner, whose residence is 2975- 113 th St., Toledo, Ohio-43611 (Phone: 419-729-7273). He has been a Toledo resident for 15 years and is employed there. All SOS members live close to Lake Erie, drink its water, and eat the fish it provides and have been doing so for years.

B. Consumers League of Ohio (CLO) whose address is 1365 Ontario Ave. # 317, Cleveland, Ohio-44114 (Phone: 216-621-1175) has been an ongoing Ohio group for over 20 years. The President of the League is Dr. Clinton Warne, Professor of Economics at Cleveland State University. Executive Secretary for many years is Mrs. Dorothy Austin. One active member in the Davis-Besse area is Mrs. Sarah V. Williams, whose address is 3405 N.E. Catawba Rd., Port Clinton, Ohio-43452 (Phone: 419-797-4913). Mrs. Williams owns property right on the Lake Erie shore within 10 miles east of the Davis-Besse facility and is an officer in a local residents organization.

C. Genevieve S. Cook is a retired high school teacher whose residence is 25296 Hall Dr., Cleveland, Ohio--44145 (Phone: 216-777-2548). She has lived all her life within a mile or two of Lake Erie, drunk its water, and eaten its fish. Cleveland-44145 is a far west suburb of Cleveland named Westlake. Her residence, which she owns, is just 1-1/2 miles from the Lorain County line, which puts her within 60 miles of the Davis-Besse facility. She has been an active member of both SOS and CLO. She also attended the original Davis-Besse construction license and environmental hearings.

Lake Erie has probably been Ohio's greatest natural resource and at the same time one of the state's biggest problems. Citizen concern for its protection, its cleanup, the preservation of its resources, and the property protection from its damages--all have been ongoing for the past 25 years. Parties to this concern have been the International Joint Commission (IJC) with Canada and the many League of Women Voters Committees on the Lake Erie Basin across northern Ohio. State agencies such as the Dept. of Natural Resources and Ohio Environmental Protection Agency have been actively involved. The Ohio legislature has passed innumerable bills protective of our Lake Erie environment.

Recently the Governors of the 7 Great Lakes states have organized and meet regularly on their mutual Great Lakes problems. Also the recent Ohio State petition to intervene on the Davis-Besse site waste disposal and prepared for Governor Celeste by the office of Attorney General Anthony J. Celebrezze Jr. displayed a much appreciated response to the concerns of hundreds of Ohio people over the protection of our state and its citizens.

SOS is a coalition of citizens groups across northern Ohio, which numbers over 150 member workers. Arnold Gleisser has been its director and organizer of its programs.

PETITIONERS' RESPONSE TO LICENSEE'S STATEMENTS CRITICAL OF THEIR CONTENTIONS

CONTENTION-1 or Mr. David Lewis

A. If Mr. Jay Silberg had read more carefully, he would have realized that this contention was not about the siting of the Davis-Besse plant in 1971. It is a review of site issues which are definitely pertinent to TEC'S present plan to bury sludge-resin rad-waste on site. These issues were not resolved by the addition of a cooling tower to Licensee's original Davis-Besse construction plans. Even a suggestion of site disposal in 1971 would have created an uproar.

All present media articles concerning TEC'S on-site disposal plan refer to the Navarre Marsh as being nearby or next to the site. Actually both the Davis-Besse nuclear facility and its proposed disposal area are on the Navarre Marsh, with drainage into both the Toussaint River and Lake Erie. Lake Erie is a source of drinking water for a few million people as well as a food source.

B&D. The Navarre Marsh is still part of an International Bird-Flyway and National Wildlife Sanctuary. In the NRC Davis-Besse Final Environmental Statement (FES of OCT.-1975--op) NUREG-75/097 Docket No.50-346 page12-7 (12.3.16 Land Use (INT, A-13) you will find this statement:

> "The applicant has indicated a commitment for the preservation of the marshes on site. The possibility of providing a public recreation area has not been discussed and the staff concludes that recreation is not part of the marsh preservation plan."

This statement was published just 1-1/2 years before Licensee applied for ALW authority for Davis-Besse Units II & III--hardly a sudden decision. In fact, the Licensee's plan was for 5 reactors on the site, which was carefully never made public. The 700 acres of marsh preserve are now down to 400. And the issue now is on-site waste disposal.

The CAPCO utilities had actually planned 18 reactors for Lake Erie shores. With the 4 Fermi reactors in Michigan and the 5 planned by Ohio Power for Sandusky Bay at Vickery, the total along Lake Erie would have been 27. INCREDIBLY UNREALISTIC!! These plans were revealed to the public only 1 or 2 at a time. There were 8 planned for Perry. Now they say,"Believe us. Site disposal is safe." Ohio Power Siting Commission has knowledge of these plans.

This same FES has information on bird species (p.6-7 Table 6.3), monitoring (p.6-9 to 6-12 Table 6.4 & 6.5), data on fish impact (p.12-14 12.3 12.3.1--5), and number and types of fish (A-3). Summary and conclusions were at the beginning. Most concern was for bird impact against the cooling tower and fish impingement losses on the water intake screens. Small fish went through and got battered.

More up to date information can be found in the State of Ohio Petition to Intervene--p.4-8 (Wetlands, birds, fish.) Disposal site flooding would cause extensive off-site radiation contamination and chemicals (p.9-10) Docket No. 50-346-ML ASLBP No.86-525-01-ML.

CONTENTIONS- 2 & 3

The above State of Ohio Petition contains an excellent description of what Ohio means by flood plain area and of the ravages of the 1972 storm over a whole area, including the Davis-Besse site flooding (p.20-23) and the destruction of 300 ft. of dike at the Toussaint Wildlife Area 3-1/2 miles upstream from Davis-Besse.

The two breaks in the Davis-Besse dikes were discussed in the ongoing hearings at the time. TEC promised to make the dikes stronger and higher. Today, however, after 13 years of pounding waves, they are somewhat battered and deteriorated.

With Lake Erie water levels at unprecedented heights today, Ohio Governor Celeste has recently declared the western end of Lake Erie to be a disaster area. With beaches and cliffs swept away, residential houses undermined and lost into the lake, people are getting help --state and federal-- in shoring up their cliffs to prevent further damage and loss of land and homes. Enclosed are some articles on the problem.

People who live in Washington and who have never experienced any really severe great lakes storms and battering waves should not be making decisions from a distance concerning Lake Erie shores. They should come up to northern Ohio and look. It is inconceivable that NRC staff would knowingly authorize a radioactive sludge-resin shallow burial on a marsh in flood plain area.

CONTENTION 4 & 5

This has to do with radiation in the environment and food chain--inevitable with this type of site disposal. See State of Ohio intervention Petition (p.12-16) on site geology, on groundwater, soil permeability, and movement of leachate from the disposal site to areas beyond site boundaries as it would occur at Davis-Besse.

Petitioners have arranged for two hearing witnesses for the hearing on radiation hazards in the environment and their human impact. We will need to accommodate them timewise.

CONTENTION-10

Information on TEC's original plans for handling Davis-Besse's rad-wastes through packaging and shipping off-site can be found in the following:

a. Davis-Besse Nuclear Power Station--Final Safety Analysis Report--Volume VI p.11-166 through 11-174

b. Davis-Besse Nuclear Power Station--Final Environmental Statement--construction 1973--Docket No. 50-346 p.5-26 &27

For your convenience Petitioner is enclosing copies of those pages.

CONTENTION-11

The 3 licensed rad-waste landfills Petitioner listed are the only ones within TEC's 300 mile plan limit. With these shut down and full, TEC would have to ship much further. Some were sent to Barnwell, N.C. These more distant licensed landfills--only 3--are now nearly full.

Petitioner is enclosing a news clipping which states that the original idea for Davis-Besse site disposal of these low level wastes came from the NRC initially. Petitioner wondered if the impending shortage of licensed low-level landfills coupled with increasing amounts of this waste from 25 additional U.S. reactors now on line, might have impelled the NRC to use this quiet oblique method of establishing such a landfill at Davis-Besse site. Also, if the 3 closed landfills had radiation migrating off-site (at Maxi Flats a mile away), there is an implication that the same thing could happen at a Davis-Besse site disposal. Considering the nature of the Davis-Besse site, it would be inevitable.

CONTENTION-16

If the NRC were successful in establishing a site-disposal at Davis-Besse without too much public uproar, what would prevent a similar procedure at the Perry facility?

CONTENTION-14 & 15

We question whether the NRC in authorizing the Davis-Besse settling ponds, as part of a site disposal plan, used a legal procedure. There was no public notice beyond the Federal Register, no hearings. Most people, including those living nearby, were astonished to learn the settling basins were on site and in use.

CONTENTION-15

This contention assumes that with the Davis-Besse's unfortunate experiences with the Babcock-Wilcox design problems and with its own operating deficiencies, it would be inevitable that the sludge-resin wastes in a site burial would at times contain higher levels of radiation than normally expected.

TEC recognizes this in the July 14, 1983 letter to Mr. Stolz, Director of Nuclear Regulation for NRC. (Docket No.50-346) (License No.-NPF-3) (Serial No.972) p.8 under the heading: Environmental Dose Assessment

Quote:

"With the planned retention of the dredged basin bottoms on the Davis-Besse site (ie., no off-site disposal), actual doses to any member of the public, if any, will be exceedingly small. However, to assure a negligible potential impact in the unlikely event of an accidental release or disposal off-site, release scenarios, environmental transport, and maximum individual exposures have been conservatively evaluated."

CONCLUSION

Petitioners have attempted to clarify their standing eligibility as participants in the hearing on the Davis-Besse sludge-resin site burial issue. Petitioners have also expanded coverage of their contentions and have enclosed relevant additional supporting material. Therefore Petitioners submit that they be permitted to intervene in the hearing on the Davis-Besse site disposal issue. Petitioners also submit that Mr. Jay Silberg's reading be less superficial.

or

Mr. David Lewis

Respectfully submitted,

Genevieve S. Cook

Genevieve S. Cook
on behalf of Petitioners
Save Our State from Radioactive Wastes
Consumers League of Ohio
Arnold Gleisser
Genevieve S. Cook

Dated: May 6, 1986

U.S. NUCLEAR REGULATORY COMMISSION
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CERTIFICATE OF SERVICE

I hereby certify that the foregoing is a true copy of the response of Petitioners (Save Our State from Radioactive Wastes, The Consumers League of Onio, Arnold Gleisser, and Genevieve S. Cook) to the Toledo Edison's request that they be denied Leave to Intervene in the Davis-Besse Sludge-Resin Issue and for Adjudication and that copies of the response were sent by me via U.S. Mail, postage prepaid, to the following on this 7th day of May, 1986.

Genevieve S. Cook

Genevieve S. Cook 25290 Hall Dr.
Cleveland, Ohio 44145
Phone: 216-777-2548
For the Intervenors

Helen F. Hoyt, Esquire
Administrative Judge
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

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Mr. Jay E. Silberg
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1800 M Street, N. W.
Washington, D.C. 20036

Genevieve S. Cook

Final

environmental statement

related to construction of

DAVIS-BESSE NUCLEAR POWER STATION

TOLEDO EDISON COMPANY AND
CLEVELAND ELECTRIC ILLUMINATING COMPANY

DOCKET NO. 50-346

March 1973

UNITED STATES ATOMIC ENERGY COMMISSION

DIRECTORATE OF LICENSING

Final

environmental statement

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DAVIS-BESSE NUCLEAR POWER STATION

TOLEDO EDISON COMPANY AND
CLEVELAND ELECTRIC ILLUMINATING COMPANY

DOCKET NO. 50-346

March 1973

UNITED STATES ATOMIC ENERGY COMMISSION
DIRECTORATE OF LICENSING

Irradiated Fuel

Based on actual radiation levels associated with shipments of irradiated fuel elements, we estimate the radiation level at 3 feet from the rail car will be about 25 mrem/hr.

Train brakemen might spend a few minutes in the vicinity of the car at an average distance of 3 feet, for an average exposure of about 0.5 millirem per shipment. With 10 different brakemen involved along the route, the annual cumulative dose for 6 shipments during the year is estimated to be about 0.03 man-rem.

A member of the general public who spends 3 minutes at an average distance of 3 feet from the rail car, might receive a dose of as much as 1.3 mrem. If 10 persons were so exposed per shipment, the annual cumulative dose would be about 0.08 man-rem. Approximately 210,000 persons who reside along the 700-mile route over which the irradiated fuel is transported might receive an annual cumulative dose of about 0.04 man-rem. The regulatory radiation level limit of 10 mrem/hr at a distance of 6 feet from the vehicle was used to calculate the integrated dose to persons in an area between 100 feet and 1/2 mile on both sides of the shipping route. It was assumed that the shipment would travel 200 miles per day and the population density would average 330 persons per square mile along the route.

The amount of heat released to the air from each cask will be about 250,000 Btu/hr. For comparison, 115,000 Btu/hr is about equal to the heat output from the furnace in an average size home. Although the temperature of the air which contacts the loaded cask may be increased a few degrees, because the amount of heat is small and is being released over the entire transportation route, no appreciable thermal effects on the environment will result.

Solid Radioactive Wastes

Under normal conditions, the average radiation dose to the individual truck driver is estimated to be about 10 mrem per shipment. If the same driver were to drive 15 truckloads in a year, he could receive an estimated dose of about 150 mrem during the year. The annual cumulative dose to all drivers for 9 shipments during the year, assuming 2 drivers per vehicle, would be about 0.2 man-rem.

A member of the general public who spends 3 minutes at an average distance of 3 feet from the truck might receive a dose of as much as 1.3

mrem. If 10 persons were so exposed per shipment, the annual cumulative dose would be about 0.1 man-rem. Approximately 90,000 persons who reside along the 300-mile route over which the solid radioactive waste is transported might receive an annual cumulative dose of about 0.02 man-rem. These doses were calculated for persons in an area between 100 feet and 1/2 mile on either side of the shipping route, assuming 330 persons per square mile, 10 mrem/hr at 6 feet from the vehicle, and the shipment traveling 200 miles per day.

MISSISSIPPI
NUCLEAR POWER
STATION
FINAL SAFETY
ANALYSIS REPORT

11.5.3.1.5 Lead Shields and Radwaste Liners

Radwaste and solidification agents are collected inside cylindrical lead shields which are fitted with disposable 50 ft^3 liners, shown in Figure 11-11. Two radiation detectors mounted on the surface of the lead cask measure activity levels during the fill operation. Readouts are provided on the control panel and wired so that if desired radiation levels are exceeded, the system will shut down. Each liner is fitted with 3 quick release, high pressure (4000 psi) couplings that mate with those on the flexible lines that extend from the process module. Each is a positive lock type identical to those used throughout the aerospace industry. When disconnected, each fitting seal provides a dripless disconnect.

11.5.3.1.6 Service Hoist

The system utilizes a one-ton capacity crane, wall-mounted, with a 10 foot boom complete with fittings and tie rods. The hoist has a capacity of one ton with a 15 foot lift at 8 ft/min. This service hoist facilitates the capping of the lead shield during the fill operation.

11.5.3.1.7 Solid Waste Baler

The baler is a standard compactor used to compress solid waste, such as rags, paper, clothing, bottles, etc., into 55-gallon drums for storage until removed for disposal at an off-site location. The compaction ratio for loose rags is approximately 5 to 1.

11.5.3.2 System Capability

The waste solidification system is capable of handling all of the solid waste estimated to be produced during station operation (see Table 11-54). The resins and evaporator bottoms are processed and collected in casks with disposable liners having a capacity of 50 ft^3. It is estimated that the station will fill 50 to 120 of these liners each year (the larger figure takes into account the processing of all condensate polishing demineralizer backwash wastes). This results in the shipment of an average of 1 - 3 casks per week. The station has on hand three 2-inch lead casks and one 4-inch lead cask. Additional casks are available on a short notice basis. The disposable liners are purchased as needed with a supply of about 2 normally kept on hand.

The solid waste baler is capable of compacting the estimated 5,000 ft^3 of compressible solid waste (paper, clothing, etc.) which is produced each year. This amounts to the filling of about 140 55-gallon drums or an average of almost 3 drums per week. The baler operates with a 30 second compression stroke.

The solid waste handling area has shielded storage space for a number of 55-gallon drums and up to 5 full casks.

The waste solidification system is designed to process radwaste at a rate of up to 6 casks in an 8 hour period. The time required for the radwaste-solidification agent mixture to solidify is controlled by a catalyst and will normally be within a few minutes. The actual processing rate is about 10 gpm.

11.5.3.3 System Operation

11.5.3.3.1 General

In general, the system contains a number of pumps which bring together the radwaste with the liquid solidification agent. These are then mixed and passed on to a disposable liner where a catalyst is introduced. Solidification into the solid matrix takes only a few minutes. Both evaporator bottoms and Powdex-type slurries can be handled in this manner.

Spent resin beads are pumped into the liners where a filter and dewatering pump are used to draw off the excess water. At this point, evaporator bottoms mixed with solidification agent are added and mixed by means of a disposable blade. A cylindrical depression in the floor by the processing module contains a sump pump to facilitate cleanup of spills as well as normal cleanup.

Once packaged, the liners and/or shields can be removed to the loading area for offsite shipment. This general system explanation is amplified in the following subsections.

11.5.3.3.2 Procedures

All horizontal movement of the casks in both the storage and process area is through the use of an air pallet, which is described in 11.5.3.1.4 above. It is used in place of a conveyor system. When it has been deemed necessary to drum evaporator wastes or spent resins, the appropriate tank and shield assembly is moved from a holding or storage area to the filling station. Since radiation levels for the spent resins differ from those anticipated from the waste evaporator concentrates, a variation in lead shielding is required. This necessitates the need for a lead shielded transportation cask for evaporator wastes and a considerably thicker one for spent resin. Common thickness is possible with a central filtration basket for beads.

Once the shield/tank assembly has been moved to the filling area, a shield cap is removed with the use of a one-ton hoist. Removal of this cover provides access to the top of the disposable 50 ft^3 tank and the various connecting devices. The flexible fill lines are attached to the quick disconnects of the liner.

Each tank is fitted with three quick release couplings that mate with those on the hoses. Each is a positive lock type identical to those used throughout the aerospace industry. When disconnected, each fitting seal provides a dripless disconnect. At this point, the liners are coupled to the solidification system and ready for filling.

The resins and evaporator bottoms are recirculated through lines on their respective tanks. This causes the resin to form a homogeneous slurry moving at a high relative velocity through the lines, thus preventing resin bead settling. It also maintains the evaporator bottoms in a homogeneous state.

As shown in Figure 11-4, Flow Schematic, metering pumps in the process module apportion the proper amounts of radwaste liquids and slurries with solidification agent and catalyst.

The total solidification process is manipulated directly from the control panel. Here the operator can select which process he desires. A selector switch allows the operator a choice of five processes and a flush cycle. They are:

1. Fill Only
   Radwaste is pumped into the liner until it is full.

2. Fill and Solidify
   Radwaste is mixed with solidification agent in the in-line mixer, pumped in and mixed with catalyst in the liner until it is full.

3. Fill and De-water
   Slurry is pumped into the liner, and water is drawn out progressively until the liner is full of essentially "dry" waste.

4. Fill, De-water, and Solidify
   Resin slurry is pumped into the liner, and water is drawn out progressively until the liner is about 90% full of essentially "dry" resin. Solidification agent and evaporator bottoms (or water) are blended in the inline mixer, pumped in and mixed into the resin in the liner with the liner mixer. Catalyst is introduced, mixed in with the liner mixer, and solidification takes place.

5. Coat
   Solidification agent and catalyst are pumped in and mixed in the liner.

6. Flush
   Water is pumped thru the radwaste pump and hose. (no liner installed).

The five solidification and packaging processes and the "flush" process are controlled by a selector switch. For any of those processes, the selector switch must be rotated to the process desired, and the start button depressed. When a particular process is completed, the selector switch may be rotated to the next process and the start button pressed, again, if desired. The flush process is included to provide a means of flushing solidification agent from the piping prior to the installation

of a new waste liner; for this process only, the start button must be held in the depressed position.

Radiation levels can be monitored during the fill process to ensure that United States Department of Transportation limits of 200 mrem/hr at the surface of the truck and 10 mrem/hr 6 feet from the truck are not exceeded.

The evaporator bottoms are introduced into the system by way of a three-way valve located on the suction of the radwaste pump. The other leg of the three-way valve provides a water flush. This guarantees complete system flushing with no trapped space between valves and fittings. Flush water can be introduced adjacent to the three-way valve for backflushing materials to holding tanks.

Once the operator has selected the solidification of evaporator bottoms as the desired process, the start button is depressed. This opens the three-way valve, starts the radwaste, solidification agent, and catalyst pumps and inline mixer. The material proceeds to the liner for solidification. All proportioning is done with positive displacement pumps to ensure that the correct ratio of materials is used at all times.

Upon reaching the high level probe, the three-way valve rotates to flush for 15 seconds and the system shuts down automatically. At this point the disposable liner is full and solidified and can be disconnected for removal to the offsite shipping areas.

Resin slurry is introduced into the tank through the three-way valve.

Resin slurries are pumped directly into the liner utilizing existing resin pumps and controls. Once introduced into the liner, excess water is removed through a filter located at the bottom of the liner by means of a de-watering pump.

The system provides for the solidification of de-watered resin material. By filling the voids between the resin beads with an evaporator concentrate and solidification agent solution, two things are accomplished:

a) Resins are solidified
b) Additional evaporator concentrates can be processed and disposed of

At this point the process outlined above (for evaporator bottoms) is repeated. In this manner, a solution of evaporator bottoms, solidification agent, and catalyst can be pumped into the bead voids where they are mixed and allowed to solidify.

The correct selection of heater elements in the motor starter allow an automatic shutoff for overtorque when the mixing material begins to stiffen and solidify.

At this point the lead cap can be positioned on the cask and bolted in place. It is then ready for relocation via air pallet to the loading dock.

Powdex slurry is introduced in the same manner as evaporator bottoms, and its solidification process is identical.

11.5.3.3.3 Safety Features

The system is equipped with proof-of-flow circuits to monitor the flow of critical liquids such as radwaste, solidification agent, and catalyst. These circuits give a visual indication of either proper or improper flow in any of the monitored lines. If the correct fluid flow does not exist within a predetermined amount of time, the system will shut down.

The quick disconnect fittings used on the disposable liners will normally allow no drippage. However, if a small amount of drippage should occur, it will be collected in a small recess surrounding the fitting, where it can be easily swabbed up with absorbent cloth or paper.

When highly radioactive spent resin beads are processed into the disposable liner, they pass into a central filtration basket. This basket retains all of the beads in the center of the liner, thus taking advantage of the self-shielding properties of the remaining material to reduce the dose rate external to the liner and shield. If necessary, this procedure can also be adapted for use in disposing of the more severely contaminated used filter cartridges.

Solid state circuits monitor the various liquid levels throughout the system and produce alarms on the control console for abnormal conditions.

No decontamination station is required. The system is designed so that the control panel controls the functions of de-watering and solidification automatically without operator attendance at the process module. Inherent in all aspects of the design is the minimization of personnel exposure to radiation.

The pumps used to meter the liquids are capable of safe, continuous operation without suffering damage under normal conditions.

Large particles, up to 0.2" in maximum diameter size can be pumped continuously through the pumps. The butyl rubber stator liner is designed for working temperatures of 210 F in the presence of chemical oxidizing agents; therefore, the hot evaporator bottoms should not affect this material which, if necessary, can be replaced easily.

Static controls are employed whenever possible to ensure fast, reliable decisions without the use of moving parts.

In summary, the system functional and safety design ensures.

a. A high degree of reliability and safety
b. Fast operation
c. Long life
d. Resistance to dirty or corrosive environment

11.5.3.4 Previous Experience

A system similar to this one is in use at Nuclear Engineering Company and has been used successfully to process over 100,000 gallons of radioactive liquid waste. Other similar systems are being supplied to Three Mile Island Nuclear Power Station and Trojan Nuclear Power Station. In addition, the transportation shields and disposable liners are being utilized by Palisades Nuclear Power Station. The air pallet has been successfully utilized by the Boeing Corporation to rotate 747 jet airplanes for gyro and compass alignment.

11.5.4 EXPECTED VOLUMES

Table 11-55 lists estimates of the quantities of solid waste that are to be shipped from the station each year. These values were derived using the input quantities given in Table 11-54 and the following assumptions:

a. Spent Bead Resins:

The gross displacement volume of de-watered resin beads consists of a minimum of about 35% voids. When resins are solidified, these vacant spaces between beads are filled with a mixture of evaporator bottoms and solidification agent. The composition of the final mixture is 1 part solidification agent (by volume) to 3 parts radwaste (resins plus bottoms). This procedure results in no increase in the gross displacement volume of the resins.

b. Powdex Resins:

The approximate volume ratio of resins to solidification agent is 3:1.

c. Evaporator Bottoms:

The approximate volume ratio of bottoms to solidification agent is 3:1. As noted in (a), some of the bottoms are used to solidify the spent bead resins.

d. Filter Cartridges:

Each filter cartridge is disposed of in an individual 55-gallon drum. This effectively amounts to about 7.36 ft^3 of solid waste per cartridge.

e. Miscellaneous Paper, Clothing, etc.:

Compressible wastes of this type are assumed to have their volume reduced by a factor of 5 in the baler.

As no decay is assumed, the total isotopic curie content of the solid wastes shipped from the site is the same as that listed in Table 11-54.

11.5.5 PACKAGING

11.5.5.1 Shielded Cask with Disposable Liner

Solidifiable waste, such as resin slurries and evaporator bottoms, are fed into a lead shield (cask) which contains a disposable 50 ft^3 liner. Spent filter cartridges can also be put into this type of container. If they are, they will be kept toward the center of the vessel to take advantage of the shielding afforded by the other waste. The cask, with its family of disposable liners, is shown in Figure 11-11. Once the liner is full and the solidification process is complete, the cask is transferred to a storage bin where it is kept until ready for offsite shipment and processing. The radioactivity concentration of the solidified waste and the thickness of the lead shield are selected so as not to exceed the maximum allowable surface radiation levels prescribed by the Department of Transportation.

When the quantity of waste to be solidified is especially larger or especially radioactive, it is possible to forego the use of casks and liners and pump the material instead directly into a shielded tank truck. See Subsections 11.5.3.1.2 and 11.5.3.3.2.

11.5.5.2 Shielded 55-Gallon Drum

If spent filter cartridges are not disposed of in the cask and liner just described, they will be stored and shipped in shielded 55-gallon drums. These are standard drums which have pre-cast concrete liners. This lining will be about 2" thick on the sides, about 5" thick in the bottom and open at the top. A concrete plug about 5" thick, is provided to cap the liner after it has been filled.

Portable shielding will be used as needed to prevent the surface radiation levels from exceeding the limits prescribed by the Department of Transportation. In general, because filters are normally changed before large amounts of radioactivity have built up, extensive external shielding should not be needed.

11.5.5.3 55-Gallon Drum (unshielded):

Solid wastes such as paper, rags, clothing, etc. are collected and compacted into 55-gallon drums using a solid waste baler. The compaction ratio is approximately 5 cubic feet of loose rags to each cubic foot of compacted rags. Since most waste of this type is usually only slightly contaminated, it is not expected that the drums will contain excessive amounts of radioactivity when completely full of compacted material. Once filled, the drums are stored in a shielded portion of the drumming area until ready for offsite shipment and disposal.

11.5.6 STORAGE FACILITIES

The location of the solid waste handling area is shown on Figure 1-5. As described in 11.5.3.1.4, solidified wastes are transported in a lined lead cask through the use of an air pallet to the loading area. Compacted wastes are transported from drain storage area to the truck loading area using the air pallet.

Storage facilities for solid radwaste include a drum storage area and stalls for up to five casks of solidified waste. Although compacted and solidified wastes are expected to be stored onsite prior to shipment, radioactive decay realized by such storage is not taken into account when filling the respective solid waste containers. That is, once filled, any container can normally be shipped immediately without exceeding Department of Transportation radiation limits.

Some wastes, such as spent resins, will be stored in separate tanks prior to the solidification process. Spent resin will normally be stored in the spent resin storage tank for a period of from 1 to 6 months to allow for radioactive decay. Evaporator bottoms from the waste evaporator are normally collected in the evaporator storage tank prior to solidification.

11.5.7 SHIPMENT

All solid radwastes from shipped from the site in Department of Transportation approved containers by Department of Transportation approved carriers. The containers are transported from the fill area or the storage area to the loading area using an air pallet. Personnel shields are provided for movement of the 50 ft^3 casks within the solid waste area. In the loading area, the casks are lifted by a crane onto a truck. Additional shielding, if required, is placed around the cask once it is secured on the truck, and it is then taken to an approved disposal site. Compacted wastes, in 55-gallon drums, are also loaded onto a truck through the use of a crane or hydraulic lift, if available.

Once the casks, or drums, are loaded and secured on the trucks, radiation readings are taken to ensure that Department of Transportation limits are

not exceeded. Surface contamination readings are also taken to ensure no leakage of radioactive contents from the containers has occurred during handling.

Figures 1-5 shows the loading area for trucks. Trucks are not normally stored onsite for the shipment of solid radwastes. The trucks are supplied by the licensed carrier.

Empty casks are stored either in storage stalls (as is the case for full or partially full casks), or in an empty cask storage area. Drums are stored in an empty drum storage area.

Delays pile up for cleanup of Great Lakes

By PETER GELLER
STAFF WRITER

Although concerned officials, scientists and environmentalists are encouraged that planning to rid the Great Lakes of toxic pollutants has finally begun, many ask why it has taken more than a decade to start.

The eight Great Lakes states and Ontario, prodded by the International Joint Commission (IJC), which oversees water quality in the Great Lakes, have begun preparing plans to clean toxic contaminants from the most polluted rivers, bays and other tributaries to the Great Lakes. In Ohio, initial planning has focused on the Maumee, Black, Cuyahoga and Ashtabula rivers.

"We could have developed the beginnings of plans 10 years ago," said David Rathke, an Ohio State University researcher and chairman of the IJC's Lake Erie Task Force. "Toxics have not been a high priority."

John Hartig, an IJC spokesman, said, "For the last eight years, we've seen no progress."

But observers also say the emphasis given initially to some other pollution issues was legitimate.

"Any environmental program deals with gross problems first," said Peter Wise, executive director of the federal Great Lakes National Program Office.

In the late 1960s and early 1970s, the obvious, immediate problem affecting the lower lakes — particularly Lake Erie — was phosphorus, in large part from sewage treatment plants.

In 1972, a federal construction grants program was set up to make billions of dollars available for building and upgrading those plants. Of a projected $7 billion needed for treatment facilities, Ohio received about $2.5 billion.

In addition, the federal Clean Water Act provided for control of industrial discharges — another significant source of phosphorus — into lakes and streams.

The combination of improved sewage treatment and permit programs for industrial discharges made a major dent in the problem, although phosphorus from less controllable sources continues to enter Lake Erie.

As a result of those measures, said Julie Letterhos, the Ohio Environmental Protection Agency official coordinating cleanup plans for Ohio, the lake's walleye fishery rebounded impressively, and fishermen and other lake users got the sense that water quality problems were being defeated.

But unlike oil spills, eroded sediments, urban debris and "blooms" of algae from excessive phosphorus, toxic chemicals do not necessarily leave the water visibly marred.

'It's readily apparent there's a problem out here, and not readily apparent that people are doing anything about it.'

— Andrew Turner, chief of the state EPA's Division of Water Pollution Control

In some river areas near the lake, fish that had been severely affected by phosphorus began to reappear, but contaminated bottom sediments drove them out again, said Letterhos.

Traditional control strategies did not fully succeed because they failed to account for most toxic chemicals (discharge standards have yet to be implemented for the vast majority) and for pollution whose origin could not be pinpointed.

With the realization that conventional controls were helping but not eliminating pollution came awareness that solutions for the more complex and subtle problems were nowhere at hand.

"There was not an environmental science of toxic pollutants to draw on," explained Larry Fink, a U.S. EPA official. "New analytic methods, sampling techniques, highly sophisticated mathematical models, some basic scientific underpinnings like the behavior of toxic pollutants — all these had to grow from the ground up."

Because of this gap, Letterhos said, "nobody really knew how to approach the problems."

But now, said Fink, "we've gotten to the point and beyond the point of gathering that background information," especially for what have been identified as "critical pollutants" demanding immediate attention.

Hartig said scientists still do not know enough about many toxic chemicals, but research conducted by states working to develop cleanup plans could fill gaps sufficiently to allow planning to go forward.

The failure to begin remedial planning sooner cannot be chalked up entirely to the need to solve other problems first and to develop methods of working with toxic substances. Most observers also cite economic resistance, lack of political will, and plain inertia.

"A lot of people were generous with verbal support and not so generous with money," said Andrew Turner, chief of the state EPA's Division of Water Pollution Control.

Cutbacks in state funding, combined with level federal support whose value was whittled by inflation, cost the division 15 to 20 staff positions per year for about four years in the early 1980s, Turner said.

"We didn't do a good enough selling job (to the state) a few years ago," he said. "The problem is we have limited (staff) to work in the toxics program. If we had had more staff three to five years ago, we would have been much further along.

"The toxics program is three people — nowhere near the staff that the program needs," he added.

Other lake states, such as Michigan and New York, have programs that have long been better staffed and funded.

Turner said he was confident that the Ohio EPA would show increasing interest in cleanups, but convincing the legislature toxic pollution is a major priority that merits substantially more funding could be difficult. "When you talk about megabucks, people want to know they are very certain about what the problems and needs are," he said.

The catch is that greater precision is unavailable without dollars to support additional research.

Another reason for the long delay in planning seems to be simple bureaucratic inertia.

For example, all the lake states except Ohio issue advisories on eating some of the fish caught in lake waters. While toxics tend to concentrate less in Lake Erie's fish than in those of the other lakes, state and federal officials agreed unanimously that the state's failure to issue warnings was a serious omission.

Ohio has not provided funds, staff, or equipment to conduct the necessary sampling.

Part of the reason, said Turner, is that the authority to issue advisories is spread among three state agencies — the EPA, the Health Department, and the Department of Natural Resources. None of these departments has taken the initiative to serve as the lead agency and coordinate a monitoring program, he said.

On the positive side, increasing public awareness and concern have played a major role in stirring the governments and their regulatory agencies into action.

Disastrous examples of toxic contamination, such as Love Canal in Niagara Falls, N.Y., and dioxin-laden Times Beach, Mo., began to raise public consciousness in the late 1970s. The Superfund program was set up in 1980 to deal with such major pollution problems.

Attention to toxics has not flagged, and at this point both the government and the public are showing considerable interest in toxic pollution, said David Miller, executive director of Great Lakes United, an umbrella organization with 170 member groups.

As far as the lakes are concerned, said Turner, "It's readily apparent there's a problem out here, and not readily apparent that people are doing anything about it."

The failure of Superfund to make a significant dent on toxic contamination during its first five years has put added pressure on government to discharge its environmental responsibilities, said Miller, and this includes cleaning and protecting the Great Lakes.

Environmental spokesmen repeatedly hold up such public involvement as the best — perhaps the only — hope for a successful cleanup effort. Officials and environmentalists alike remind that pressures exerted by citizens on elected representatives and public agencies set political priorities, create the public agenda, and generate the will to accomplish goals.

Without public awareness and the political will that flows from it, they say, there is little chance of producing the enormous revenues and sustained effort the cleanup program will demand.

Shore dwellers aim to turn back Great Lakes' tide

PD p. 25
5/4/86

By RICHARD ELLERS
STAFF WRITER

LA SALLE, MICH.

Watching Lake Erie waves crash against the sea wall 35 feet from their home in this Toledo suburb, Sandy and Cliff Sasfy talked about a growing movement to get Canada and the United States to lower water levels in the Great Lakes.

The Sasfys are the leaders of a coalition formed two months ago by 24 Great Lakes citizen groups that want lake levels lowered to put an end to devastating flooding and erosion.

The Sasfys' crusade began when they formed a citizen group, the West Shore Coalition, on their personal day of infamy, Palm Sunday 1985.

That was the day when "Nor-Easter" winds blew tons of water over their seawall and into their lakefront home.

"I kept the pumps going and Sandy kept the phone going," Cliff recalled.

Sandy added, "I decided we'd had enough, we had to start getting help. I called the governor and every other official I could think of. And I called the neighbors and they agreed we had to organize."

The Sasfys' anger was underscored by the throbbing of the sump pump they have installed *outdoors* to move flood waters from their yard back over the sea wall and into Lake Erie.

The Sasfys said they and thousands of other lake-shore residents were angry that, despite available technology, nothing had been done to significantly slow the rise of Great Lakes' water levels.

The result is, they said, that all of the Greats Lakes today are at record levels after increases for most of the past 14 years.

Charles Ed Herdendorf, an Ohio State University expert on the Great Lakes, said the waters were at their highest point in 126 years, since record-keeping began in 1860. Since 1972, when the first flooding struck, lake levels have risen every year but two, he said.

During spring and fall storms, when high waters are piled even higher by booming winds, Lake Erie erupts with huge waves that flood lowlands and gobble tons of highland shoreland.

The Sasfys said coalition members were angry that the two governments had done nothing to stem flooding because a 1983 report recommended against trying to lower the lake levels.

That report came from the International Joint Commission, a board that advises the U.S. and Canadian governments on management of the Great Lakes and on other cross-border issues.

'If the controls were installed tomorrow, it would take a year or two before water levels would begin to be affected. . . . Unless there is an abrupt change in the weather, the lake levels and the flood damages are going to keep rising.'

The report was based on a study made by a joint commission committee with representatives of agencies from both countries. That study considered but rejected several possibilities for relief, including widening and deepening the Niagara River and lowering the outlet of Lake Ontario into the St. Lawrence River to drastically increase the flow of water from Lake Erie through Lake Ontario and the St. Lawrence.

That would lower the level of Lake Erie, which in turn would permit releases from the other Great Lakes.

An official with the Army Corps of Engineers, which participated in the International Joint Commission study, said the commission ruled against the control proposals because the study estimated that reducing lake levels would have saved less than $60 million in flood damage. That is in comparison to $132 million in reduced profits from shipping and hydroelectric generation, said William P. Erdle, water control chief for the corps at Buffalo.

But the Sasfys contend the joint commission study grossly underestimated the losses from flooding and erosion. They said that, according to published figures, storms last December alone cost the Great Lakes states and Ontario a reported $1 billion in flood and erosion damages.

And millions of dollars is being spent on flood control, they noted.

"Toledo just spent three years and $13 million for a dike around Point Pleasant (the city's northeast peninsula)," she explained.

David Young, design engineer for Toledo, said that the $13 million, 70% of which was federal funding, built a 4.2-mile dike and a series of pumping stations to move flood waters over the dike into the lake.

In a study in the late 1970s, Herdendorf found that high-water damage to Ohio public and private property on Lake Erie from 1972 through 1976 totaled $64.6 million in flooding and erosion damage.

See LAKES, PAGE 2B-A

Lakes

FROM PAGE 25-A

Added to that, he said, was $38.3 million spent for public and private flood protection and erosion control.

Ohio Department of Natural Resources officials said $13 million in local, state and federal funds had been spent on 20 major recreation-related flood and erosion control projects along the shore from Toledo to Conneaut.

The projects included $4.5 million spent this year for shore protection at Maumee Bay State Park, $2.5 million in 1977 for breakwater protection of Lakeview Park in Lorain, and $1.3 million for building a dike in Ashtabula in 1978.

The goal of Sasfy's group is to get the United States and Canada to agree, through the International Joint Commission, to both immediate and long-range changes in management of the Great Lakes to stop and eventually reverse the flooding.

As a long-range change, the coalition wants the Niagara River widened and Lake Ontario deepened to greatly increase the flow of water out of Lake Erie.

Cliff Sasfy said that, for interim relief, the coalition says that Canada should reduce the amount of water diverted into the Great Lakes from the Hudson Bay basin, while the United States should increase the water diverted from the Great Lakes basin into the Mississippi River basin.

Sally Spiers, special assistant to U.S. members of the joint commission, said the two governments were considering whether to ask for a new Great Lakes study.

Spiers said the joint commission cannot take an official stand on any subject not specifically referred to it. But, she added, commissioners in both countries are consulting informally with the governments, and have unofficially said they felt another study was worthwhile.

The original study covered up to the year 1976, she said, but adding the past 10 years "would mean that the whole cost and benefit analysis would come out differently."

Spiers said there was no timetable for the proposed study, but she said the joint commission "recognizes the problem is urgent."

The Sasfys said they continually warned their fellow sufferers that the Great Lakes flood troubles were going to get a lot worse before they got better.

"Even if everything would go our way, which it won't, we're talking two or three years before we would see any improvement. If the controls were installed tomorrow, it would take a year or two before water levels would begin to be affected, and many more years before there would be any significant relief," Cliff said.

"The interim things would help, but unless there is an abrupt change in the weather, the lake levels and the flood damages are going to keep rising."

The overwhelming cause of the water levels is that, according to National Weather Service, rain and snow over the Great Lakes basin has been two to three times higher than normal for most of the past 15 years.

The Sasfys said that although weather was the key contributor to the Great Lakes high-water problem, thousands of lake-shore homeowners in both countries were erroneously convinced the lake waters were being kept high for the benefit of commercial shipping on the lakes, and for hydroelectric generating plants on the Niagara River. He said his research convinced him that improvements made years ago to keep the lakes at minimum levels to benefit shipping and hydroelectric operations did contribute to the flood, but only minimally.

The Sasfys said that even though the shipping/hydro legend was false, the issue hurt their cause by leading citizens to the false belief that the situation was either easily correctable or utterly hopeless.

Some people are certain that the corps of engineers has some cure-all gate it could open to flush the excess water, they said. Conversely, others think that shipping and hydro interests are so powerful that the governments will refuse to do anything about the problem.

Both beliefs are wrong, they said.

PD/RICHARD ELLERS

Put-in-Bay Mayor Steve Urge checks on island cottage that had to be raised and moved sideways to save it from the ravages of high Lake Erie waves.

High water could erode tourist trade

In Ottawa County, Dale Burris, a township trustee for the Bass Islands, says if Lake Erie gets much higher, South Bass Island will become four islands instead of one.

"That's no joke," he said. "We have the lake reaching across the low places to meet itself during storms now, cutting off sections of the island days at a time. If the lake gets much higher, the cutoffs will be permanent."

Burris said flood and erosion damages were running higher than the islands' small permanent populations could afford, yet the Army Corps of Engineers had rejected partial federal funding for several township proposals for projects to halt high-water damage.

Put-in-Bay Mayor Steve Urge said rising waters threatened tourism, which, directly and indirectly, provides 90% of the islanders' income.

Several summer cottages have been abandoned after they were surrounded by high water, and the shoreline shrinks every year as pounding waves erode the bluffs.

On a tour of the islands, Burris pointed out a long line of huge junked metal boxes that owners had stacked at the edge of the bluff a year ago to stop erosion.

But the erosion continued, so much so that a year later, the gap between last year's boxes and the new edge of the bluff is eight to 10 feet wide. The owners are stacking carcasses of junked automobiles into the gap in a new attempt to save the land.

Lake level brings us 'disaster' designation

By DEBBIE COURTRIGHT
C-T Staff Writer

Lorain and Cuyahoga counties are among the eight counties along Lake Erie threatened which have been declared eligible for $754,000 in aid from the state for high water damage which is expected this spring.

Gov. Richard Celeste Wednesday declared that "an imminent threat of flooding and impending disaster" exists here and in Lucas, Ottawa, Sandusky, Erie, Lake and Ashtabula counties.

CELESTE'S proclamation allows county governments to apply through his office for state funds to protect people and property in emergencies related to the high lake levels.

The lake is expected to set a new record this year for high water and spring storms are feared by officials for their potential to increase damage which already is widespread because of [illegible].

Lorain County Commissioner Herbert [illegible] this morning said commissioners today intend to approve the pouring of 61 cubic yards of concrete on the east side of the Erie Avenue bridge in Lorain.

The county engineer is concerned the water will get into the bridge machinery and short out the electrical equipment that raises and lowers the bridge, he said.

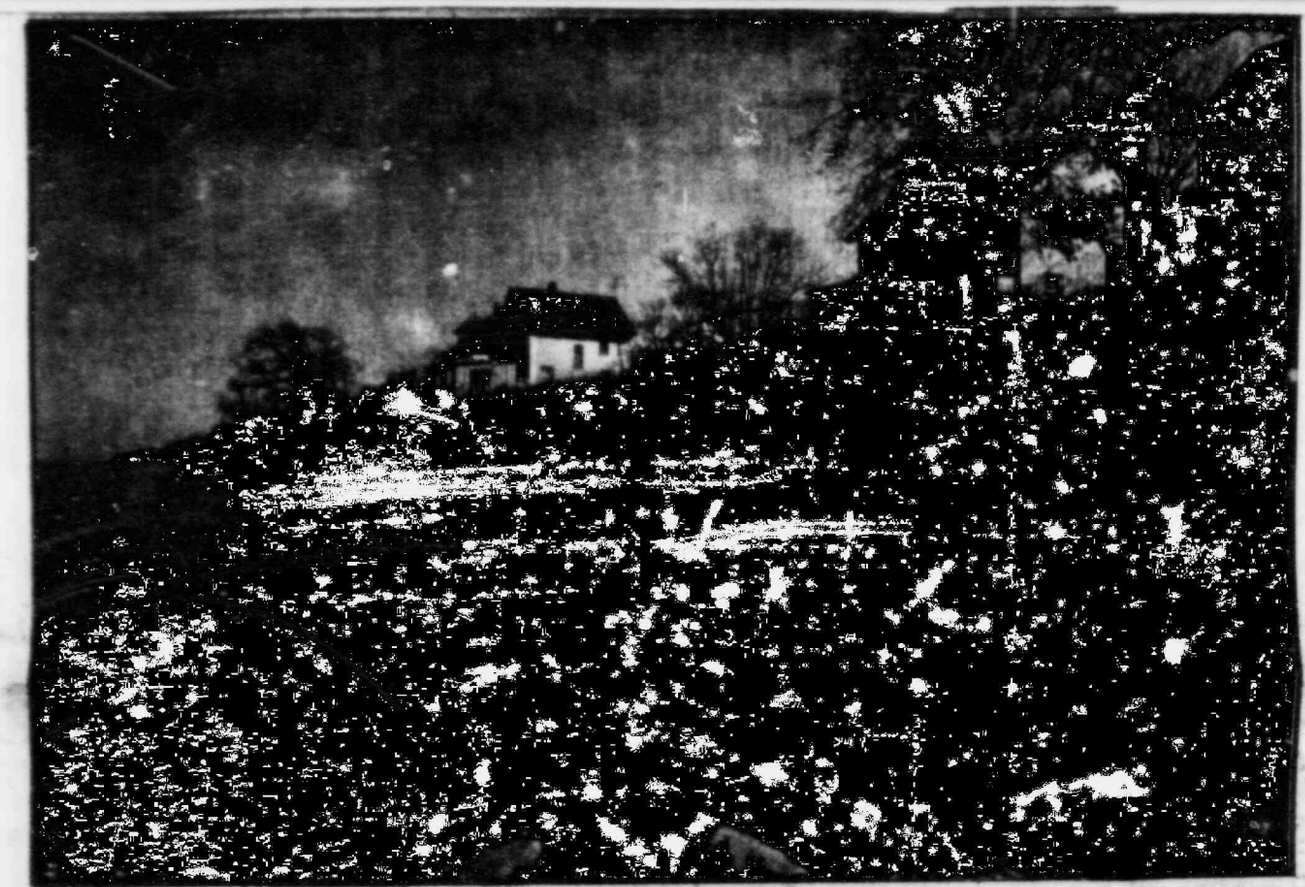
Cost of the concrete is estimated to be $4,600. "We're going to see if the state will fund some of that. We'll see if we qualify," Jacoby said.

Lorain Port Authority Executive Director John Sulpizio said he believes the aid will be directed at private propery owners who are facing severe erosion problems as the waves wash away their land along the shore.

Sulpizio said the high waters are also limiting dock operations at area marinas, including Beaver Creek in Lorain.

SOME MARINAS that don't have floating docks are in trouble because the water has risen above their docks, he said.

Commercial shipping prob[illegible] not be affected



Stones, Rocks. Debris of all kinds have been tossed into the battle against erosion along Lakeside Avenue in Lorain. Without retaining walls and breakwalls, though, residents wonder if it will do any good. (C-T photo by Gene Krebs)

Living on the lake: The agony & the ecstacy

By KATHY WILHELM
C-T Staff Writer

SHEFFIELD LAKE — Herbert and Constance Bickers, 315 Harris Road in Sheffield Lake, live on a half acre of land right on the edge of swelling Lake Erie.

Their three-bedroom ranch has lost the protection of two different retaining walls built over the years to resist the lake's pounding force.

"We are not going to put in another one," said Bickers. It just costs too much, he said.

SPENDING MONEY — a lot Mrs. Bickers said, is that the lake eats at the land only in summer. Winter snow storms cause just as much damage; the weather churns the water and ice hammers at the land.

"We saw four-ton tiles go into the lake one winter and lost two of our trees," said Mrs. Bickers.

The first retaining wall on the Bickers' property was constructed of cement and built before the couple moved into the home 26 years ago.

"That wall was lost in the big storm in 1972," said Mrs. Bickers. "We've lost land consistently to the lake for the last 26 years," said her husband.

On C-1: Breakwalls seem to be the best way to battle the insatiable lake — if you can afford them.

constructed of three-foot-square wire baskets filled with stone. But the strong wave action "shifted the rocks and sawed through the wire," said Bickers.

DESPITE their fear that this summer's expected record high water will cause even more of their land to wash away, the Bickers plan to stay.

"The view of the lake is priceless. We love looking at (it) of their home and contents.

Other shore property owners also have the coverage but they, too, hedge their bets with retaining walls.

Realtor Tom Jordan owns one and one-half acres of land and businesses along the lake. Jordan's Boat Rental, a real estate office and apartment buildings. His son Tom Jr. 28, operates the boat rental once owned by his grandfather.

"I put $1,000 or better into the repair and maintenance of my retaining wall during the summer," said Jordan Sr. "I put money into (protecting my property) every year. I expect [illegible]he cost of being

n't know any way to hold back the lake, he put in a 215-foot retaining wall in 1974 by his apartments. "I did it myself after the plans and designs were approved by the Army Corps of Engineers," he said.

The wall is 4 ft. wide by 4 ft. high and made of solid concrete and reinforced rods.

Jordan Sr., who was a member of the committee instrumental in obtaining federal flood insurance, said he wouldn't think of moving, either.

"I like it here. (Repairs and retaining walls) are all part of the expense of living on the lake," he said.

Living on the lake: The agony & ecstacy

FROM PAGE A-1

communities to have it.

"This type of insurance was never available before because no one looked at the lake as being a flood," said Jordan Sr. Now, the insurance is available to Lorain, Avon lake and other communities.

"I don't think all of the people, who don't live on the lake, should pay for those who do," said Jordan Sr.

But he said there were other ideas that might help save lake property. Making low-interest-rate loans easily available to residents along the lake would be one such step, and a big one, he explained.

AFTER THE BIG storm of 1972 federal money was available to property owners along the lake because the area was declared a disaster area.

But according to Tom Jordan Jr., "there was a mile of red tape."

"It was a good deal, but the papers that had to be filled out could fill a book," said Jordan Jr.

More technology in providing plans for construction of better retaining walls and methods to control the lake level are areas Jordan Sr. also would like studied.

"Canada and the United States are trying to control the lake level. I can't believe anyone would want to raise it,"he said.

Although high water caused flooding in his house on the lake, Jordan Jr. said he feels the high water "keeps the lake a lot cleaner.

"It's good for the fish circulation and the boats get in and out a lot easier," he said.

FRIDAY: The Army Corps of Engineers has been sounding an alarm on high lake levels, but is almost powerless in trying to stem the erosion tide.

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A HUNGRY Lake Erie laps at the shore below Cashelmara condominiums in Bay Village despite the stone and concrete debris which litters the shoreline. (C-T photo by Gavin Smith)

Breakwall-sheltered OK

High lake levels: Some shore up, some move

By LINN GROSSMAN
C-T Staff Writer

LORAIN — Homeowners hiding behind well-sunk breakwalls are unconcerned about the record-high lake levels expected this year.

The rest have plenty to worry about.

But one resident whose yard has been ravaged by Lake Erie has a solution to his eroding back yard — he's moving.

"Sometimes we worry because on real stormy nights the water comes up and crashes against the house," said David R. Zeiter, 735 Lakeside Avenue.

Zeiter says he had more than 13 feet of back yard when he moved into his ranch home two years ago. Now, there's about eight feet left, and he's planning to move by the end of the summer.

Zeiter is just one of the many residents living along the Lake Erie shoreline who may be facing serious problems later this year if predictions of record-setting lake levels hold true.

ZEITER HAS tried to stem the flow by packing fill dirt in along the edge of the lake but it just washes away.

"It's washing all the land away. It's almost up to the house," he said. "There's nothing I can do about it because I can't afford a breakwall."

He suggested the city install a breakwall to help protect property along Lakeside Avenue, but officials say the city can't afford one either.

"We cannot do that. First of all, for financial reasons," said Service Director Richard Koba.

HE SAID the U.S. Army Corps of Engineers has jurisdiction over structures built in Lake Erie and it's up to the property owner to seek a permit.

But the cost of building a breakwall can exceed the value of the property, said John Derbyshire, Corps public relations officer.

Breakwalls are about the most expensive thing we build, he said.

Construction costs can range from $150 to $1,000 a foot, depending on factors such as the slope of the lake bottom, depth of the water and wave action at the site.

"YOU WON'T get anything cheaper that $150 a foot. If you do, chances are it won't work," said Denton Clark Jr., chief coastal engineer for the Corps.

But even a properly installed breakwall won't help if your neighbors don't install one, too.

Stanley Supeck, who has lived at 661 Lakeside for 30 years, installed a wall five years ago to help protect his property.

"It's like a breakwall. It's helped some," he says. But one neighboring property owner doesn't have any shore protection and the water just flows around the wall.

THIS YEAR, Supeck is concerned with the water level being so high.

"But what can I do about it?" he asked.

In neighborhoods where all the property owners have breakwalls, residents don't seem to be havig much trouble with erosion.

Benjamin Norton, 3535 E. Erie Ave., says he's lived on the lake for 10 years and this is the highest he's ever seen the water level. He and all his neighbors have retaining walls. So far, erosion has been no problem.

WEST SIDE residents don't seem to be having too much trouble either because most of their property is protected by breakwalls.

Nancy Rohner, 2116 Harbor View Road, says she lost about 10 feet of her back yard to the lake in a big storm several years ago, but was able to get federal assistance to install a breakwall afterward.

"I'm pretty well protected and I have a lot of land, so I'm not too worried," she says.

A number of her neighbors installed steel pilings and filled them in with rocks. She chose to use huge sandstones that serve as a breakwall. Those measures should help them weather whatever may come this year, she said.

According to a department spokesman, Rev. Young said he did not want to stop the truck because he thought it might stall and told his two daughters to jump out of the truck as it slowly crept along in the lot.

Rachel's sister, Caroline, 12, got out of the truck without incident, but Rachel was injured when she fell down after jumping out and was struck by the right rear wheel.

Hearing date set for stabbing suspect

LORAIN — The 21-year-old Delaware Avenue man accused of stabbing two teenagers Tuesday, will have a preliminary hearing May 2 before Municipal Court Judge Paul Timko.

James P. Horinek, of 446 Delaware Ave., pleaded not guilty to two counts of felonious assault at his arraignment Wednesday. He was released after posting bond of $6,000 on each count.

Horinek allegedly stabbed Greg Massey, 18, of 2251 Crehore St., Lorain, and Jim Williams, 19, of 2633 Reid Ave., Lorain, during a fight in the parking lot at Clearview High School Tuesday afternoon.

Both Massey and Williams were listed in fair condition today at St. Joseph Hospital. Massey was stabbed in the stomach, while Williams was stabbed in the side of the neck and thigh.

Lorain, Ohio p. 13

AREA AND STATE

JOURNAL/TODD MCINTURF

RICHARD SCHECK, of Sandusky, drives down Anderson Street, where high lake waters make it difficult for people to get around.

Eating land and memories

Residents group to battle Erie's rising waters

By Ellen Zimmerli
And Michael W. Sheehy
Journal Staff Writers

Dan Shepherd and Walter Stashick live 40 miles apart, yet they both are battling a common enemy: the menacing waters of Lake Erie.

Shepherd's house stands along Anderson Street in Sandusky, in a sleepy waterfront neighborhood just a few yards from Sandusky Bay. High water has encroached upon the area, causing some residents to flee their homes and others to raise the levels of their houses.

Stashick of Lorain has lived along the lake for more than 40 years. Over the decades, he has watched 20 feet of the back yard of his Lakeside Avenue home disappear because of erosion.

"They can put men on the moon, but they can't lower the lake a few inches," he says matter-of-factly.

Like a bathtub on the brink of overflowing, Lake Erie is projected to reach a record high level of 573.62 feet this year. Thousands of people who live along the lake's shoreline are now feeling the effects of the water level and wondering what the future holds.

Experts say the problem is going to get worse before it gets better. Some of the residents have resigned themselves to the prospect of disastrous floods and the never-ending encroachment of their land. But others have banded together and have decided to fight.

Shoreline areas along the lake's western basin are bracing for flooding that will occur when the dreaded northeast winds push the water away from Buffalo and toward Toledo. This phenomenon, known as "seiche," has been known to result in a 16-foot differential between water levels at one end of the lake and the other.

Some communities, including Put-in-Bay on South Bass Island, have already declared themselves disaster areas in anticipation of the flooding. Sandbags are being stockpiled and residents are familiarizing themselves with evacuation procedures.

Meanwhile, shoreline residents of the eastern communities are continuing the constant battle with erosion by building breakwalls and constructing dikes. At the same time, they consider themselves lucky that no major storms have hit the area this year and are hoping their luck holds out.

Shepherd moved to Sandusky's Anderson Street in 1977 because he owned a boat and wanted to live near the water. As it turned out, he's getting more water than he bargained for.

Anderson Street residents who live on the block closest to the bay virtually need wading boots to get to their homes. "The water is in the street all the time except when the wind is coming from the south," he noted.

"When there is no wind at all, water sits in the street six or eightinches. If it blows a little out of the north, it goes up," Shepherd said.

Describing it as "a hell of a storm," high water on March 4 of last year forced the Shepherds to flee their home. They weren't able to move back in until the middle of June.

"Last year, I had water in the house 10 times," Shepherd said. Finally he decided that enough was enough, and in October he had the house raised by three feet.

Shepherd views the situation philosophically, going so far as to even describe it as "an adventure."

"I'm not mad at anybody," he said. "It was my own fault. I wanted to live by my boat."

High water is not only plaguing residents but also local businesses. The Showboat Restaurant in Huron is one such place. It sits precariously close to the water, with Lake Erie on one side and the Huron River on the other.

"Eighty-five to 90 percent of the time I have water in the parking lot," said the restaurant's owner, Jake Claus.

Water usually only affects the perimeter of the lot, he said, but [illegible] 40 percent is covered when strong winds are blowing from the north. In such

heightened and that Showboat employees often have to shovel driftwood and other debris from the lot. On three recent occasions, he said, snow removal people were summoned to plow high water debris from the parking lot.

"It really hasn't so far hurt business," Claus said. "It's just the extended cost of trying to maintain the parking lot."

Claus doesn't think that anybody can work miracles with the lake level. "I don't think the (U.S. Army) Corps of Engineers can lower it two feet," he said, "but I think they can do something to lower it four, five or six inches."

Stashick said he believes the water is being kept high by the Corps of Engineers for shipping interests and hydroelectric power, a view shared by many of the shoreline residents.

But Tony Eberhardt, acting chief of the Corps' Water Control Division, said the levels are a phenomenon of nature and that it would take three to five years to construct any measures that could lower the lake.

"It is due to the excess precipitation that has prevailed since 1967," Eberhardt said. "We try to understand what the problem is and advise people on the situation so they can prepare for it."

Some of those suggestions include having the residents go to their local governments for help or building a temporary structure, such as a breakwall. A 1981 study revealed that more drastic measures — such as dredging the St. Lawrence Seaway and building structures in the river — would lower the lake about one foot after three years of operation. But Eberhardt said the costs of construction combined with the resulting loss of navigation were too great.

"Until we receive some direction from some higher authority, we have no control over what comes into the lake and what goes out," Eberhardt said.

Working in cooperation with the corps is the Ohio Department of Natural Resources. There is not much the department can do to affect the lake level, but it is involved in dike-building projects to help prevent flooding in certain vulnerable areas.

"The corps has identified several communities where projects are cost effective to construct," said Richard Bartz, the department's special assistant for Lake Erie. Three of the projects are slated for Erie County: at Bay View, Crystal Rock and White's Landing. The other two are in Lake and Sandusky counties.

Close to $825,000 is being spent on these "advance measures" projects, Bartz said, with the federal government picking up 70 percent of the cost. The state and local governments pay the remaining 30 percent.

"There might be four or five additional sites eligible for projects" because of the rising lake levels, he said.

In addition to the flood prevention projects, the department is also assisting local authorities in preparing for any disaster that may occur. Bartz said that people in Erie and Ottawa counties, in particular, "have done a lot to make sure they are prepared."

And last week, Gov. Richard Celeste declared that "an immunent threat of flooding and impending disaster" exists in eight Ohio counties. The declaration applies to Erie, Lorain, Cuyahoga, Lake, Ashtabula, Sandusky, Ottawa and Lucas counties. The governor's proclamation allows the counties to apply through his office for state help to protect people and property in emergencies related to the high lake levels.

Joseph Phillips, chairman of the Lorain Shore Erosion Subcommittee, said present lake levels have caused destruction and that "it would just be an inconceivable, tremendous amount of destruction with a storm."

With peak lake levels expected to occur in May, many residents may notice a difference in the amount of beach at a number of local parks.

Steve Coles, chief of park planning with Cleveland Metroparks, said there are areas of Huntington Beach in Bay Village which no longer have any sand. He said people may remember in the 1960s, when the same area had between 80 and 100 feet of beach.

"The effects are being seen more rapidly," Coles said. "A gradual loss of five or six feet a year was not noticed much with 100 feet of beach. But when that is cut to 20 feet, you notice it."

Coles said they cleaned and straightened a channel at the west end of the beach to allow more sand there but that the middle of the beach, where the most sand had been in the past, was being hit the hardest.

Although he said some of the beach may return when the water recedes, he added that it might be a few years before people notice a difference.

Phillips said the government liaison subcommittee is going to join a growing group comprised of concerned residents experiencing similar problems, the West Shore Coalition. Headed by Clifford Sasfy of Michigan, the group is gaining popularity in both the U.S. and Canada and amassing support of the people.

Phillips said that with such a large number, hopefully they will be able to seek more help from the Corps of Engineers.

"As far as an end is concerned, it will end when the main highway or sanitary sewers are threatened because then the government will have to come in," Phillips said.

In the meantime, he said it is hard for people who have not been directly affected to realize how much power the water can have.

"I can remember beaches 50 feet wide. I can remember picnics on the sand, family cookouts, it was beautiful," he reminisced. "Now the comparison between the two ... well it's hard to compare. It's bad, tragic."

[redacted]

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Describing it as [illegible]ll of a storm," high water on March 4 of last [illegible]r forced the Shepherds to flee their home. The[illegible]eren't able to move back in until the middle of Ju[illegible].

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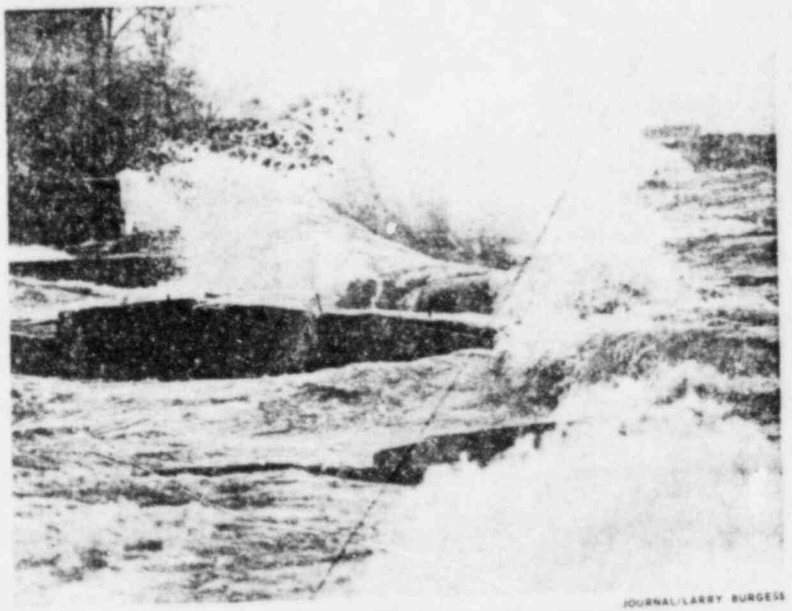
Water usually only affects the perimeter of the lot, he said, but up to 40 percent is covered when strong winds are blowing from the north. In such situations, he noted, "waves roll right into the parking lot."

Claus said he has never had a high water problem with the restaurant itself. But the parking lot has been an inconvenience to customers and a headache for the restaurant staff.

Maintaining the lot has been expensive and time consuming. Claus said a seawall has been



JOURNAL/LARRY BURGESS

AN ANGRY Lake Erie pounds the shore at Century Park in Lorain.

[redacted]

Besse sludge burial never studied: EPA

By The Associated Press

TOLEDO — The effects that buried sludge from the Davis-Besse nuclear power plant would have on wildlife, ground water and Lake Erie were not studied before the plant began operation, the Ohio Environmental Protection Agency says.

"I don't think any tests on ground water leaching or any of the issues concerned with land burial were ever done," said E. Dennis Muchnicki, chief of environmental enforcement for the EPA.

"By now, the interaction of chemicals may have caused changes we didn't even know were possible that could threaten wildlife."

Tests done in the 1970s "probably did not focus on the sludges that (Toledo) Edison wants to bury," Muchnicki said.

"Since the original assessments of the Davis-Besse site were done prior to operation, it is impossible to say whether this sort of thing was even considered," he said. "We have developed much data over the years and perfected methods of testing that may not have been done or even available in the early '70s."

Toledo Edison, which operates the plant in Port Clinton, about 20 miles east of here, has the Nuclear Regulatory Commission's approval to bury slightly radioactive sludge at the plant.

State environmental and health agencies said they may oppose the plan but have not announced their opposition. Yesterday was the deadline to file objections with the NRC. Spokesman Frank Ingram at the NRC's headquarters in Bethesda, Md., said he had not yet seen any petitions.

Attorney General Anthony Celebrezze scheduled a news conference for this afternoon at Catawba Island to announce whether state agencies will object to the dumping, a spokeswoman for his office said.

"Right now, it looks as if the state will intervene against the plan, because we are concerned about what else might be in (the sludge)," Muchnicki said.

The slightly radioactive sludge is a by-product of the plant's non-nuclear steam system. It would be buried in a 20,000-square-foot excavation.

Those opposed to the dumping say chemicals or radioactivity could harm fish and wildlife.

"The resin is not harmful, and everything else, with the exception of the trace radioactivity picked up in the piping process, are from Lake Erie," Toledo Edison spokesman Richard Wilkins said.

Wilkins said tests of the sludge have not been completed. The material contains an organic polymer resin that is used to remove impurities from water and contains salts, calcium and trace metals, he said.

[redacted]

State opposes nuclear waste burial

By Tony Lima

The Ohio Attorney General's office has announced not only is it opposed to a proposal to bury low-level radioactive waste at the Davis-Besse Nuclear Power Plant without first having a formal hearing, but it has expressed its oposition with a 30-page detailed petition.

The stand is apparently the result of a meeting among officials from state and federal agencies last week, to discuss the burial proposal.

According to Jack Van Kley of the attorney general's office, that office will act as a lawyer on behalf of the state, which has filed the petition, adding, "We have decided to intervene."

Van Kley said the state is just as concerned with possible chemical contamination as radioactive content of the sludge. Concern over the proposed burial surfaced among environmental and outdoor groups when it was announced Toledo Edison Co. proposed burying the sludge in two-foot trenches under approximately four inches of sod.

"We believe that disposal of any kind of waste, whether radioactive or chemically contaminated, is inappropriate there because it is adjacent to the Navarre Marsh on Lake Erie," said Van Kley.

He said the area sits on the 100 Year Floodplain, and is subject to possible flooding even this year. "I understand the level of the Great Lakes already poses a flooding threat this year," he said. "That area is very low-lying and subject to flooding and wave action."

Earlier this month, a Toledo Edison spokesperson said the issue of burying waste on site lends itself to "a lot of emotionalism," adding the procedure stemmed from such a request by the Nuclear Regulatory Commission (NRC).

The Ohio Attorney General's petition may well have been triggered by the outcry from a number of environmental groups and community governments which have spoken out against the proposal and/or the lack of formal hearing(s) over the issue.

Rocky River city council is one of a handful of Greater Cleveland communities which passed resolution encouraging either "examination" or "opposition" to the plan. Some others include Cleveland Heights, Euclid, Parma and Lakewood.

Van Kley stated Toledo Edison Co. "has not given the Nuclear Regulatory Commission enough information to adequately judge its (the sludge's) content."

"There has never been an analysis of these materials and we don't know whether the chemicals in the waste are harmful or not," he said. "Nor do we know anything about the geology of the area."

Other agencies which have been meeting to discuss the proposal, aside from the attorney general's office, include the Ohio Environmental Protection Agency, the U.S. Fish and Wildlife Service, the Ohio Departments of Natural Resources, Health and Disaster Services and Toledo Edison Co.

SUN HERALD Thursday, April 17, 1986 Page A6

Pennsylvania's low-level 'radwastes' arrive at a burial site in Hanford, Wash. By James Mason

Burying radioactive trash: some states balk at regional solutions

3/15/83 p.4

By Lucia Mouat
Staff correspondent of
The Christian Science Monitor
Chicago

It's a bit like a sack of garbage you'd rather send to a dump across town than bury in your own backyard.

In this case the garbage is nuclear – some 430,000 drums of low-level radioactive waste produced each year by nuclear power plants, hospitals, and industry.

In New Federalism fashion, Congress has handed the responsibility for finding dump sites for this radioactive trash back to the states. By law they are expected to have sites selected, licensed, and operating by January 1986.

No one now expects that deadline to be met.

Federal legislation passed in 1980 urged states to band together in regional compacts to solve the problem more efficiently and safely. But an increasing number of states appear reluctant to team up without some assurance they won't be tapped as "host" to receive an entire region's low-level radioactive waste. Since a regional compact is only a first step, and no one can provide such assurances, several states, including Texas and California, are opting to go it alone.

In Midwestern compact talks, for instance, most participants have long assumed that Illinois, as the area's chief generator of low-level "radwaste," would likely serve as the region's first dump site. But Illinois has already had ample experience with one such site in Sheffield. It was forced to close when it reached capacity and later was found to be leaking. For this and other reasons, Illinois may decide to back out of a compact. Nearby Wisconsin may well do the same.

"Illinois might be first, but we'd be in danger of being the host state next time," says Wisconsin state Sen. Joseph Strohl, who backs a go-it-alone approach for his state. Supporting his case, he cites the expectation that the volume of Wisconsin's low-level radioactive waste will fall sharply in future years as some of the state's nuclear power plants are decommissioned. Also, an economic study indicates the cost difference to utility ratepayers, who would bear most of the burden, would be a cent more per month.

"I think the whole process [of forming compacts] is going to fall apart unless someone volunteers to be the host state," says Joanna Hoelscher of the Chicago-based Citizens for a Better Environment, who sat in on some of the Midwestern compact negotiating sessions.

There is no question that it's perfectly legal under Congress's rules for each of the 50 states to have its own dump site.

"The national policy would be served by it and there are some economic reasons for doing it," insists Elgie Holstein of the National Conference of State Legislators. "It's a mistake to look on going it alone as a burden or inconvenience to those with compacts."

But a key problem relates to past history and the federal government's timetable. Three of the original six commercial low-level radioactive waste sites, including Sheffield, have been shut down for management, capacity, and safety reasons. Two of the remaining sites (in Washington and Nevada) were forced to close temporarily in 1979. The management of the third, in South Carolina, vowed to cut back its trash receipts by 50 percent. It was that situation which spurred Congress to action in 1980.

But Congress's proposal to spread the burden to more states could leave some states out in the cold if they fail to find a site by 1986 or develop problems with a chosen site. Once Congress ratifies a compact, the states within it can refuse to accept waste from any states outside the region's boundaries. The Washington and South Carolina dump sites now operating have agreed to continue as initial sites under new Northwest and Southeast compact arrangements. But within three years they could refuse to accept any more outside radioactive trash.

The Northeast and Midwest, regionally the largest producers of such waste, face the disadvantage of being without an existing site. They have to start from scratch.

Some keeping a close watch on developments say they think the federal government may yet be forced back into the ring – to renege on its earlier promise allowing compacts to exclude nonmembers, to involve itself in the site selection process, or to designate temporary sites at federal dumps or near existing utilities.

Many environmentalists argue that a more determined effort to reduce the volume of low-level radioactive waste (often packaging, clothing, and tools are unnecessarily exposed) and a more thoughtful look at alternate disposal methods is needed.

They point out that even a General Accounting Office report of last year urged that dumping capacity not be increased until the Nuclear Regulatory Commission develops a comprehensive program for reducing the quantity of waste and the Department of Energy more thoroughly explores alternatives to the current method of dumping the waste in shallow trenches. Possibilities include deeper burial or surface storage in well-sealed casks or vaults.

SUN HERALD Thursday, April 10, 1986 Page B8

Officials ponder hearing on nuclear waste burial

By Tony Lima

Officials from a handful of state and federal agencies met last week to discuss a proposal to bury low-level radioactive waste at the Davis-Besse Nuclear Power Plant in Ottawa County, and whether or not the state should hold a formal hearing on the issue.

Those officials will meet again this week, each giving his or her expertise in each field. "After then, we'll know whether or not we want to intervene with a public hearing," said Sharon Sigler, assistant attorney general.

The agencies represented by officials include the Ohio Attorney General's office, the Ohio Environmental Protection Agency, the U.S. Fish and Wildlife Service, the Ohio Departments of natural resources, health and disaster services and Toledo Edison Co.

A resolution which would have urged Gov. Richard Celeste to oppose the burial, was turned down by the Rocky River City Council recently. The majority of council members stated they felt the resolution should encourage Celeste to "examine" the situation, and not necessarily "oppose" it.

Such a resolution, introduced by Councilman Thomas Malling (Ward 4) was passed unanimously at Monday evening's committee of the whole meeting. It was amended by Councilman Vince Hvizda (Ward 3), to assure copies of the resolution are sent to the approporiate House and Senate committees which oversee the Nuclear Regulatory Commission (NRC).

Those House and Senate committees include the Energy and Commerce and Energy and Natural Resources committees, respectively.

A handful of Greater Cleveland communities have passed resolutions which encourage either "examination" or "opposition" to the plan. Included among them are Cleveland Heights, Euclid, Parma and Lakewood.

In addressing the Rocky River council last month, a Lyndhurst resident who is a member of Save Our State from Radioactive Waste, told members the area at Davis-Besse Nuclear Power Plant was being eyed for burial.

At a later meeting in Rocky River, however, a Cleveland Electric Illuminating Co. (CEI) spokesman reportedly claimed the burial practice there has been going on for the past seven years.

The Davis-Besse site is near the 600-acres Navarre Marsh, 400 acres of which are reserved as a wildlife area. Thus, much concern has surfaced among environmental groups.

"Our findings (from last week's meeting) are being evaluated and reviewed for further documentation," said Sigler, adding this week's meeting is being held "to find out more about it."

Rick Kelly, a spokesperson for Toledo Edison Co., said the issue of burying the waste on the site "pretty much lends itself to a lot of emotionalism."

He said the whole procedure stemmed from such a request by the Nuclear Regulatory Commission (NRC). The commission was looking at the capacity of disposal sites for very low-level radioactive waste, he said.

"The Nuclear Regulatory Commission in 1983, brought to the attention of the licensees, a rather obscure section of NRC regulations regarding such burial practices," said Sigler. "Pursuant to this, Davis-Besse, in 1983, requested this plan for disposal . . ."

According to an NRC report, the commission is considering the approval of a procedure for the proposal of burial of low-level radioactive waste, proposed by the Toledo Edison Co. Toledo Edison and CEI are the licensees for the Davis-Besse Co.

The decision as to whether or not a public hearing will be held, is expected to be made next week. A hearing examiner will decide after an April 14 deadline whether the concerns among these officials and citizens merit a hearing.

6 Nuclear Waste

The General Electric Stockholders Alliance Against Nuclear Power, Box 966, Columbia,Md. 21044 has three Proposals in the Proxies that are being mailed out to GE shareholders this month in preparation for the Annual Meeting in Kansas City, Mo, April 23.

In recognition of the growing public apprehension of nuclear wastes and lack of confidence in the ability of the Department of Energy to come up with safe and affordable disposal methods good for at least 10,000 years, protests against making any additional wastes are growing daily, particularly in those 14 states that are under study for repositories.

Following is the text of the Alliance Proposal:

STOP RADIOACTIVE WASTE

WHEREAS GE is involved in each step of the nuclear fuel cycle, and has been a principal supplier and fabricator of nuclear fuel for the armed forces and civilian reactors, and is involved in the improvised government program to transport and handle radioactive waste;

WHEREAS the quantities of radioactive waste are proliferating;

WHEREAS no permanent safe disposal system has been developed and tested, even abroad;

WHEREAS the public is exposed to radioactive effluent and waste at each stage of the nuclear fuel cycle, from mining, milling, conversion, fabrication, operation of reactors, transportation, reprocessing, waste storage and decommissioning;

WHEREAS some nuclear wastes remain radioactive for hundreds of thousands of years;

WHEREAS there is no safe level of radiation; effects of radiation on human health are often cumulative; and health effects may not become evident for many years;

WHEREAS both government and industry have records of inept nuclear waste management, coverups and spills, greatly undermining public confidence; and

WHEREAS it is immoral to generate long-lived lethal hazards which cannot be isolated from the environment and which future generations have no choice but to inherit;

THEREFORE BE IT RESOLVED that GE management forge a responsible new policy to:

1. set a target date after which no further generation of nuclear waste will be allowed from GE industrial processes;

GE is now proclaiming "the company that has put more nuclear power systems in space than anyone else is ready today to power America into the next century." Sounds like S D I (Star Wars) ?

2. not renew contracts with nuclear-related products upon their expiration;and

3. provide technical assistance to governmental agencies seeking a permanent solution to the need to isolate transuranics and other long-lived radioactive wastes from the human environment in perpetuity.

SUPPORTING STATEMENT

Prior to and during World War II, there was minimal regulation of companies using nuclear materials, with the result that the Department of Energy does not know the location of some sites containing long-lived radioactive waste materials. Improper storage of some low level waste has resulted in migration of waste off-site, with the result that dumps at Maxey Flats, KY, Sheffield, IL, West Valley, NY, have been closed for "cleanup." Existing facilities for low level waste at Barnwell, SC, Beatty, NV, and Hanford, WA, are reaching capacity and soon will not be available. Makeshift storage will be necessary at many operating nuclear power plants, creating further risk to the public.

In 1959, Abel Wolman, an engineering professor at Johns Hopkins University and a consultant to the AEC, told a Congressional Committee, "I am not quite sure that there is a final solution." In June,1976, after an extended investigation of waste practices, the House Committee on Government Operations stated, "We may have to face the realization, even after determined and conscientious effort, that it just may not be possible to guarantee the containment of radioactive wastes over the ages until they are harmless to mankind and the environment." According to the National Academy of Sciences, "The spectrum of radiation-caused genetic desease is almost as wide as the spectrum from all other causes."

Responsible management should establish short-and long-term policies that result in protecting the public health and the environment.

Arlen V. Hall
381 Pollard Rd
Northbridge, MA 01534

Sent to all GE stockholders

1975

THE DAVIS-BESSE ENVIRONMENTAL HEARING REPORT

THE COALITION FOR SAFE ELECTRIC POWER, after 2 pre-hearings and 5 1/2 days of testimony and rebuttal, has just completed its role as intervenor in the Davis-Besse environmental hearing, which should have been part of the original construction license hearing 2 1/2 years ago. No decision by the Board has yet been announced.

Davis-Besse will not have a valid construction license permit until this decision is made. From past experience, however, the Coalition has little doubt that the decision will favor the applicant (Toledo Edison and the Cleveland Illuminating Company.)

Meanwhile, Davis-Besse is more than half completed. Construction began before the construction license hearing and has continued----uninterrupted----at the two power companies' own financial risk.

At the initial hearing, the Coalition made repeated requests to halt the construction until vital issues were considered. The Applicants always countered with vigorous protests about how much money the delay would cost them.

THE STACKED HEARING

This successful pressure on the Board was not surprising since Atomic Energy Commission hearings have always been what Dr. John Gofman describes as a "Kangaroo Court". It's a 3 to 1 proposition against the citizens group, whose hands have been effectively tied.

The AEC appoints from its approved group the 3 member Safety and Licensing Hearing Board. Two AEC trained lawyers from Washington serve the Applicant. Then the AEC Regulatory Staff, complete with 2 attorneys and a staff of so called scientific experts, completes the triumvirate. This last Hearing Board, however, was the most equitable we have encountered.

The Hearing Board then "defines" or limits the issues, deciding what the Intervenor may discuss. The Intervenor may not challenge AEC radiation standards or regulations, or issues under evaluation in national AEC hearings.

The long-dragged-out Bethesda hearing, for example, has successfully kept out of all local hearings any discussion of the unreliability of the vital Emergency Core Cooling System or of the phony Interim Criteria regulations. This is how the AEC "represents the public interest."

Citizens interventions do have value. Some reactor orders have been canceled and 2 have been stopped. Its greatest contribution, however, is the growing public awareness of the full risk to which they are being exposed. Even some Congressmen, previously indoctrinated by AEC engineers, have begun to ask some sharp questions.

INADEQUATE MEDIA COVERAGE

Cleveland news media for some time have exhibited a marked restraint in reporting adverse nuclear information. The Coalition has wondered to what extent this has resulted from lavish power company promotional advertising or business community pressures.

Though the Davis-Besse Hearing brought into focus many pertinent issues, its impact in Cleveland has been blunted by the generally meager and somewhat slanted coverage in most of the local news media.

Part of the reason for this was the Hearing Board's requirements that all testimony be submitted in written form before the hearing. Consequently, the actual hearing was concerned only with cross-examination and rebuttal, except for the new Issue-9.

The principal witness for the Coalition, a person to whom the public is deeply indebted, was Dr. Ernest Sternglass, Director of Radiological Physics at the University of Pittsburgh School of Medicine. Both times, he took the stand late in the day for rebuttal testimony------after the reporters and television personnel had left. As a result, they heard AEC and Applicant rebuttal witnesses, but none of Dr. Sternglass's original statement nor his rebuttal testimony. Dr. Sternglass's prepared testimony, however, had broad front page coverage in the Sandusky Register.

CONFLICTING RADIATION REPORTS

Dr. Sternglass is a dynamic witness with vast information and a prodigious memory. He based his Davis-Besse testimony largely on 2 recent research studies, which have made the nuclear establishment extremely uncomfortable. In fact, the Applicant's attorney made several insistent attempts to keep his entire testimony out of the hearing records.

The Sternglass studies were based on radiation monitoring reports from the vicinity of two small reactors -----the 90 mw Shippingport Power Plant on the Ohio River east of E. Liverpool, and the NASA Plum Brook test reactor near the southeast part of Sandusky Bay, less than 25 miles from Davis-Besse.

For Plum Brook he used radiation monitoring reports from Ohio EPA and another set from Bio-Test Laboratories ; Quarterly Preoperational Environmental Reports for 1972-1973, submitted to Toledo Edison. He found the reported radiation levels in soil, water, and milk to be very much higher than would be expected, based upon reported releases from Plum Brook reactor. These readings dropped off in all directions from Sandusky in proportion to distance. The implication was clear. Either the Plum Brook reports of radioactive releases were too small, or the contamination levels were much greater than would be anticipated, based upon the reported releases.

Nuclear opponents have long been of the opinion that monitoring only at the perimeter of the plant site is unrealistic. Radioactive gases and particulate radionuclides emitted from a reactor stack or radioactivity released in liquid effluents travel much farther than the site boundary. Another questionable assumption of the AEC is that radioactivity in water is not harmful to health if it is adequately diluted. This ignores possible reconcentration in the food chain.

Dr. Sternglass's study for the Shippingport reactor used data from the U.S. EPA, the State of Pennsylvania, and the Nuclear Utilities Services Corporation (NUS), consultants to the Duquesne Light Co. His findings were comparable to those from Plum Brook.

ISSUE 9

The Hearing Board felt that the implications of this testimony were so serious as to warrant discussion at this hearing. To facilitate this, the Board framed a new contention----Issue 9, which reads:

"The Intervenor contends that the Final Environmental Statement is inadequate in that the methods used to relate proposed releases of radioactive materials to contamination and radiation levels in the environment, may greatly under-estimate these final levels.

REBUTTAL - (?)

The rebuttal testimony on the Sternglass Shippingport findings aroused expressions of incredulity at times and occasioned a couple of searching glances from the Hearing Board Chairman. The NUS Corporation "admitted" that some of its analytical monitoring results were "in error". Miraculously they had located some of the original samples in a box (2 years later) and had them reanalyzed.

It also stated that some of the thermoluminescent dosimeters used to monitor environmental radiation near the Shippingport plant were thought to have received large radiation doses in air transit to New Mexico for analysis.

Yet, miraculously, the dosimeters down-wind of the plant had picked up more radiation than the upwind dosimeters. Furthermore, the control dosimeter, allegedly kept in Pittsburgh, showed an exceedingly high statistical correlation with dosimeters on and near the plant site.

BIOLOGICAL EFFECTS RULED OUT AS USUAL

The Applicant succeeded in having Dr. Sternglass's section on the biological effects of radiation stricken from the record as irrelevant. Epidemiological studies (based on vital statistics) are not considered as "proof", since too many possible causative factors are not considered. However, Dr. Sternglass's findings are highly indicative.

Using Ohio and Pennsylvania state vital statistics reports for 1958 through 1970, Dr. Sternglass noted a marked increase in death rates from cancer and heart disease as well as higher fetal and infant death rates in Sandusky and in the two towns nearest the Shippingport plant and down-river at East Liverpool.

Increases in these death rates for the same period dropped off significantly as distance from the reactor increased. Also, total state increases were much lower. To rule out normal industrial air and water pollution as a causative factor, Dr. Sternglass shows that figures for Sandusky death rate increases were markedly higher than those for Lorain and Cleveland. The greatest increase in infant and fetal death rates occurred in the Shippingport area about the time the reactor was shut down for repairs following a period when radiation releases were reported as above AEC maximums.

Many scientists have expressed the opinion that proliferation of more nuclear reactors should be halted until a thorough investigation has been made of their impact on public health. Dr. Sternglass's reports indicate that this is an urgent need.

TRANSPORTATION OF RAD GARBAGE

Discussion of the possibility of accidents with trucks or trains carrying highly radioactive spent fuel rods was arbitrarily restricted to the Davis-Besse area, which was considered to present no special problems. Of course, these trucks or trains could be passing across northern Ohio en route to the West Valley reprocessing plant near Buffalo. However, in developing a container that will withstand a 30 foot drop to an unyielding surface, the AEC considers the transportation safety problem solved. Others wonder!!!!

THE ALTERNATIVE OF CONSERVATION

The National Environmental Policy Act requires consideration of alternatives to nuclear plants. Consideration of conservation of electrical energy, in particular, was shown to have been inadequate. The Coa-

lition presented the Hearing Board with a stack of utility promotional advertising as a part of their proof. Rick Morgan, formerly with OPIAG, was the Coalition witness, testifying on the extensive study he had made of this issue.

INSIDIOUS OLD LAKE ERIE

Possibility of reactor damage from storm and wind was discussed. The Coalition presented aerial pictures taken after the November-1972 storm, showing the flooded areas, the dike breaks, and the auxiliary building (which houses all the controls) without a roof. The Intervenors could not prove that the roof had been on before the storm. The Applicant testified as to materials used in the dikes and as to calculated margins in the strength of buildings to withstand storms. What is adequate in a tornado?

CUMULATIVE EFFECTS FROM MULTIPLE REACTORS

Ironically, testimony from the applicant strongly indicated that one of the Intervenor's contentions was correct. The AEC's Final Environmental Statement was inadequate in that it failed to evaluate the cumulative effects on Lake Erie of effluents from Davis-Besse reactor combined with those from other reactors along Lake Erie and the effluents from reactors operating along the upper lakes----Superior, Michigan, and Huron ------including Canadian plants.

Brought out in Intervenor cross-examination was the fact that in total radiation calculations for Lake Erie, the Applicant had not included possible effluents from Plum Brook reactor nor from 10 to 20 other small research reactors. In addition, the Applicants assumed that mixing of radioactive pollutants in the lakes would be uniform. In calculating total Lake Erie radiation levels, they disregarded the effects of lake currents. Another factor not considered was that certain short-lived radioactive substances decay into long-lived radionuclides. Surprisingly, the total tritium level calculated for Lake Erie by the Applicant was not as large as the tritium readings in 1969 in the western basin of the lake.

Both the Applicant and the Regulatory Staff admitted that to their knowledge, no studies had ever been made of possible synergisms (interactions) between radioactive substances and lake pollutants such as heavy metals, pesticides, herbicides, and industrial chemicals. Such combinations might conceivably step-up the toxicity many fold.

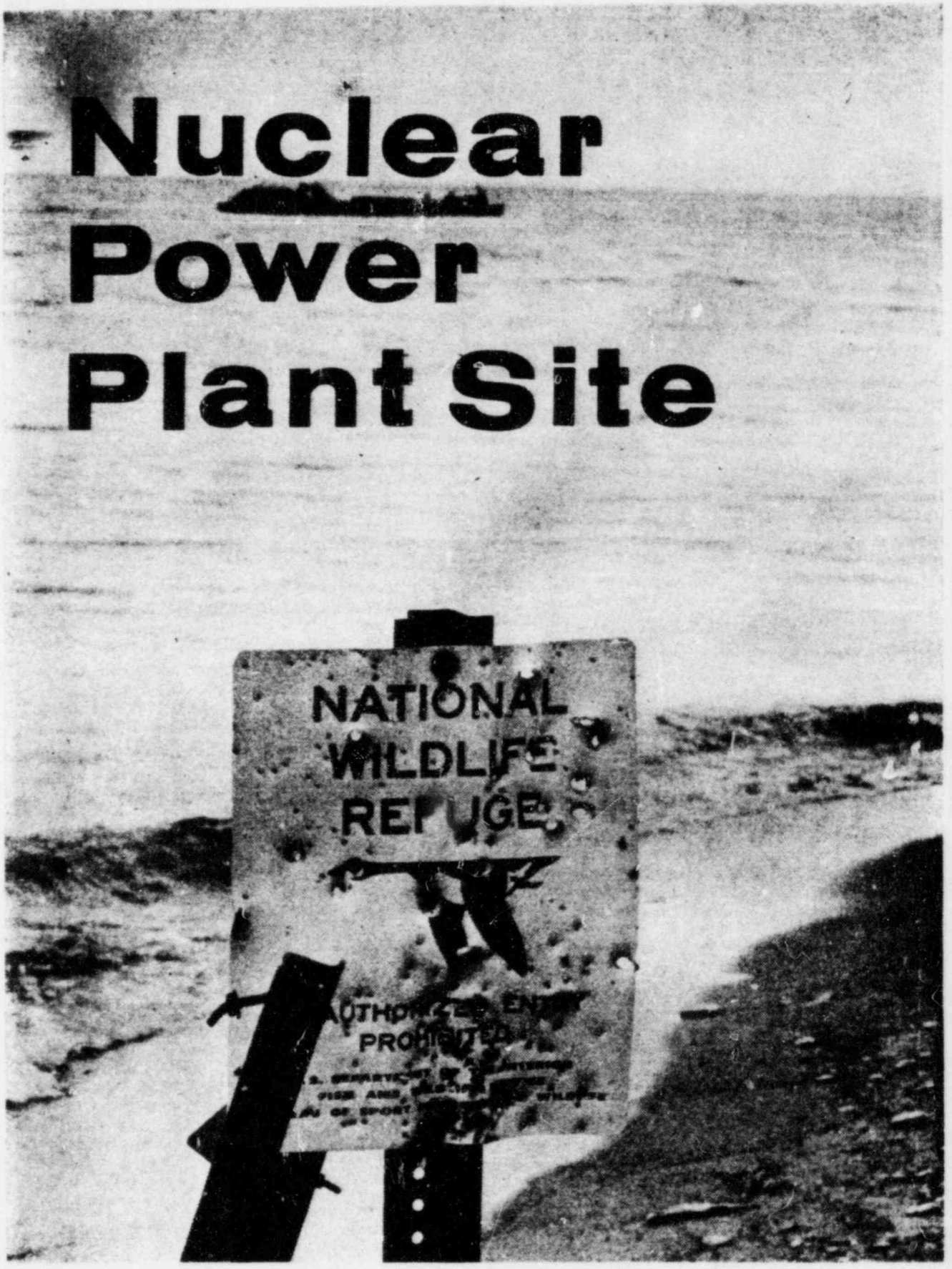
The Non-degradation Clause in the Ohio Water Quality Regulations does not apply to radioactivity releases. AEC regulations take priority for the whole nuclear field. We need urgently to restore states' rights. Write or tell this to your Congressman.

Much information about Davis-Besse is now available to the public. This knowledge would not have been brought out had this been an uncontested hearing. Unexpectedly high radiation levels in the areas around Plum Brook and Shippingport reactors are indicative of what the public may expect from the infinitely larger Davis-Besse. Both a state and federal moratorium become a "must" ---also, vigorous opposition to the Perry reactors. The effectiveness of the Coalition in this Perry intervention will depend upon your support and participation.

COALITION FOR SAFE ELECTRIC POWER
~~140 Public Square, 312 Park Bldg, Cleveland Ohio, 44114~~

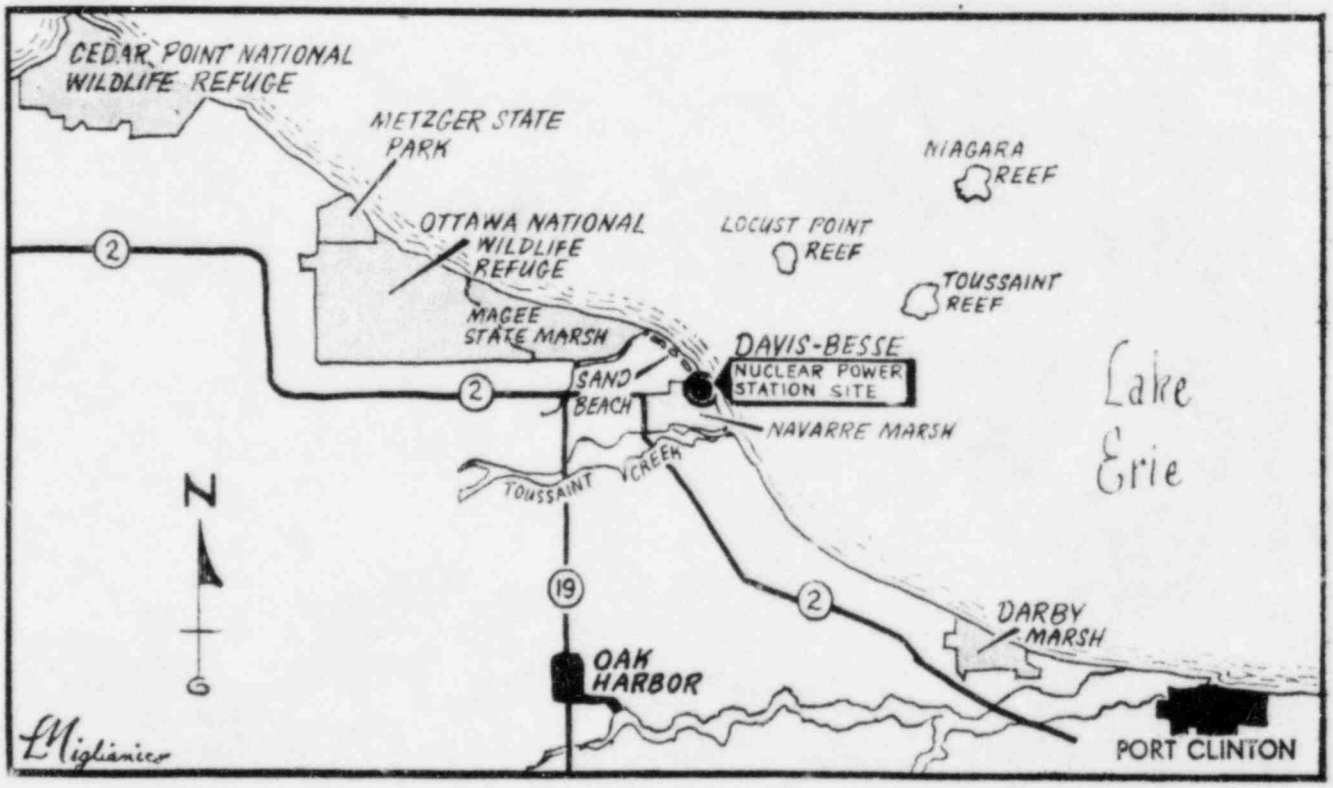
EDITOR: G. Cook CONSULTANT: Dr. Owen Davies

Nuclear Power Plant Site



FORMER REFUGE—Battered sign marks the boundary of a former wildlife refuge now owned by two Ohio utility companies. They plan to built a nuclear power plant there. Commercial fishing boat (background) maintains nets along the area where the plant is to dump huge amounts of hot water daily.

FISHING HOLE—The Toussaint Creek near its Lake Erie mouth is a popular fishing spot and close to the site of the proposed nuclear power plant.



Will A-Power Plant Kill Lake Sanctuary?

Plain Dealer photos
(Richard C. Widman)

by RICHARD C. WIDMAN
and
WILLIAM D. McCANN
Staff Writers

PORT CLINTON, O. — Along the south shore of Lake Erie, between here and Toledo, lie some 12,000 acres of state and federal marshlands—the remnants of a vast natural wildlife sanctuary.

In the midst of these lands, unscarred by today's big-city asphalt and concrete jungles, the Toledo Edison Co. and the Cleveland Electric Illuminating Co. are moving to build a $240-million nuclear power plant.

The companies plan to build the plant on a 900-acre site of Navarre Marsh, acquired from the U.S. Bureau of Sport Fisheries and Wildlife in exchange for a private preserve, Darby Marsh, owned by Toledo Edison.

The unused portion of the plant site marshland—perhaps some 400 acres—will continue under federal jurisdiction as a wildlife refuge.

NAVARRE MARSH IS JUST west of the Toussaint Creek. Darby Marsh is several miles to the east.

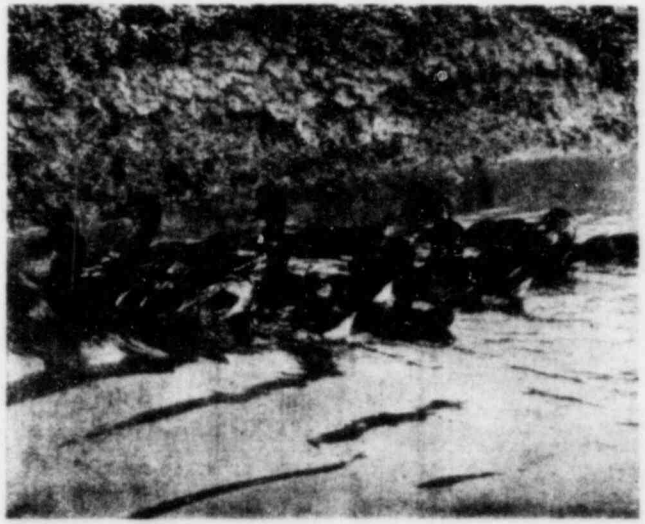
The utility companies are confident the plant will cause no harm to the environment. But a growing number of biologists, conservationists and state and federal officials say the plant could cause some harm—either by releasing small amounts of radioactive waste into the air and water or by dumping tremendous amounts of heated water into the lake.

The U.S. Atomic Energy Commission has announced it will hold a public hearing on the plant this fall. This hearing will involve the construction itself and radiation safety. It would be up to the Ohio Water Pollution Control Board to hold any hearings on facilities to control hot water discharges.

No one can predict for sure, however, just how extensive any damage might be.

The plant would produce much-needed power to run industry's machines and the homeowner's electric lights, toasters, air-conditioners and other appliances.

BUT IN ORDER TO PRODUCE this energy, the plant must draw from the lake more than a billion gallons of water a day to cool its condensers.



PROTECTED WILDLIFE—Wildlife including many types of waterfowl, abounds in the marshland between Toledo and Port Clinton.

The water would be put back but at a temperature increase of 12 degrees, further affecting a lake which many scientists and conservationists say is "dying."

Karl E. Bednarik, nationally-known waterfowl biologist and manager of Ohio's Magee Marsh, which is near the plant site, told The Plain Dealer that the plant's hot water discharge could create a "biological desert" in part of western Lake Erie.

Bednarik said if a utility company contention that fish would "swim away" from the hot water were correct, then no plant or animal life could live there except green algae scum. The heated water could nurture the growth of such scum, he said.

A GROWING PROBLEM ALONG the lake's shore, the algae growths foul swimming beaches and boats and, according to scientists, exhaust oxygen in the water, resulting in fish kills.

"I'm not against progress but every safeguard that could go in should go in," Bednarik remarked. "And that includes cooling facilities."

In their official report to the Ohio Water Pollution Control Board, the utilities stated their case for not spending an estimated additional $17 million to $19 million for towers to cool the water.

A principal objection, their officials said, is that the towers would create a visible "fog" over the area a few days a year. Under certain wintertime conditions, this would cause icing on Ohio 2, which runs within a mile of the plant site.

"WE ALREADY HAVE GROUND fog here much of the time anyway, and people have learned to drive carefully because they expect some ice on the highway," Bednarik commented.

Bednarik also pointed out that Ohio 2 is scheduled for relocation in the next few years.

This was confirmed by a spokesman for the Ohio Department of Highways who told The Plain Dealer that the relocated highway would be "several miles" from the nuclear plant. The relocation project has a top priority, he added.

Western Lake Erie once yielded more top-quality fish to commercial fishermen and sports anglers than any other body of fresh water in the world, according to government reports.

But pollution has nearly wiped out the multimillion-dollar commercial fishery. Every year that goes by finds more fishermen lifting their nets for the last time.

THEY HAVE WATCHED THE STURGEON, the cisco and the whitefish disappear from the lake. Catches of the last remaining prime species, the walleye—called "pickerel" in the restaurant trade—have declined from millions of pounds annually to a fraction of the former haul.

Three major lake reefs, important to the spawning of the walleye and other fish species, are within six miles of the site of the proposed nuclear plant.

According to a study ordered by Toledo Edison for submission to the Ohio Water Pollution Control Board, under unfavorable wind and water conditions the hot water could reach the reefs with a temperature increase of one or two degrees.

The report said:

"A prolonged rise might induce earlier spawning if the rise were uninterrupted, but it is more likely that the spawners would move out rather than spawn in warmer water."

Harvey Cover, 30, of Oak Harbor, some 11 miles west of Port Clinton, has been going out in commercial fishing boats with his father since he was five years old.

THE COVERS OPERATE OUT OF the Toussaint Creek.

The exact spot in the lake where the nuclear plant will discharge hot water is where the Covers set their seine nets for their livelihood.

Harvey Cover says the hot water will drive the fish away, if it first does not kill them.

"If they put in the cooling towers, I could stand the fog," Cover remarked. "But if they don't, I'll starve."

"The lake around here already turns green every summer from the algae, and the nuclear plant could only make it worse," he said.

Cover pointed out that the Toussaint Creek is a major catfish spawning stream. He said the hot water would be discharged only 300 feet from the mouth of the creek.

THE PREVAILING LAKE CURRENT "will push some of the hot water up the Toussaint and will keep the catfish from running up it to spawn," Cover said.

Supplying live bait, fishing tackle and boats and motors has long been important to the economy of this area.

Warren Musser operates a combination grocery store and bait and tackle store in Oak Harbor, which depends heavily on visiting anglers, tourists and summer cottage owners.

"I have lived around water and fished all my life," Musser said. "If a cooling system does not go in at the nuclear plant, I'll sell this place and go to Canada."

Musser said he was convinced the plant's hot-water discharge would "wreck the fishing around here."

HE SAID HE WAS TRYING TO organize opposition to the plant, unless cooling facilities are built.

S. R. Brown, an Ohio pioneer and naturalist, traversed the southern shore of Lake Erie many times. Writing in 1815, he recorded his wonder at the wild marshes and beaches, and the seemingly unlimited abundance of wildlife.

He noted "a natural meadow 90 miles long and from two to 10 feet wide, extending from the mouth of the Portage River (about 12 miles east of Toussaint Creek) to south of Detroit, Mich., containing not less than 200,000 acres."

"We found the grass to be higher than our heads and as thick as a mat, confined together by a species of pea vine," Brown wrote.

HE SAID THAT NEAR THE MOUTH of the Toussaint Creek the grass "was about seven feet high and so thick that it would easily sustain one's hat—in some places a cat could have walked on its surface."

In the last century, residents along the lake shore speared the great sturgeon as they migrated up the streams.

These fish were smoked for food, rendered for oil and their bladders were converted into isinglass.

The sturgeon were a nuisance to the commercial fisherman, however, because they damaged the nets. They threw the fish onto the beach to rot or fed them to hogs.

Like the tall grass, the sturgeon are gone now.

In the autumn and again in the spring, migrating birds once blacked out the sun over the marshes.

AMERICAN BUSINESS TYCOONS built plush hunting clubs in the marshes and hunters sent trainloads of the abundant wildfowl to eastern cities.

The ducks and the geese still come today, although in fewer numbers, and thousands of birds are hatched every year in the complex of state and federal refuges near the nuclear plant site.

Nuclear Plants Seen as Health Peril

By WILLIAM D. McCANN and RICHARD C. WIDMAN © 1970, The Plain Dealer

The peaceful atom, once hailed as mankind's technological savior, may be posing more severe problems than it was expected to eliminate.

Nuclear-fueled power plants, such as the three proposed for construction in Ohio along the Lake Erie shoreline and the Ohio River, had held promise as smoke-free cures to the nation's dirty skies. But a growing number of critics are raising serious questions about a possibly serious health hazard puffing from nuclear plants — radiation pollution.

Two scientists at the University of California's Lawrence Radiation Laboratory recently reported that maximum radiation pollution now permitted from nuclear power plants could cause more than 16,000 cancer and leukemia deaths each year in the United States.

THE LAWRENCE LABORATORY research has been financed by the U.S. Atomic Energy Commission, which also acts as the watchdog agency for nuclear plants and federal radiation standards.

The two scientists, Dr. John W. Gofman and Dr. Arthur R. Tamplin, have called for the permissible radiation limits to be reduced to at most one tenth the present allowable level.

The standards call for an exposure limit of .17 REM (for Roentgen Equivalent Man) per year. REM is a measure of the quantity of any radiation that will have the same biological effect on man as the exposure to one roentgen of ordinary X-ray.

"THE CURRENT STANDARDS are based on the theory that there is a threshold dose of radiation below which no harm accrues to man," Dr. Gofman said recently.

Dr. Gofman, a Cleveland native who attended Oberlin College, has worked for the AEC more than 20 years. He was a researcher on this country's Manhattan Project to build the atomic bomb and was a co-discoverer of uranium 233.

"Our research shows that there is no threshold dose, however, demonstrable to man," Dr. Gofman added. "Any radiation exposure, no matter how slight, causes risks."

A RADIATION EXPERT at the University of Pittsburgh told The Plain Dealer that radiation wastes — even at the low levels now permitted for nuclear power plants — could be endangering the lives of yet unborn infants.

"We should hold off on going nuclear until we have done major studies on possible infant and fetal mortality," said Dr. Ernest Sternglass. "It would be a mistake to install huge new reactors until we take a whole new look at present permissible levels and their effects on present and future generations."

A growing number of concerned citizens here are casting critical looks at the nuclear power plants to be built in Ohio.

THE 300-MEMBER Citizens for Clean Air and Water last week came out against construction of such plants until industry can give enough proof that no hazards will exist.

In addition, a group of about 120 scientists and students at Case Western Reserve University recently formed Project Survival to focus concern on the nuclear plants. Other local conservation groups also are showing increasing concern.

Of particular interest is the 872,000 kilowatt Davis-Besse Nuclear Power Station to be completed in 1974 by Toledo Edison and the Cleveland Electric Illuminating Co. some eight miles west of Port Clinton on Lake Erie. Although the plant itself is in a secluded wildlife refuge area, hundreds of thousands of people live within a 35-mile radius.

TWO OTHER PLANTS are to be built side by side on the Ohio River next to Moscow, a small town of about 400 some 28 miles southeast of Cincinnati.

The 840,000 kilowatt plants, to be called the Wm. H. Zimmer Nuclear Power Station, Units One and Two, will be built for the Cincinnati Gas & Electric Co., Columbus & Southern Ohio Electric Co. and the Dayton Power & Light Co.

Nuclear fueled power plants are designed to put to work the tremendous heat created by the splitting of atoms. The heat is used to generate electricity. The fuel, a concentrated form of uranium, is in the reactor core, where it is bombarded with subatomic particles resulting in a release of heat energy.

HOWEVER, RADIOACTIVITY IS also formed. Byproducts include many potentially dangerous radioactive wastes such as strontium-90, desium-137 and tritium. Tiny amounts of these and other wastes are released into the air by the plants each day. In addition, if a plant dumps its hot coolant water into a stream or lake — as now proposed for the Lake Erie plant — small amounts of radioactive wastes will also be poured into the water.

All waste releases must be monitored and kept within federal limits, however.

Although the radioactive emissions are indeed small, some of the wastes take many years to decay and certain ones tend to concentrate in living plants and animals. The concentrations may increase along the food chain.

FOR EXAMPLE, CONCENTRATIONS can build up in tiny plants in the lake. Fish eat the plants and then in turn are eaten by humans.

Radioactive wastes falling on the ground might be absorbed by grasses which are then eaten by cows. Milk from the cows is then consumed by humans.

Such accumulations could be several thousand times greater by the time they get into the human body.

WE ALL CARRY CERTAIN amounts of strontium-90 in our bones and desium-137 in our muscles from radioactive fallout from nuclear testing. Scientists do not yet know for sure how much or how little of these materials can be harmful, but they are becoming increasingly alarmed about it.

Dr. Sternglass fears that dangerous concentrations of wastes, especially tritium, could be building up in thousands of human embryos.

"Some parts of developing embryos may be getting 100 times normal levels of tritium," Dr. Sternglass said.

SUCH CONCENTRATIONS could cause increases in infant mortality or might even show up as genetic defects in this or future generations, he added. Defects might range from minor ailments, to serious illnesses and even shorter life spans.

"We cannot ignore the fact that nuclear plants, fuel reprocessing plants, transportation and nuclear fuel storage may all contribute to this problem," Dr. Sternglass said.

Spokesmen for the utilities building the three Ohio plants admit the plants will release tiny amounts of radioactivity, but point out the emissions will meet standards.

LOWELL E. ROE, chief mechanical engineer for Toledo Edison, told The Plain Dealer the Lake Erie plant would probably release ony albout 2% or less of the maximum allowable radioactivity "most of the time." But he said the tougher standards requested by some scientists and several states would be "too restrictive" because "there would be no operative leeway."

William Dickhoner, manager of electrical operations at the Cincinnati Gas & Electric Co., said that tougher standards would "not give us any latitude." He said containment systems could be built so that plants could meet tighter standards, but it might add millions more to the cost of construction.

Most critics agree that low level radiation would probably be minimal from the three planned plants in Ohio. But these plants will undoubtedly pave the way for others in the state.

MORE THAN 100 SUCH plants are projected for completion throughout the nation within the next few years.

So before the growth of nuclear power pushes exposure levels higher and higher, critics contend, limits should be made as tough as possible now.

The Atomic Energy Commission has challenged virtually all current criticism and has been fighting any changes in standards. The AEC contends the criticisms cannot be medically proven and often use more scare tactics than reason.

The AEC has come under fire, too.

"THE PROBLEM IS THAT the Atomic Energy Commission has a built-in conflict of interest," said Prof. Arnold W. Reitze, assistant professor of law at Case Western Reserve University. "they are in the unique position of promoting nuclear power while at the same time charged with protecting the public from possible radiation dangers."

Critics have not been limited to individuals.

Minnesota recently imposed its own stringent standards on a reactor being built by the Northern State Power Co. there.

THE UTILITY IMMEDIATELY went to court to challenge the power of the state to regulate atomic energy. Eleven other states, but not Ohio, have sided with Minnesota, which wants top radiation limits set at only 2% of those now in effect. The case is pending in court.

Another major criticism leveled at nuclear plants is the possibility that a major reactor accident could release dangerous amounts of radiation to millions of persons.

The AEC points to its outstanding safety record, although it admits there have been problems with many plants.

UTILITY SPOKESMEN ARE quick to point out that a plant could never explode like an atomic bomb.

Several plants around the country have been faced with operational problems and have shut down. Ohio's first nuclear fueled power plant at Piqua ran into problems with its cooling and wiring systems. It closed three years ago after limited operation.

PERHAPS THE MOST publicized problem-plagued reactor has been the Enrico Fermi plant on the Lake Erie shore near Detroit.

Fermi had a fuel "meltdown" accident in 1966 in which several of its long, thin uranium alloy control rods became overheated and buckled. Some melted. The plant was shut down for three years afterwards.

ACCORDING TO A STUDY by the University of Michigan's Engineering Research Institute after the accident, if all the material contained in the plant has blown into the air under certain weather conditions 67,000 persons would have died of radiation poisoning. Even if only 1% of the radiation had been emitted, 210 persons would have died, the study reported.

Thirteen years ago the AEC made a study called "Wash-740" to determine the worse possible results from a nuclear power plant accident. The study showed that as many as 3,400 persons could be killed, 43,000 injured and $7 billion in property damage in an accident of a 150,000 kilowatt plant 30 miles away from a major city, with only half the radiation being released.

THE POTENTIAL WIDESPREAD danger is one reason critics give that private insurance companies now only insure these plants a total of $82 million. As a result, the government has had to put up another one half billion dollars to persuade utility executives to go atomic.

There are other problems, too.

RADIOACTIVE WASTES contained in spent reactor fuel elements must be transported, "reprocessed" and eventually stored for many years until they decay. The reprocessing practice now used is to dissolve the fuel rods in nitric acid, then store the liquid in huge steel vats underground.

The nearest reprocessing facility for the Lake Erie plant is probably Buffalo, N.Y., according to Toledo Edison spokesman. The reactor wastes would have to be transported by rail from the plant site to the Buffalo facility.

Critics admit that some nuclear alarmists may have drawn some questionable conclusions and may be unreasonably frightening many thousands of persons. But as one critic said recently: "It would be much better if we took certain actions now and 20 years later found that the alarmists were wrong than to do nothing now and find out later they were right."

Reprinted from The Plain Dealer, March 16, 1970

Lake Nuclear Plant Row Puts

By RICHARD C. WIDMAN and WILLIAM D. McCANN

Scientis s concerned about potentially severe changes in the e. tire western basin of Lake Erie point an accusing finger at plans of Cleveland Electric Illuminating Co. and Toledo Edison to build a nuclear-fueled power plant west of Port Clinton without cooling facilities.

The plant would dump about one billion gallons of hot water a day into a lake that conservationists say is "dying".

Three southern Ohio power companies, however, will spend an extra $22 million to add cooling facilities to their two combined nuclear-fueled power plants to be built on the Ohio River southeast of Cincinnati.

Construction of the Lake Erie plant without cooling facilities is expected to gain the approval of Ohio Water Pollution Control Board according to Earl Richards, engineer in charge of sewage and industrial waste for the Ohio Department of Health's division of engineering.

But, in the opinion of George Harlow, director of the Federal Water Pollution Control Administration's Lake Erie office here, the CEI-Toledo Edison plant will not meet the federal government's water quality standards for the lake unless cooling facilities are included.

THE apparent contradiction points up the nebulous character of the state's standards for Lake Erie set in early 1967 following public hearings.

George Eagle, chief engineer and the state department of health's top expert on water pollution, has in various statements said that the present quality of the lake is the standard. Harlow said the same to The Plain Dealer.

According to Richards, the state water pollution control board judges each input into the lake on the basis of "whether or not it will degrade the lake."

The board is not expected to need a variance for the Lake Erie plant since it is expected to meet state standards, Richards said.

CEI and Toledo Edison plan to have their 872,000-kilowatt, $240-million Davis-Besse nuclear power station in operation by late 1974.

The site is near the mouth of the Toussaint River, 21 miles east of Toledo and eight miles west of Port Clinton.

The three southern Ohio companies, Cincinnati Gas & Electric Co., Dayton Power & Light Co. and the Columbus & Southern Ohio Electric Co. plan to build two 840,000-kilowatt units at a total cost, including cooling facilities, of $462 million.

The site is on the banks of the Ohio River near the village of Moscow, 28 miles southeast of Cincinnati. The first unit is to be operational in 1975, the second in 1976.

IF COOLING facilities were not included in the design, the two units would take in 800,000 gallons of water a minute from the Ohio River, then return it to the river with a temperature increase of 28 degrees.

Facilities will consist either of a single concrete cooling tower some 500 feet in diameter at the base and about 450 feet high, or two smaller towers.

A spokesman said the $22-million additional cost for cooling facilities will mean an "insignificant" increase in the average consumer's electric bill of "no more than 1%."

In interviews with reporters spokesmen for Toledo Edison, which will build and operate the Lake Erie plant, stressed that adding cooling facilities to their plant at an estimated cost of $17 million to $19 million would mean higher electric bills for consumers. They did not quote figures.

In a news release explaining their objections to cooling towers for the Lake Erie plant, Toledo Edison officials said two towers would be needed, each 370 feet high and 400 feet across the base.

The towers would evaporate 7,200 gallons of water a minute into the atmosphere, they said. In cold weather this would create an artificial cloud plume as much as 20 miles long. It would subject the area to fog, dampness and severe icing in winter.

THE plant site is in a remote area along the lake shore.

The billion gallons of water a day from the Davis-Besse plant will be discharged into Lake Erie with a temperature increase of 18 degrees, according to Lowell E. Roe, Toledo Edison's chief mechanical engineer.

Roe says the discharge will increase the lake temperature as much as five degrees over 88 acres, and as much as two degrees over 1,000 acres.

Toledo Edison commissioned the University of Michigan's Great Lakes Research Division, headed by

:s Standards in Doubt

Dr. John C. Ayers, to make a study of the potential effects of the hot water discharge on Lake Erie.

Ayers contends that the plant will actually benefit Lake Erie by increasing its oxygen content.

He says that water pumped through the plant's condensers will show a "slight" increase in oxygen content, explaining that turbulence in the pumps and the condenser overflows would trap air in the water as it is sucked in from the lake to cool the condensers, then discharged again into the lake.

Ayers added that heated water discharged into the lake would "rise to the surface, giving up its heat to the air and not mixing with the water below."

"ORGANISMS around the plant would be beneath this floating layer except near they would be washed out to the discharge point where deeper water," Ayers said.

The primary concerns of conservationists opposed to the Davis-Besse plant are centered on effects on the lake's fish population and the possibility that hot water will spur growth of algae.

Algae is the green "guck" which exhausts the lake's oxygen supply.

According to Ayers, the hot water discharge will not promote algae growth.

The net effect will be beneficial, he says, because algae already present in the water will be destroyed by the heat as it passes through the plant.

The plant site is in the midst of a large complex of state and federal wildlife refuges.

The Toussiant River is one of the lake's major catfish spawning streams.

Just offshore are some of the lake's major fish spawning grounds for the walleye.

The walleye, once Lake Erie's No. 1 sport and table fish, is nearing extinction in the lake, according to many conservationists.

Ayers says the hot water will not damage the lake's fishery. "The fish will swim away from it."

HARLOW, who said he had seen Ayers' report, commented that he had "no quarrel with it. Dr. Ayers qualified everything he wrote."

Dr. Edwin Skoch, assistant professor of biology at John Carroll University, disagrees with some of the Ayers' findings.

Skoch has conducted extensive studies of the western Lake Erie basin in recent years.

He says it is true the hot water discharge will float on top, and agrees it is theoretically possible the plant will put more oxygen into the lake than it takes out but, he emphasizes, only at the intake-discharge point. The net effect, he believes, will be an oxygen loss.

The hot water will float on top only temporarily, he says, and will conduct heat into the surrounding water. This will result in immediate leaching of the oxygen into the air, where it would be lost without benefitting the lake.

The heat would boost algae growth, most probably the toxic blue-green algae, he says.

"Shallow and affected by winds, the extreme western basin is extremely sensitive to change," Skoch said.

"The thermal discharge positively will make a severe change in the lake and definitely will affect a large area of the western Lake Erie basin."

Skoch said he is "not yet ready to say it will be a detrimental efffect" because "we can't yet prove it."

"THE heated discharge will stratify the western Lake Erie basin, and if you stratify the water this doesn't allow oxygen to get to the bottom. Nothing could live at the bottom of the lake except some undesirable organisms."

He disagrees with Ayers' contention that fish would swim away from the hot water.

"Some species will but others would be trapped by it," Skoch said.

Dr. Robert Rolan, assistant biology professor at Cleveland State University feels the plant will have widespread effects on the entire western Lake Erie basin.

Rolan is also concerned that hot water will promote massive growth of algae the lake, in particular blue-green algae which, he said, would give off unpleasant odors and, more importantly, is toxic to wildlife.

"It is also toxic to man if it gets into the drinking water," Rolan said.

Reprinted from The Plain Dealer, March 15, 1970

Pollution Foes Decry

By WILLIAM D. McCANN
and RICHARD C. WIDMAN

Conservationists are voicing increasing alarm over the proposed construction of three nuclear-fueled power plants along the shores of Lake Erie and the Ohio River.

There are two major concerns: possible massive thermal pollution and potential radiation dangers.

Dr. Ernest J. Sternglass, professor of radiation physics at the University of Pittsburgh, told The Plain Dealer, "We would be mad to ignore the possible radiation hazards of nuclear power plants."

DR. STERNGLASS SAID the utility industry should "hold off on going nuclear until we have done major studies on possible infant mortality caused by low levels of radiation, such as those levels permitted to be released from nuclear plants."

The discharge of about one billion gallons of hot water a day from a 872,000 kilowatt plant to be built near Port Clinton by Cleveland Electric Illuminating Co. and Toledo Edison Co. "positively will make a severe change in a large area of the western Lake Erie basin," according to Dr. Edwin Skoch, assistant professor of biology at John Carroll University. The location is about 100 miles west of Cleveland.

Dr. Robert Rolan, assistant professor of biology at Cleveland State University, said the Lake Erie plant might cause "critical" side effects by releasing massive amounts of hot water.

He said such thermal pollution might cause further growth of blue-green algae which already are blamed for creating odors in Cleveland's drinking water in the hottest parts of the summer. The odors could reach an "intolerable" level, he said.

THE SITE IS IN THE MIDST of a complex of state and national wildlife refuges.

Some of the lake's most important fish spawning grounds are nearby.

The area is renowned as a major vacationland. Just to the east is Cedar Point, a major summertime playground.

Hundreds of thousands of Ohioans live within a 35-mile radius of the site.

Spokesmen for the CEI and Toledo Edison said their studies indicate the discharges will have no detrimental effect on the lake. Therefore, they said, they do not propose to spend the several million dollars they say it would cost to add cooling facilities.

HOWEVER, THREE OHIO power companies who plan to build two 840,000 kilowatt nuclear plants side by side on the Ohio River near Moscow, some 28 miles southeast of Cincinnati, have announced they will spend an extra $22 million to put in closed-system cooling towers. No hot water would go into the river.

Total cost of the Ohio River combined plants, with cooling facilities, is estimated at $462 million. The companies that will share the constructon costs and the electricity produced are the Cincinnati Gas and Electric Co., Columbus & Southern Ohio Electric Co. and the Dayton Power and Light Co. The facilities will be called the Wm. H. Zimmer Nuclear Power Station, Units One and Two.

Estimated cost of the CEI-Toledo Edison Davis-Besse plant on Lake Erie is $240 million.

A Toledo Edison spokesman said adding closed-system cooling facilities to the Lake Erie plant would cost an extra $17 to $19 million.

The Davis-Besse plant is to go into operation in 1974, while the Ohio River plants are to begin operation in 1975 and 1976.

CONCERN IS ALSO FOCUSED on the U.S. Atomic Energy Commission and the Ohio Water Pollution Control Board, which must give approval on compliance with radioactivity and water pollution safeguards before actual plant construction can begin. Some conservationists fear Ohio will bypass public hearings and grant a variance on construction of the Lake Erie plant.

The three plants will set the pattern for any such plants to be built in Ohio in the future.

One conservation group here, the 300-member Citizens for Clean Air and Water Inc., already has taken a position against construction of any nuclear power plants until industry can assure them that no thermal or radiation hazards exist.

A group of about 120 scientists and students at Case Western Reserve University recently organized Project: Survival to focus on the nuclear plant problem. The group is planning a six-hour teach-in on the subject April 10.

THE OHIO DIVISION OF the Izaak Walton League, with 44 chapters and 3,500 members, has adopted a resolution calling on the state to prohibit construction of nuclear stations unless cooling facilities are included.

The League of Ohio Sportsmen, representing 135 clubs with 30,000 members, has urged the Ohio legislature to require nuclear installations using public waters for cooling purposes to discharge wastes with a

Nuclear Plant on Lake

temperature increase of no more than three degrees.

CEI and Toledo Edison have proposed to discharge the water from their Lake Erie plant with a temperature increase of 18 degrees.

"This will have little or no detrimental effect on the lake ecology," Lowell E. Roe, chief mechanical engineer for Toledo Edison told The Plain Dealer. He said a closed cooling system— which would add no hot water to the lake—would be "too costly and would lessen plant capability."

ROE ADMITTED THE HOT water discharge would drive aquatic life away from the vicinity of the plant, but contended that the effects would be limited to a relatively small area of the lake. The total area raised two degrees or more would be equal to an area the size of Brooklyn Heights, or about 1,100 acres, he said.

Conservationists countered that the lake, which some describe as "dying," cannot absorb another such ecological blow.

According to Dr. Skoch, the hot water discharge could be expected to boost algae growth, in particular the blue-green algae, which is choking off the lake's oxygen supply.

In recent years, masses of algae, a certain sign of water pollution, have spread along Lake Erie's shores, fouling beaches and plaguing swimmers and boaters.

OFFICIALS OF THE UTILITIES building all three Ohio plants admitted there will be a certain amount of radioactivity released from the plants. But they said the releases will be kept within standards set by the Atomic Energy Commission.

A growing number of scientists, however, have contended even these "low" levels of radiation emissions may be adding thousands of additional cancer cases to the national toll. The AEC standards must be made tougher to allow only a small fraction of the radiation now permitted, they have argued.

The state of Minnesota, backed by 11 other states—not Ohio—has taken to court its effort to have radioactive discharges reduced to 2% of what the AEC now permits.

Nuclear plant foes also have pointed out that private insurance companies will not insure the plants against possible losses that could be expected from a major accident.

Coolant Is Feared as Pollutant

Both nuclear and fossil-fueled power plants have the same objective—producing electricity.

Fossil plants burn coal, gas or oil, while nuclear plants use radioactive fuel to generate heat. This heat is absorbed by circulating water, air or gas. This circulating material heats water to make steam, which in turn produces electricity by powerning a turbine-generator. The material is used over and over again and never gets outside. The steam is condensed back into water and it, too, is reused.

The heated waste water which is the thermal pollution concern is used to cool a plant's steam condensing system. This water is sucked in from a stream or lake, circulates around the hot condenser, then either gets pumped into special cooling facilities and is reused or goes right back into the stream as hot water.

Fossil-fueled plants also are sources of thermal pollution but by comparative size not nearly as much as nuclear plants.

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EARTHQUAKES IN OHIO AND NORTHEASTERN U.S.

DATE	HOUR	LOCATION	INTENSITY M M	AREA SQ.MILES	REMARKS
Jun. 1 1638	3:00 PM	Mass.	-		
Jan.26 1662	-	N.E.	7		
Feb. 5 1663	-	N.E. & Cleve.	11 - 12	750,000	Major
Nov. 8 1727	10:40 PM	Mass.	8		
Sep.15 1732	11:00 AM	St.Lawr.Val.	8		
Dec. 7 1737	11:00 PM	N.Y.	6		
Jun. 3 1744	10:15 AM	Mass.	-		
Nov.18 1755	4:11 AM	Mass.	8	300,000	
May 16 1791	10:00 PM	Conn.	8		
Nov. 9 1810	9:15 PM	N.H.	6		
Oct. 5 1817	-	Mass,	7 - 8		
Oct.17 1860	6:00 AM	Canada	8	700,000	
Oct.22 1860	6:00 AM	Maine	8		
Oct.20 1870	11:25 AM	N.E. & Cleve.	8	1,000,000	
Jan. 9 1872	7:54 PM	N.Y.	7		
Aug.10 1884	2:00 PM	N.Y.	7		
Aug.31 1886	9:30 PM	Cleve.	10		
May 27 1897	10:16 PM	N.Y. & Cleve.	6	150,000	
May 17 1901	1:00 AM	Ohio	5		
Mar.21 1904	1:04 AM	Maine	7		
Feb.10 1914	1:31 AM	Maine	7	200,000	
Aug.21 1918	0:12 AM	Maine	7		
Feb.28 1925	9:24 PM	N.H. & Cleve.	8	2,000,000	Severe
Sep. 9 1928	3:10 PM	Cleve.	5		
Aug.12 1929	6:25 AM	N.Y. & Cleve.	8		
Apr.20 1931	2:54 PM	N.Y.	7		
Nov. 1 1935	1:04 AM	Cleve.& Canada	6	1,000,000	
Mar.9 1937	0:48 AM	N.Y. & Cleve.	7 - 8	150,000	
Mar. 8 1943	10:26 PM	Cleve.	4 - 5	40,000	
Sep. 5 1944	0:39 AM	N.Y.	8	175,000	
Aug. 9 1947	9:46 PM	Cleve.	6		Slight
Dec. 3 1951	2:00 AM	Cleve. & Wlby.			Press & P.D.
May 26 1955	12:09 PM	Cleve.	5		
Jun.28 1955	7:16 PM	Cleve.	5		
May 2 1958	6:42 PM	Cleve.			Press & P.D.
1963		Quebec			New York Times
Nov. 9 1968	12:05 PM	Cleve.			Press

Note:

M M = Modified Mercalli Intensity Scale of 1931 (Range from 1 to 12)

References: "Earthquake History of the U.S." (1956) U.S.Dept.of Commerce(41-1)
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Seismology Lab. John Carroll University