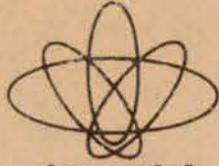


# the Waste Paper



sierra club  
radioactive waste  
campaign

Volume 3, Number 3

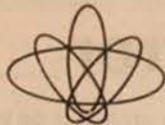


photo by Philip Hyde

At the beach, as you lick the salt from your lips, think of how important salt is in your life . . . see page 1

***The Swimming Pool Nobody Wants - page 1 No Reassurance  
From Nuclear Assurance - page 3 The Nader Syndrome - page 7***

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## The Swimming Pool Nobody Wants

The Indian Point reactor just north of Manhattan is running out of space for its highly toxic irradiated fuel. Con Edison wants to cram more fuel on site. Citizens are worried about the hazard of an accident in the spent fuel pool. Our roving writer, Warren Liebold, examines this issue more closely.

America has long been known for the large numbers of private swimming pools that dot the landscape. Soon the U.S. may be known for an entirely different type of swimming pool that is used not for pleasure bathing, but as storage for highly radioactive, irradiated fuel.

The uranium fuel used in nuclear power plants during plant operation builds up a large inventory of radioactive materials such as strontium-90, cesium-137, and plutonium-239. After one year, due to the build-up of these toxic by-products in the fuel, it must be removed from the reactor. Then the "spent" or irradiated fuel is so thermally and radioactively hot, it must be stored under water. Otherwise, the fuel would "self-melt" from its own intense heat. The

water also shields the intense radioactivity, so workers are not exposed to unacceptably high radiation doses. Storage of this material is in steel-lined pools about 40 feet deep and of varying sizes.

When nuclear reactors first started generating electricity, utilities blandly assumed that someone (preferably the federal government) would take the irradiated fuel and dump it somewhere (preferably someone else's backyard). Therefore, reactors were designed with small fuel pools able to accommodate only 3-5 years of irradiated fuel. But citizens at all the prospective dump sites have understandably been reluctant to accept the federal government's gift of millions of tons of radioactive material. The result: the utilities are running out of storage space for the toxic fuel.

**Packed Pool Dilemma** The pools at 18 of the 70 nuclear plants in the U.S. are due to be filled by 1985, including both the Fitzpatrick and Indian Point #2 plants in New York State. This information is from what is known as the Greybook - Licensed Operating Reactors Status Summary

Report, NUREG-0020, published by the Nuclear Regulatory Commission. It is available at Government Document repositories, usually located at central libraries. When a utility is faced with the dilemma of too much irradiated fuel, it has four possible alternatives: ship the excess irradiated fuel to another reactor's pool; find a regional irradiated fuel pool or "Away-From-Reactor-Facility" (AFR) to take the fuel; build a new pool on site or expand the old one; or cram more spent fuel into the existing pool. This last alternative is known by the euphemism of "fuel pool compaction."

The option of shipping excess fuel to another reactor's pool is available to only a few utilities in the U.S. since space for spent fuel is at a premium. Some utilities have purposefully built new reactors with very large storage pools, using the excess space to store fuel from older reactors. Some companies have previously-existing arrangements to ship their irradiated fuel to the pool at the closed-down reprocessing plant at Morris, Illinois, but Morris also has limited space. Fuel pool expansion is a possibility for almost all reactors, but, since compaction is much cheaper, that is the alternative of choice.

At Indian Point only thirty-five miles from midtown Manhattan, the spent fuel problem is headed for a crisis in 1981. Con Edison has just requested a second compaction from the NRC.

There are actually three reactors at Indian Point. Indian Point #1 (IP-1), a nuclear-oil hybrid plant, began operations in 1962. It was shut down in 1974 due to its inadequate Emergency Core Cooling System. Imagine! For 12 years on the edge of metropolitan New York, with its population of 11 million, a reactor operating without an adequate Emergency Cooling System! After years of citizen protests, Con Edison was ordered by the NRC last year to begin preparing a decommissioning plan for IP-1, (see "Late Breaking News, page 8").

Indian Point #2 (IP-2), like unit #1, is owned by Con Edison. This plant began operating in 1973, generates 873 megawatts (when it operates) and along with unit #3 has been embroiled in a safety controversy as old as the plants themselves.

While much of the attention to Indian Point has been about the reactor, the spent fuel pool at IP-2 presently contains about 40% more irradiated fuel than is inside the reactor core. Most of the fuel in the pool is not as hot and radioactive as the oldest fuel in the reactor, but the pool



by Lisa Finaldi

Pinochio's Nose Maureen Bartley and her daughter Susan nosing around the DOH building in Buffalo. See page 5 for details.

continued on page 7

## Salt: Endangered Condiment

"Pass the salt, please." This simple request is made daily by millions of Americans. And, as a result, families sitting down to dinner find chicken, green beans, rice, all the more tasty.

Salt is a condiment we take for granted along with death and taxes. But, according to a new Batelle report called *Solution Mining in Salt Domes of the Gulf Coast Embayment*, February, 1981, PNL-3190, we may find salt a rare commodity in the near future.

**Domes and Dumps** The 180-page Batelle Pacific Northwest Laboratory report addresses the question: how likely is it that a salt dome used for a high level radioactive waste dump will, in the near future, be used for brine or solution mining? The answer: A HIGH PROBABILITY. The only way to reduce this probability says Batelle is to have administrative control - guards on site, restricted access, maintained fences - for 1000 years. And Batelle finds this 1000 year time table unrealistic. (One thousand years ago, in 981, Europe as it is known today, did not exist. Feudal fiefdoms were battling the Vikings and Magyars. One thousand years from now what political institutions, nations or governments will be in existence?)

The Batelle report states that the reason it is highly probable a radioactively contaminated salt dome will, sometime, in the next several hundred years be breached and used is related to the scarcity of the resource. According to the U.S. Bureau of Mines, there are 130 salt domes in the Gulf Coast with potential for mining. More than one-third of the Gulf Coast salt domes are now producing salt for America's needs. This means only 82 await exploitation by humans for future needs. Since Louisiana and Texas provide 55% of the total U.S. salt production, the resource pressure is particu-

larly high in the Gulf Coast region. (See map, page 6.)

**Baby's Playthings** Salt is used for several purposes besides the common table salt. Salt brine is used to produce chlorine based chemicals such as hydrochloric acid and caustic soda. And these chemicals are important in plastics production. So, if the Batelle scenario becomes true and contaminated brine is used for baby's playthings, school-room chairs and food packaging, to name a few items, these items could all come off the assembly line radioactive. Batelle thinks the risk of contaminated salt brine going undetected is high because "radiation detectors are not being used to monitor brine production today. It is not logical to

**It is highly probable a radioactively contaminated salt dome will sometime, in the next several hundred years, be breached and used because of the scarcity of the resource.**

assume that future generations will [use detectors] either . . . contaminated brine could be produced for months or years before discovery." (Italics is the Waste Papers'.) The same logic would apply to other salt uses.

Salt is also widely used for road de-icing operations. (Hold those cracks about the heat from the radioactively contaminated salt increasing the speed at which ice and snow is melted.) Already the use of salt for de-icing is seri-

ously polluting many water supply systems through surface drainage into storm sewers, streams, and rivers. The problem would be grossly compounded if the salt were radioactively contaminated.

Aside from these important functions, the Gulf Coast domes are widely used for underground storage of liquified petroleum gas and are prime candidates for strategic petroleum reserve (S.P.R.) storage caverns. S.P.R. was set up, in 1975, in response to the oil embargo of 1973-1974. It is designed to make the U.S. less vulnerable to a petroleum embargo. S.P.R. calls for the storage of 1 billion gallons of oil in the Gulf Coast area by 1985. By the year 2000, Batelle estimates that 50% of new S.P.R. capacity will be located in the Gulf Coast.

**365 Years** The Gulf Coast is one of the most desirable locations for these underground storage facilities because the area receives a majority of the crude oil that is imported into the U.S. Also, there are three major pipelines leading inland from the Gulf, so the oil, in an emergency could be quickly transferred to other regions of the country. S.P.R. facilities are due to be developed at sites located on the accompanying map.

With the S.P.R. facilities, potential radioactive contamination is not so much a problem as with table salt, plastics production or road de-icing. But the U.S. Department of Energy's search for appropriate storage caverns for oil places more demand on the remaining virgin salt domes available for domestic and industrial uses. Because of these competing needs, Batelle estimates that the Gulf Coast salt domes will have been used up in a mere 365 years. This estimate does not take into account the use of the salt dome for high level radioactive waste dumps. If radioactive waste is placed

continued on page 6

# Radscope Lost Lychees

Picture this: Pesticides, Chinese food and radioactive material loaded up in a semi-trailer, heading down the Pacific Highway in Australia. The truck collides head on with a van. The contents spew out onto the road - Chinese lychees, DDT, americium and cesium.

One small cask containing americium-241 cracks open, the cesium-137 package also fails. A drum labelled "Strip X" shatters completely. This drum carries the placard "Fatal if absorbed through the skin." The DDT also spills out of its container.

Two police officers stationed at the accident handled the ruptured containers repeatedly. This accident occurred in December, 1980. Six months later the officers

still suffer from radiation poisoning - severe headaches, breathing problems, nausea and dizziness. These men were never examined for radiation exposure.

We don't know where the radioactive materials were disposed of. The chemicals were simply buried along the road and the Chinese delectables went on to stores in Australia.

Picture this: Unknowing Australians eating lychees in syrup laced with americium-241 and cesium-137. Hopefully, the Australian incident will not duplicate a massive outbreak of poisoning which similarly occurred in 1968 in Japan. The consumption of PCB's in cooking oil resulted in 20 deaths and thousands of poisonings.

# West Valley Furor

"Stepping on a hornet's nest" was Ecology Action of Ithaca's metaphor for describing the unwise recommendation by Cornell University to reopen the state-licensed burial ground at West Valley, NY.

The recommendation was made by Dr. William Kiker, director of the Radiation Safety Office at Cornell University last summer. The Kiker memo, just recently obtained by the local environmental group, has created a furor.

Kiker said: "Geologically, the West Valley site appears to be nearly ideal, and the local population, which is rather sparse about the site, does not appear to be particularly hostile." Kiker added that Cornell should "flex whatever political muscle it has in Albany, to assure the re-opening of West Valley."

Kiker noted that at a meeting of the Western New York Chapter of the Health Physics

Society held at the West Valley site, no less, the group passed a resolution "urging the State of New York to resume the use of the low-level radioactive waste burial ground at West Valley." The resolution also stated that West Valley should "serve all of New York State, for the sake of public health and safety."

Clearly, neither Kiker or the Health Physics Society are aware of the sand lenses and swamps at the site (See *the Waste Paper*, Winter 1980), or of the intense concern about West Valley in nearby Buffalo (See *Buffalo Says*, page 5).

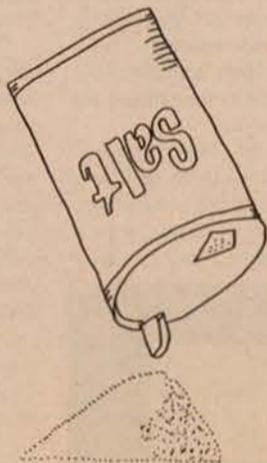
Cornell cast up 16 radiation safety violations on its last inspection, including the failure to maintain an accurate inventory of isotopes. Ecology Action questions whether Cornell should direct its efforts to dumping its waste in somebody else's backyard rather than cleaning up its own act.

# WIPP News

On March 18, 1981 Citizens Against Radioactive Dumping (CARD) in New Mexico filed suit against the federal government to halt the construction of the Waste Isolation Pilot Project (WIPP) 20 miles south-east of the Carlsbad Caverns.

The Department of Energy is securing 17,200 acres of public land to explore salt deposits for the use of dumping high-level radioactive waste. For the problems of disposing high-level waste in salt, order our fact sheet, *Salt Will Not Work*.

CARD is claiming that the land, maintained by the Department of the Interior's Bureau of Land Management, has been illegally segregated from public use for four years without public hearings. These public lands are transferred by the Department of the Interior to the Department of Energy. Interior is headed by the "pro-development extremist" James Watt. (Petitions to replace Watt can be obtained from the Radioactive Waste Campaign office.)



# Watt a Mistake

How much energy does it take to destroy the nation's parks and wilderness areas? ONE WATT. The Sierra Club has organized a petition to remove Secretary of the Interior James Watt from office. Michael McCloskey, executive director of the Sierra Club, called Watt "a frontman for the principal exploiters of our public lands and resources" and a "pro-development extremist."

The Club is getting support from many di-

verse conservation groups and expects to present Congress and President Reagan with one million signatures. Signatures are coming in at over 10,000 per day. For further information or copies of the petition contact your local Sierra Club, or "Replace Watt," 530 Bush St., San Francisco, CA 94108. (415) 981-8634 or write to The Sierra Club Radioactive Waste Campaign.

# Campaign Asks Dismantlement of IP-1

On June 30, the Sierra Club Radioactive Waste Campaign asked the Nuclear Regulatory Commission (NRC) to request Con Edison to come up with a detailed engineering plan for the dismantling of the IP-1 reactor at Buchanan, N.Y. The Campaign also asked for public hearings on the matter in the vicinity of the nuclear plant.

IP-1, which has been shut-down since

1974, could be dismantled now. But, Con Edison wants to wait another twenty-five years, until 2006, pushing the health and safety problem into the laps of the next generation. Not only would this delay constitute a safety hazard during the ensuing quarter of a century, but also, there would be considerable uncertainty regarding who was going to pay for the expensive clean-up at that time.

Con Edison may go out of existence in the meantime leaving taxpayers with the financial burden of cutting up and carting off the radioactive reactor.

Please send letters requesting that a hearing be held and that dismantlement occur now to Calkins, Decommissioning Program Manager, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

# Bovine Blues Revisited

Farmers in the vicinity of the nuclear power plants in Scriba, N.Y., 30 miles north of Syracuse along Lake Ontario continue to have cow herd problems. One farmer recently told *the Waste Paper* that in an 18-month period, there were

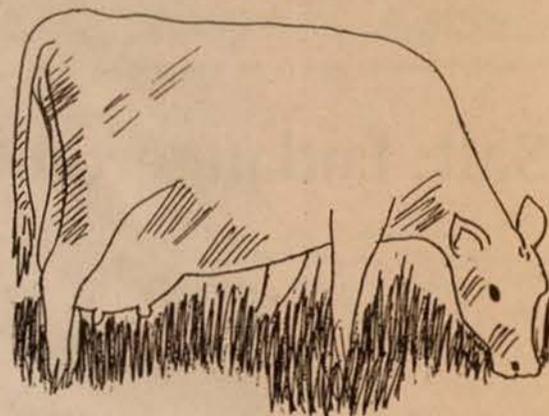
29 sets of twins born in a herd of 70 cows. Normal for a herd of 50 cows would be one set of twins in two years.

The problem of twins is a heavy economic burden to Oswego County farmers because over 95% of the females in a twin set are born sterile and cannot be used for milkers. In addition, cows having twins have decreased milk production and the farmers have increased veterinary costs.

Some of the other cow problems previously described in the article *Bovine Blues* (See *the Waste Paper*, Summer, 1980) such as brain and liver tumors and rare genetic diseases ("foothills" disease, e.g.) have now decreased. Some farmers think this is because they have fenced off open ponds and streams and are now watering cows from underground wells. In the past farmers have reported a white slick on ponds after rainstorms but it is not clear what the material is. Since cows drink tremendous amounts of water each day to produce 100 lbs. of milk per day, keeping the fences maintained and the cows away from the open ponds and streams is a cumbersome chore.

Farmers have also noted that heavy doses of minerals have turned sickly cows, previously unresponsive to vet treatment, into healthy specimens. The treated cows are peppier, have eyes clear and handsome coats. Cows, sickly when given a normal dose of 2 oz. of minerals per day, were miraculously improved with a force feeding of 5 lbs. The scientific relationship between these heavy mineral doses and cow's health in the vicinity of the nuclear reactors is unclear, but is worthy of investigation.

*Editor's note: In the Spring 1980 edition of the Waste Paper, the article "Bovine Blues" correctly stated that "the (cow) problems started in 1976, four years before the Three Mile Island nuclear power plant had come on line." Ms. Jane Lee, a farmer from the Three Mile Island area, pointed out an error in the Winter 1980, Vol. 3 No. 1 edition of the Waste Paper. In the article "Radioactive Milk?" we stated that "the severe cow problems at TMI did not occur until after the accident in March, 1979." Our original statement was correct.*



# Letters

May 8, 1981

Dear Waste Paper:

I would certainly appreciate your making it known to your friends that I would like to obtain some of the "ALERT" signs that have been appearing in and around Western New York. As you know, people from East Aurora and the Holland area are involved with this, but there have been no signs around here.

I would really appreciate having some of these at least to post around my church. I think this has been one of the most successful campaigns of concerned citizens that has been undertaken.

With warm regards,  
Paul R. Watson, Jr.

Pastor  
First Presbyterian Church of  
East Aurora, New York

# the Waste Paper

Published by the Sierra Club Atlantic Chapter Radioactive Waste Campaign

Business Office: 3164 Main Street  
Buffalo, New York 14214  
(716) 832-9100

New York City Office: 800 Second Avenue  
New York, NY 10017  
(212) 687-5559

Peter Dalton Office Manager  
Lisa Finaldi Assistant Editor  
Mina Hamilton Organizer  
Marvin Resnikoff Staff Scientist

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Special thanks to Warren Liebold, Lindsay Audin, Keith Gemerek, Jack Luzier and Accu-type for all their help.



## No Reassurance From Nuclear Assurance

Lindsay Audin, a citizen long dedicated to the issue of safe transport of nuclear materials, dug up the following information from a Nuclear Regulatory Commission (NRC) inspection report in May 1981.

On August 20, 1980, Tri-State Motor delivered a "hot" empty shipping cask to the San Onofre nuclear power plant in California. A survey showed the radiation dose rate in the tractor behind the cab seat was 4.4 mrem/hr. This exceeded the regulatory [but not safe] limit of 2 mrem/hr. (The fact that the cask was "hot" indicates that the previous user, Jersey Central, owner of the Oyster Creek reactor, was shipping leaking irradiated fuel. The NRC Inspection Report did not further check this possibility.) Upon being informed of the "hot" cask, Nuclear Assurance Corporation (NAC), the owner of the shipping cask, assigned two employees to the clean-up work. They arrived promptly, two weeks later.

After scoping out the work assignment, the men suited up with coveralls and plastic booties and went to work. A health physics technician was assigned by Southern California Edison, the owner of the San Onofre plant to provide radiation monitoring. Unfortunately, as the NRC inspectors later learned, this technician "was not familiar with the operating character of the survey instrument." The NRC report stated: "He had no familiarity with irradiated fuel shipping casks. He received no briefing or instruction with regard to the potential hazard associated with the NAC TE cask or what procedure or actions were going to be performed." As a result of the technician's lack of instruction, the technician had improper equipment which only monitored for gamma radiation and failed to direct the clean-up workers to wear facial masks and gloves.

**Bolt by Bolt** With their health and safety inadequately protected, the two NAC workers began to take the cask apart bolt by bolt. The workers were attempting to locate the cause of the high radiation levels. The men finally turned a drain pipe plug and (after several unfruitful leads) "tainted water" began to flow. Two cups of water, reading up to 100 rems/hr were caught in a plastic bag. The NAC representative then proceeded to reach inside and wipe up the residue with a Handy Wipe (ever see that on a TV commercial?). The throw-away wash cloth read 300 rems per hour. (We stop at this point for a commercial break. These radiation levels are no joke. They are about 30 million times background radiation levels. Four hundred rems is considered lethal in 50% of the exposed population.) At this point, the

workers broke for lunch.

The NRC report reveals the penalty the workers were to pay for the incompetence of the technician provided by Southern California Edison. "On leaving the Fuel Handling Building both individuals were found to be highly contaminated in their protective clothing. No survey results were available except that they recalled the personnel survey instrument read full scale. After their anti-contamination clothing was removed, they were found to be contaminated on their face, head, back and legs. Nasal smears from one individual indicated that he had inhaled radioactive materials. They showered three times . . . The individuals turned in their finger rings and went to lunch."

**Hold Your Breath** Back after lunch, the NAC men's protective clothing was beefed up. The workers "donned additional protective clothing including two sets of overalls, 4 or 5 pairs of gloves and half face respirators and returned to the Fuel Handling Building to decontaminate the cask and pick up the waste." Another health physics technician, as uninformed and inexperienced as the first, was assigned to "protect" the NAC men. After completing the clean-up, all radioactive material was taken to a shielded container. "Because the bags would not fit into the shield cavity, the NAC man held his breath, turned his head, pushed the bags into the cavity while puncturing them with a screwdriver." (Editors note: this action is not an approved health practice.) Although wearing a facial mask, the worker was aware that the mask only gave protection against some particulates and that jabbing a hole into the bag to squeeze it into the container would spew out a heavy dose of radioactivity.

The NAC men left the area. Both found that they were again contaminated. "The contamination was located on their face, head and shoulders. They recalled levels of about 9000 cpm on their face. One individual recalled contamination nasal smears." Nine thousand cpm is about 100 times the legal limit for surfaces. And "surfaces," according to NRC regulations, do not include human skin.

No air measurements, nor measurements of radioactivity excreted from the body were taken. For this alarming performance, Nuclear Assurance Corporation was cited for four items of non-compliance, but was not fined. On the other hand, Southern California Edison who sent in the inexperienced health and safety technicians, was fined \$150,000. The company had a long history of worker health and safety incidents. This incident finally persuaded the NRC to fine the company.

## Shipping Accident II

"Spent Fuel Accident Devastating," an article describing what we considered a credible irradiated fuel shipping accident, appeared in *the Waste Paper* almost two years ago, in the Aug./Sept. 1979 issue. Due to an impact and/or fire, we postulated that the coolant-air or water cooling the hot fuel—could leak from a seal or an unsealed valve of an irradiated fuel shipping cask.

The remaining coolant would then heat up. Two hours into the accident, steam would be released. The steam would carry the hazardous and long-lived radionuclide, cesium, which vaporizes at a low temperature. A temperature would be reached (1688°F) where the zirconium fuel cladding would interact vigorously with the remaining steam or air in the cask cavity, producing more heat.

Then, there could be an explosion and a major release of radioactivity from the shipping cask. The lung dose 100 yards downwind from the cask would be fatal. Depending on where the accident took place, a large number of cancers or early fatalities could arise. Land would be contaminated for long periods of time, up to 100 years.

The calculational details were written up from the original notes January, 1980 and sent to the Nuclear Regulatory Commission (NRC) and Department of Energy (DOE) for comments. How did the Federal agencies react to our calculations, and is there any independent research that supports our conclusions?

**TMI Similarities** Both the NRC and DOE, through Sandia Laboratory's Transportation Technology Center, and Pacific Northwest Laboratory, agree that an accident involving a coolant leak could occur. For example, the report PNL-2588, *An Assessment of the Risk of Transporting Spent Nuclear Fuel by Truck*, Pacific Northwest Laboratories, November, 1978, shows that a fire of 1850°F for only fifteen minutes, could cause a coolant leak from the cask seal. According to Batelle, the temperature, 1850°F, is the average temperature of a highway accident fire. This exceeds the NRC cask testing requirement of 1475°F for one-half hour.

The agencies, however, deny that a loss-of-coolant accident (LOCA), even with a fire at 1850°F for up to 2 hours, could lead to internal cask temperatures hot enough to risk a zirconium reaction. The agencies assert that since tempera-

by Lisa Finaldi



### Who is the masked man?

Legislators throughout much of Western New York are still asking the question: Who posted Buffalo, Salamanca, Olean, Cortland and countless other communities in the middle of the night?

The bright yellow and magenta signs appeared mysteriously on May 6, 1981. The posters screamed radiation alert and urged citizens to call their state senator or local civil defense for more information about evacuation plans along the shipping route. Of course, legislators were quite embarrassed that no evacuation plan existed.

The legislators hastily reassured worried citizens and the press, shifted the subject by attacking environmentalists for littering. But the question was lodged in residents' minds—when is the next shipment coming through and is my community ready?

As a result of the publicity, the Campaign received an anonymous call regarding additional shipments of radioactive materials coming into Niagara Falls via the Lewiston-Queenston Bridge and into Buffalo via the Peace Bridge from Canada. We have since discovered that natural uranium from a General Electric plant in Peterborough, Canada is being transported across the U.S. to Seattle, Washington and then exported to a reactor in South Korea.

## No Cask Safety

In an amazing moment of truth, probably never to be repeated, the U.S. Department of Transportation (DOT) has admitted they never have inspected any irradiated nuclear fuel shipping casks, or, for that matter, inspected any facilities shipping nuclear fuel. This admission was contained in a response to a Freedom of Information request by Lindsay Audin dated May 7, 1981.

According to Elaine Economides, Executive Officer of the DOT's Materials Transportation Bureau, "the Hazardous Materials Enforcement Division has not conducted any inspections involving the shipment or transportation of spent nuclear fuel. This type of inspection is generally performed by the Nuclear Regulatory Commission's Office of Inspection and Enforcement." DOT is the Federal agency responsible for assuring that casks are built according to its regulations. Since the agency never does any inspections, this is a classic case of "hear no evil, see no evil." DOT is also the agency that intends to pre-empt all local nuclear transport ordinances February, 1982. DOT has claimed that shipping of irradiated fuel is safe and that local ordinances are a hindrance to interstate commerce. How the agency knows the casks are safe without doing any tests is one of those bureaucratic miracles for which Washington, D.C. is notorious.

**Missing Records** Not to miss a trick, Lindsay Audin then requested all 1980 shipping cask inspection reports from the Nuclear Regulatory Commission (NRC). The NRC did conduct a grand total of two inspections in 1980, two inspections. Both inspections showed serious noncompliance with the NRC regulations. Two out of two is distinctly discomforting.

In an inspection of NL Industries' cask construction facility in Wilmington, Delaware February 25, 1980, the NRC noted that "the casks were not built in accordance with the approved plans and specifications," and also that "records were not on file for some certified material test reports."

More alarming is the NRC inspection conducted Nov. 25, 1980 of a Nuclear Assurance Corporation (NAC) cask conducted at the San Onofre nuclear facility in California. NAC received 4 citations of noncompliance from the NRC for their inept decontamination of a "hot" shipping cask. The company was not fined. The incident contaminated two workers and showed a woeful disregard for elemental health and safety practices. The full report is recounted in the box "No Reassurance from Nuclear Assurance."

NAC has a pending application before the NRC to ship irradiated nuclear fuel from Chalk River, Ontario, Canada to Savannah River, South Carolina this year through the states of Michigan and Ohio. Citizens are urged to bring the poor safety record on cask inspections to the attention of their local legislators.

tures would not exceed 1688°F, a Zr-steam reaction is impossible. This reaction would be similar to what happened during the Three Mile Island accident when heated zirconium reacted with water to create the "unexpected" and potentially explosive hydrogen bubble. Sandia Laboratory, reviewing agency references (SAND80-2124, *Transportation Accident Scenarios for Commercial Spent Fuel*, by Edwin Wilmot, February, 1981), states that the maximum temperature for a truck cask (NLI-1/2) is 1100°F and 1576°F for a train cask. These temperatures are far lower than those assumed in the *Waste Paper* accident scenario. *The Waste Paper*, using an Oak Ridge computer calculation, stated that the maximum temperature could reach 2000°F to 2150°F.

The NRC has denied our request for experimental verification of their computer calculations, using heaters in casks partially filled with coolant to duplicate a situation of partially lost coolant. Without a detailed analysis of the differing NRC computer codes, the disagreement between the Radioactive Waste Campaign and the NRC must remain unresolved. And, a major uncertainty remains regarding the potential risk from a shipping cask accident.

**Japanese Agree** A recent Japanese study on temperatures within shipping casks under a loss-of-coolant accident supports the *Waste Paper* analysis (thank you Michael Aaron of the West Valley Coalition on Nuclear Waste for the reprinted article). Titled "A Study on the Temperature Distribution in the Shipping Cask of Spent Nuclear Fuels at LOCA" by H. Nakai and T. Shibata (Memoirs of the Faculty of Engineering, Kyoto University, vol. XLIII, Part 1, January, 1981), the article shows that the maximum internal temperatures could vary between 1787°F and 2282°F. This is much higher than the NRC results of 1100°F. *The Waste Paper* temperatures of 2000°F to 2150°F were located between the Kyoto numbers. The Kyoto calculation, done for a GE rail shipping cask I-300, is therefore an independent confirmation of our results. It gives added weight to the Radioactive Waste Campaign conclusions that the casks must be experimentally tested for loss-of-coolant situations.

The Kyoto calculations assume no external fire, but do assume that the fuel has aged only 90 days. The Kyoto calculations are much more detailed than any temperature calculations yet performed in the U.S. The Japanese scientists analyze temperatures under a range of steam and neutron shield pressure assumptions. The Kyoto paper states that the dangerous zirconium steam reaction could take place. We have sent copies to the NRC and DOE for their comments.

# The Trenchant Report

Every one of the 72 operating nuclear reactors in the U.S. today produces 50 truckloads of "low-level" radioactive waste per year. This means a total of 3600 shipments annually or 10 per day. This radioactive cargo must be going somewhere, but where?

Although Hanford, Washington and Barnwell, South Carolina now accept the nuclear industry's excrement, both plan to limit out-of-state waste this year. So the pressure is strong to re-open old dumps and site new ones. The U.S. Congress, in December, 1980, called on states to help solve this problem by establishing regional locations to bury radioactive waste.

The Waste Paper recently uncovered severe problems at the West Valley burial ground. (See the Waste Paper, Winter 1980 edition.) Are these anomalies as the nuclear industry would like us to believe, or typical problems of underground dumping of toxic waste? Reading the Nuclear Regulatory (NRC) report entitled "Characterization of Existing Surface Conditions at Sheffield Low-Level Waste Disposal Facility" NUREG/CR 1683, is not reassuring.

**Ravines, Gullies, Gulches** The Sheffield burial ground, 50 miles north of Peoria, is criss-crossed by ravines, gullies and gulches, many six to 36 inches deep. In the thirteen short years since the site opened, Mother Earth has given us a warning of her constant geologic changes. Much of the trench area is eroding away. A mammoth crack in the earth threatens the stability of one wall while hazardous contents of another have been exposed by erosion.

There are 20 acres of once fertile land holding three million cubic feet of radioactive waste at the site. Although alfalfa, clover and weeds disguise the contaminated land, concrete markers are a give-away. Monuments of an atomic age, these markers depict the dimensions of the 21 trenches.

Among the waste buried there: 10 lbs. of enriched uranium and 34 lbs. of plutonium which will remain deadly for centuries to come. (Currently, regulations ban the dumping of this extremely dangerous material in "low-level" dump sites). The radioactive garbage was dumped into soil trenches without any type of liners. Part of the dismantled Elk River reactor in Minnesota is also buried on site.

**Permeability** According to the U.S. Geologic Survey, the insecurity of the site is largely due to the mixed clay and sandy soil called loess. This soil is loose, permeable and unsuitable for burying any type of hazardous material. Sand is a medium which allows rapid infiltration of water through either the trench covers or caps or through surrounding soil.

Nuclear Engineering Co. (NECO), which leased the land from the State of Illinois in 1966, claims that a clayey material was mixed with the loess to insure that rainwater would not drain through the trench covers. Geologists contracted by the NRC investigated the site in 1980 and remarked that "great care would have to be taken to obtain a homogenous mixture." These geologists excavating a drainage channel also observed a poor mix of low permeable soil surrounded by loess. If this is NECO's clayey material, water infiltration is inevitable.

**It appears that the entire site is eroding away!**

Tritium is the only radionuclide being monitored at Sheffield for off-site migration by 100 test wells. In only three years, 1975-1978, tritium had moved 75 feet. Recently the U.S. Geologic Survey constructed a tunnel under four of the trenches to detect tritium migration.

The deterioration of the Sheffield site is well-portrayed on the erosion map at PCI-3 (see below). PCI-3 is a huge, 105 foot-long crack along trench 14A (T-14A). In the NUREG report geologists speculate that this giant fissure intercepts the wall of trench 14A. This would mean water has direct ac-

cess to radioactive materials in the trench.

PCI-1 is yet another tale of the erosion of loess soil. The blackened circle on the map pinpoints a collapse on the north side of trench-3 (T-3) measuring six feet in diameter and one foot deep. Yet another route for water infiltration.

It appears that the entire site is eroding away! The state is baffled by the problem and desperately searching for a solution. One short-term cure attempted at the site was to fill eroding gullies with crushed limestone. Instead of preventing further erosion, foot deep gullies formed around the stone, creating an even broader gully area.

Remedial action under consideration for the site ranges from mixing the upper layer of soil with cement to covering the trench caps with asphalt. Neither action addresses the problem of possible underground water migration into the trenches.

**Echoes From West Valley** Presently the State of Illinois and NECO (now Ecology, Inc.), which also leases burial grounds at Maxey Flats, KY, Hanford, WA and Beatty, NV, are battling over responsibilities at Sheffield.

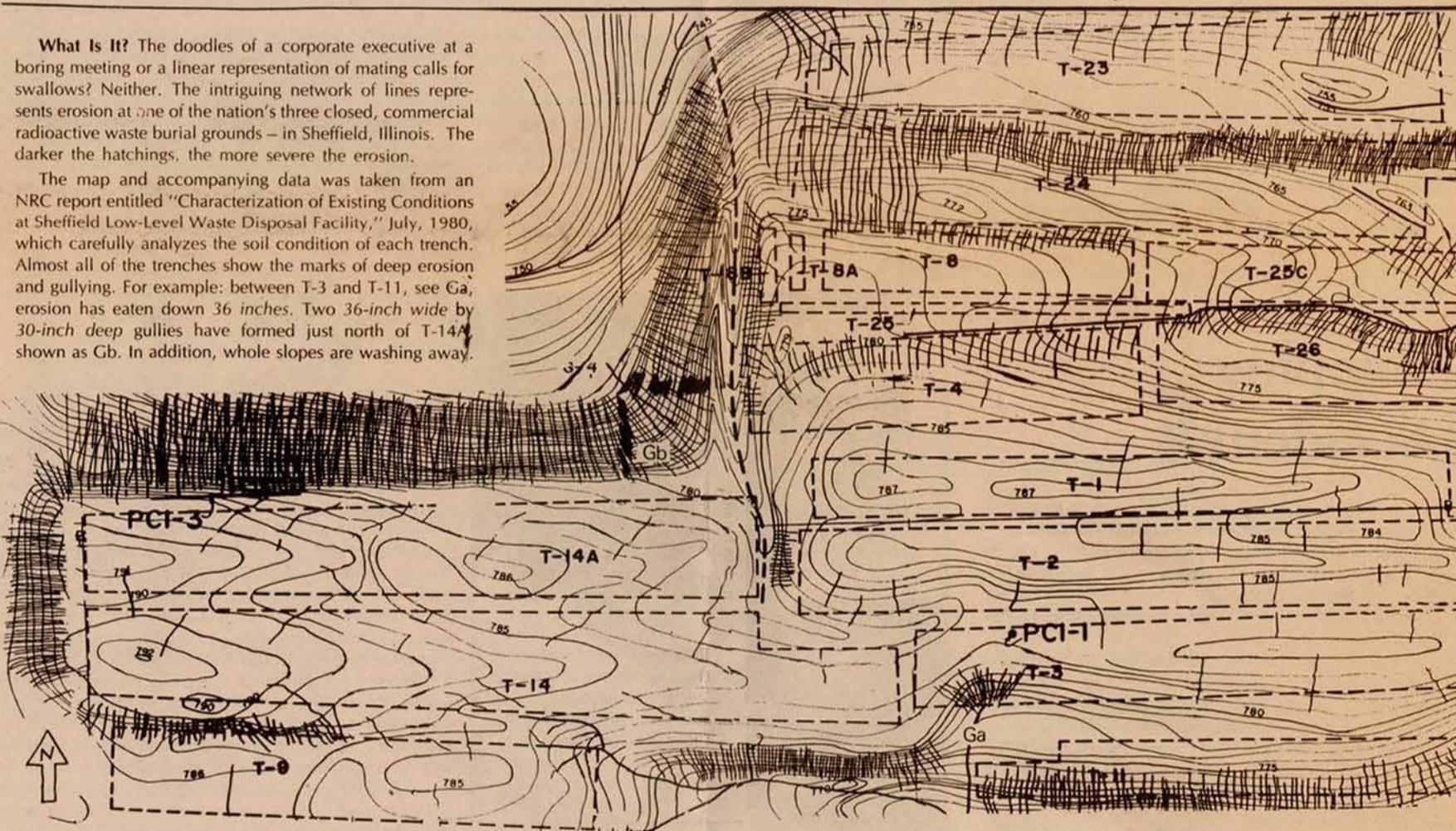
In 1976, NECO applied for an expansion of 168 acres but citizens and the State Attorney General prompted the company to withdraw their expansion application. In 1979, NECO attempted to abandon Sheffield, and the site was closed. The NRC obtained a court injunction, forcing NECO to remain on site. (A similar situation exists at West Valley where New York State has gone to court to prevent the corporation, Nuclear Fuel Services, from leaving the site.)

That decision sparked a battle, and today there are no quick or clear signs of agreement. The perpetual maintenance fund has dwindled to a mere \$44,000 and remedy of the severe erosion problems have been postponed until a caretaker of the site is established.

Citizens should read NUREG/CR 1683 and send it to state officials who regulate radioactive waste. The report is an understandable trench-by-trench analysis of erosion with vivid photos of gullies. Maxey Flats, West Valley and Sheffield, point to one conclusion: Don't bury radioactive waste underground.

**What Is It?** The doodles of a corporate executive at a boring meeting or a linear representation of mating calls for swallows? Neither. The intriguing network of lines represents erosion at one of the nation's three closed, commercial radioactive waste burial grounds - in Sheffield, Illinois. The darker the hatchings, the more severe the erosion.

The map and accompanying data was taken from an NRC report entitled "Characterization of Existing Conditions at Sheffield Low-Level Waste Disposal Facility," July, 1980, which carefully analyzes the soil condition of each trench. Almost all of the trenches show the marks of deep erosion and gullying. For example: between T-3 and T-11, see Ga, erosion has eaten down 36 inches. Two 36-inch wide by 30-inch deep gullies have formed just north of T-14A, shown as Gb. In addition, whole slopes are washing away.



## Remedy for Canonsburg?

Misery loves company. At least according to the U.S. Department of Energy (DOE). It wants to remove tons of radioactive waste from Canonsburg, PA and dump it 20 miles northwest in Hanover Township.

After five years of bureaucratic foot-dragging, DOE has finally outlined two options for remedial action. Either use the Canonsburg industrial park as the dump site, or truck 200,000 tons of radioactive residue and uranium mill tailings to Hanover.

The Canonsburg industrial site, 20 miles south of Pittsburgh, was contaminated by Vitro Rare Metals, Inc. and predecessor companies. The site has been used for uranium and radium processing since 1911. The Atomic Energy Commission (AEC) permitted the company to haphazardly dump the waste, ignoring federal regulations for disposing of mill tailings. Soon after, AEC

gave the plant a clean bill of health. The site, just one of over 100 Manhattan Project locations used to develop an atomic bomb, now needs decontamination. (See the Waste Paper, Spring 1980.)

Aside from the industrial park itself, at least 25-150 homes may need some type of decontamination. Residents' houses, gardens and pools will be part of the decontamination process. The AEC's mistake may cost as much as \$20 million. (We think much more.)

**Above-ground Storage** Concerned Citizens of Southwestern PA, outraged by the possibility that the nightmare at Canonsburg may become their own, began organizing on this issue. The group takes a stand that the hazardous material should remain at the place of origin and be placed in above-ground steel or lead bunkers to avoid offsite

migration and insure better monitoring.

George Lucchino of Concerned Citizens added "These bunkers will also be a constant reminder of the enormous amount of waste this country produces every day." The group also supports relocating Canonsburg residents whose homes or property are radioactive.

**10,500 Truck Loads** Two sites in Hanover Township are mentioned in DOE's remedial action report. The first, labelled the "Dinsmore site", is located on a ridge between two streams, hardly a secure place to store radioactive waste. The second, known as the "Ash Dump site", now used to dispose of ash, is similarly on a ridge. The potential for erosion here seems inevitable.

Remedial action would entail 50 weeks of transporting the waste to either site. A total of 10,500 loads would have to be

carted to Hanover.

The idea is to place tailings onto a plastic liner and use excavated backfill as a cover. This system has yet to be tested but the DOE is estimating it will take 2 1/4 years for the construction on this project.

The question of whose backyard we dump this toxic waste into is one no one wants to answer. But the DOE is making it a difficult question to avoid. The people from Canonsburg do not want to see another town experience their anguish, yet they are desperately seeking a cure. Not yet adequately researched is the possibility of chemically removing the radioactivity from the mill tailings remaining on the Canonsburg site, and thereby reducing the volume of material which must be sequestered. The NRC indicates this is a possibility, though an expensive one.

# Slaying the Atomic Waste Dragon

## Organizing Tips on Radioactive Waste

I. Be a non-human being. Be totally dedicated. Never stop thinking of the project. Eliminate your personal life or completely integrate it into your professional life. Work long hours. Travel tirelessly. Go to endless meetings. Read technical reports past midnight. Work harder than everybody. **WRONG.** This behavior is a guarantee of burnout, irritability, and most importantly of failure to understand how the rest of the world lives, thinks, feels. If we can't understand folks, we can't organize them. So take every third weekend off. Go out to dinner once or twice a week. Go to a movie once every three months. And force yourself to read something totally different than NUREG blimp and EIS blab - Gandhi, Sir Walter Scott, Thomas Merton, whoever.

II. We should consciously and carefully work on developing respect for those we organize. If, for one of the tiniest seconds, we think that the folks out there are fat, eat junk food, are uninformed, stupid, lazy, or morally inferior to folks who spend a lot of time thinking about Hiroshima and cancer, or that the folks are less advanced in cooperative, loving, superior living then **GO BACK TO SQUARE ONE.** We all think these things on a fairly regular basis.

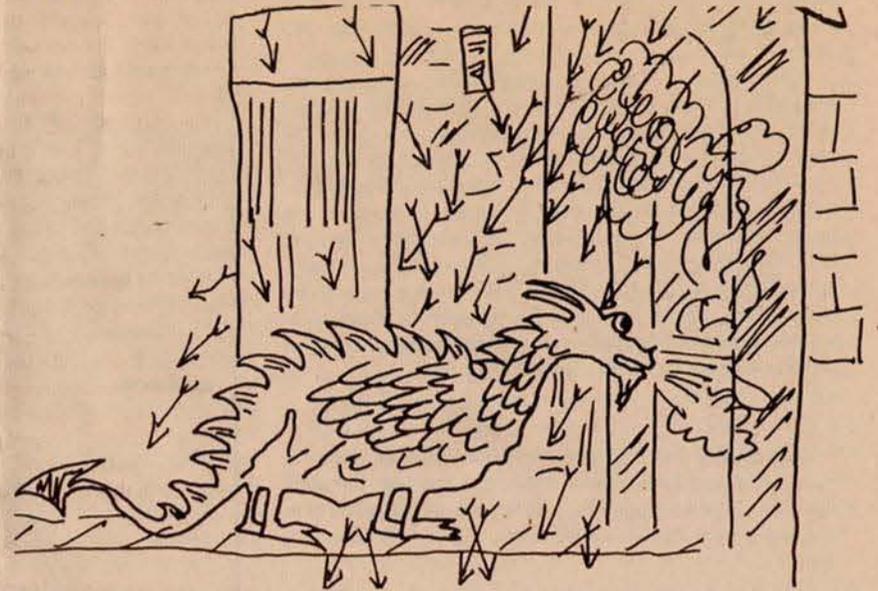
We have all been systematically educated OUT of respect for our fellow citizens so that we will feel free to stab them in the back and claw our way up the ladder of success, as we have been told to do. Learning to respect again is a long, long process which requires enormous discipline and practice. One part of this process is learning not to guilt trip those citizens who don't yet want to spend a lot of time reading grisly reports on cancer rates near nuclear facilities. Folks are going to do what they are going to do in their own time.

III. Be charismatic. Have the ability to inspire and encourage people who are flat out depressed and desperate. We are uncertain as to what exactly charisma is. But, in part, it is the ability to empower people - to make them feel alive again, feel important, feel that they can play a significant role in the battle. We can only elicit this response in folks if we, in fact, believe in this message.

How does one convey this attitude to an audience? One technique is to open a talk saying "Everybody in this room is important. We have been educated to believe otherwise. And you will not believe me, but you are somewhere inside your personality **HEARING me.**" A second way to empower people is to integrate them into a realistic political agenda that has a hope of succeeding (See # VII). If folks are led to feel that success depends upon them - then they will start feeling more important.

Another part of charisma regards enjoying oneself. If you the speaker are having a great time, more often than not, so will the audience. Most importantly, however, we should be able to conjure up a vision of a solution to this awesome problem - a vision that is grounded in reality.

IV. Developing a vision. Radioactive waste is one of the saddest, most painful and intensely disturbing fields that we can work in. We submerge an audience in extraordinary unpleasant facts - we talk of millions of gallons of fiendishly toxic poison seeping, leaching, leaking into the environment for 80,000, 250,000 or millions of years. We talk about bone cancer, bone marrow cancer, pancreas cancer, liver cancer, birth defects, skin cancer, nostril cancer, more birth defects. How do we prevent folks from rushing home and jumping under the covers? How do we keep people from push-

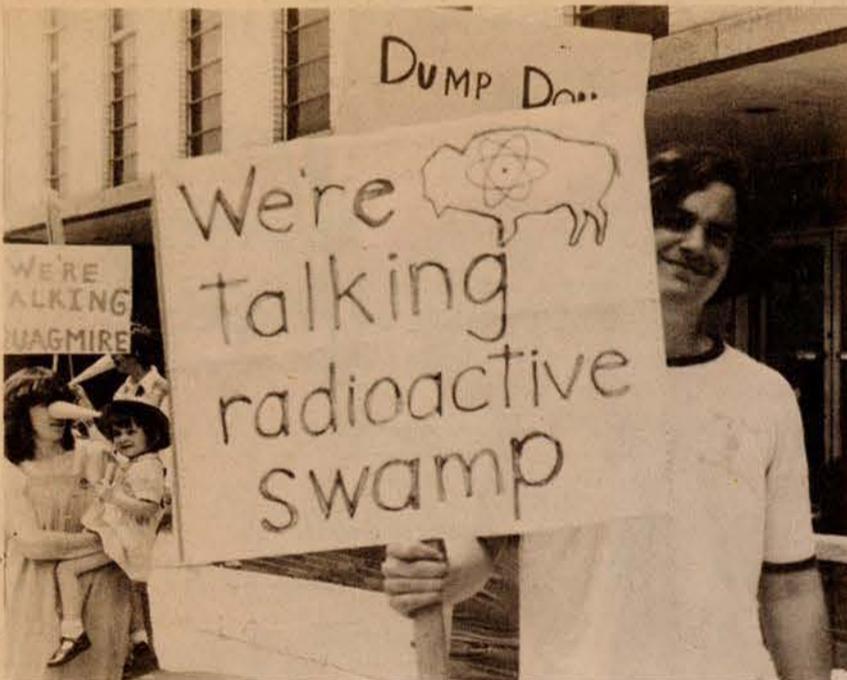


ing this awesome, awful topic out-of-sight, out-of-mind? We need to provide a glimpse of hope.

There can be hope on three different levels. 1) Hope regarding an action which may raise public consciousness or offer some measure of political relief - such as a bill setting up a public hearing process on an AFR (away-from-reactor storage facility for ir-

radiated fuel). 2) Hope regarding an intermediate solution that will tide-us over to a more long-term, permanent solution - such as digging up the burial ground at West Valley and putting the hazardous isotopes in above-ground, steel or concrete tanks. This is at least a substantial improvement over isotopes migrating every which way under-

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by Lisa Finaldi



by Lisa Finaldi

**They Lie** It wasn't Halloween or story time at the Department of Health (DOH) on May 28, 1981. Citizens were wearing Pinnocchio noses to represent the numerous lies that DOH has told about the solid waste burial ground at West Valley. Left: Mina Hamilton of the Campaign staff, talks to a reporter

about sand lenses at West Valley, which the DOH has known about for years. Among the radioactive waste buried, there are 12 lbs. of plutonium. Below: Citizen activist Mike Ahern pickets the DOH, protesting its lies about the insecure burial ground.

## Buffalo Says 'Dig It Up'

The Buffalo Common Council showed its concern about the hazard of leakage from the state-licensed burial ground at West Valley by requesting a state investigation into exhuming the contents. On May 26, 1981, it unanimously passed a resolution, sponsored by Dave Collins, to request that the New York State Legislature investigate the feasibility of exhuming the radioactive material. The resolution is reprinted below. Letters of thanks to the Council members are in order.

RE: West Valley Storage Site

WHEREAS, the West Valley dump site has several streams that lead into Lake Erie, the source of drinking water for one million persons in the Buffalo metropolitan region; and

WHEREAS, the West Valley dump site, licensed by the State, contains two million cubic feet of hazardous radioactive materials including twelve pounds of plutonium; and

WHEREAS, this waste is currently stored in "trenches" constructed for storage purposes; and

WHEREAS, these trenches at West Valley containing hazardous materials are chronically filled with water and will need to be pumped-out for hundreds of years; and

WHEREAS, almost two million gallons of radioactively contaminated water has been pumped out thus far; and

WHEREAS, springs, moist areas, sandy strata, and groundwater in the burial area make water accumulation in the trenches an unremedial problem; and

WHEREAS, the trenches continue to degrade with trench covers and walls collapsing, causing erosion affecting the integrity of the burial ground; and

WHEREAS, the longer materials packaged in cardboard, wooden crates and steel drums inside these trenches are allowed to dissolve, break down, rust and corrode, the more difficult it will be to retrieve these materials from the

trenches; and

WHEREAS, these waste materials could be stored in above ground concrete or steel storage bins for temporary storage purposes; and

WHEREAS, the hazardous radioactive materials in the trenches will be hazardous for three hundred years and must be prevented from reaching the environment through soil, water, and air contamination during that time; and

WHEREAS, the Buffalo Common Council has been made aware of the long-term hazards of West Valley burial sight to the health of citizens in the metropolitan region;

NOW, THEREFORE, BE IT RESOLVED, that this Common Council hereby requests the New York State Legislature to initiate an investigation into the feasibility of exhuming the hazardous material stored at this burial ground and placing the wastes in less threatening storage facilities, until such a time as there is a permanent repository; and

BE IT RESOLVED, that this resolution be forwarded to each Western New York Legislator.

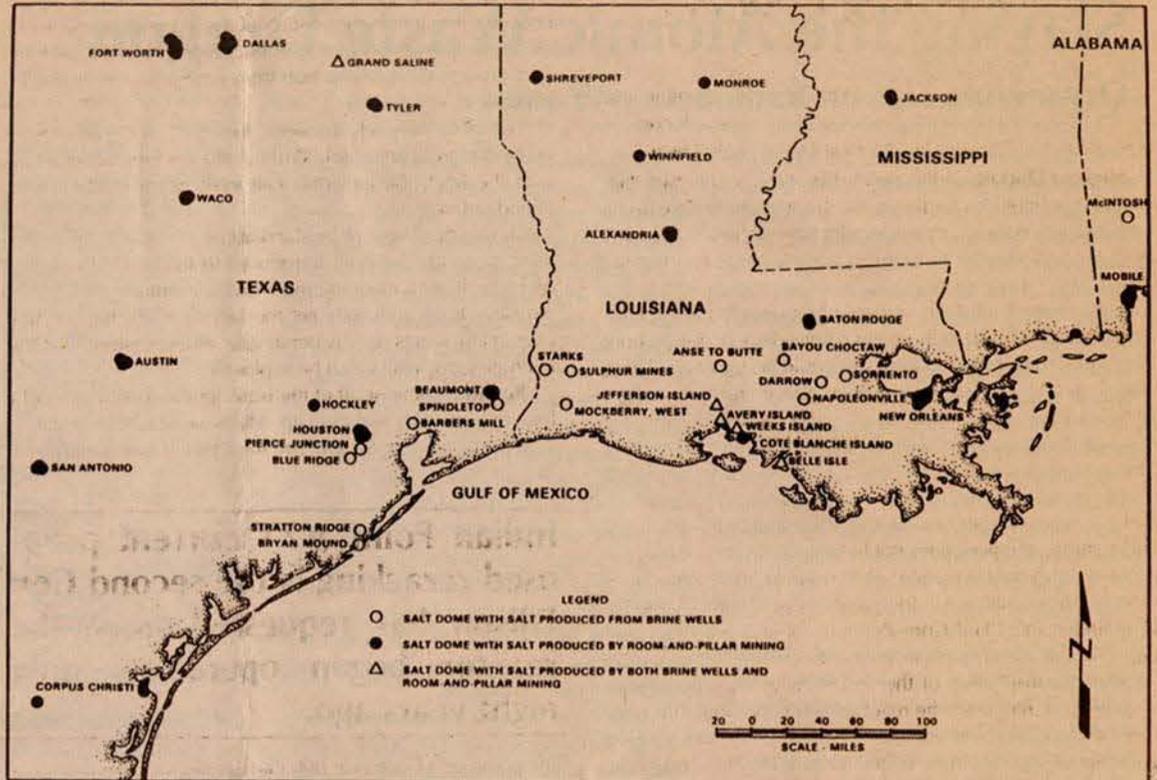
# Salt . . .

continued from page 1

in the virgin domes, then the domes as a resource for other uses would be exhausted considerably sooner than 365 years.

Citizens may not want to start hoarding table salt, but folks may want to share the important information laid out in this report with local legislators, Congresspersons and the media. This Batelle report should be enough to kill, immediately, the salt dome storage scheme. The report *Solution Mining in Salt Domes of the Gulf Coast Embayment* can be ordered from National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22151 for \$9.00. If the price is too stiff, try to get a copy directly from your Congressperson. Readers interested in further information on the salt repository question should order our fact sheet, *Salt Will Not Work*.

**Salt Domes** The map represents operating salt mines in the Gulf Coast Embayment. Note that few are presently operating in Mississippi which makes the state a prime candidate for radioactive waste dumping. Source: US Bureau of Mines.



# Atomic Waste Dragon . . .

continued from page 5

ground. 3) Hope regarding the possibility of an eventual solution. The example we often use is that of putting a man on the moon. It took 11 billion dollars and hundreds of the best scientific and technical minds in the country. It was a dream. But we did it. We must offer our depressed, desperate audiences a belief that we can slay the atomic waste dragon. IF IT IS MADE A NATIONAL PRIORITY.

V. We must believe in our cause with an intense passion. We all have our own reasons why we choose to work in this field. It is important for us to know why, to be able to identify to ourselves those reasons, to understand and appreciate the font of our activity. For each person, this font is different.

VI. Become experts. We cannot sit around and wait for the PhD's to come to our rescue. De-mystifying information and de-experting the experts is critical to building a strong movement. Only through possessing and understanding information will citizens start to control it. Bone up on the facts. Read technical reports carefully sometimes. Skim them at others. Develop the knack of looking for nuggets that you have a gut feeling has the potential to galvanize folks. Penetrate the barrier of numbers. Put handy numbers down on 3 by 5 cards, and memorize them on bus trips. Or put them in

a notebook with a reference. Don't be such an expert that you make folks feel overwhelmed and UNABLE to become experts themselves. Remember, it is permissible to not know something, sometimes. Just promise to get back to the individual with the correct information later. (More suggestions about numbers in the next section.)

VII. Learn the skill of turning defeats into victories. We will frequently suffer defeats. We need to be able to *redefine* a situation so that folks are not too depressed if we do lose a battle. If a goal is not reached, then redefine the strategy so that it is the *process* that is most important not the goal itself. The spent fuel ordinance may be defeated this legislative session but, in the process of holding forums, hearings, getting press coverage, a lot of groundwork is laid for the next session.

To avoid too many defeats, we need to select **REALISTIC** goals with a reasonable time frame. Most legislation will take, at least, two, sometimes three, four, and five years to pass. If we have unrealistic expectations, defeat will be all the crueler. There is a juggling act here. We can only inspire folks to act, if there is a good chance at winning, yet we do not want to set up our supporters for a fall by overestimating the chance of a win. And when we lose (and normally we will have advance warning) we

must never manifest discouragement to our constituency. It is our role to encourage everybody all the time.

VIII. Don't be reactive. Set an agenda. Do not keep constantly running off to put out brush fires. We are going to lose some battles. **ACCEPT IT.** There are some battles we are not prepared for now. In our opinion, our agenda is basic education, building of a network, and setting up a coalition. We will win later if we keep our noses to the grindstone of slow, methodical, careful, grass roots work and ignore the sound and fury of other battles. *Our first commitment is to build our strength.* Engaging in battles we lose, in fact, does the opposite, saps our strength. (For more on this point, see the book reviewed on page 7, "The Nader Syndrome".)

IX. Try the oblique attack. Do something that surprises the enemy, instead of what he expects you to do. For example, go after the hazard that is present now. It's hard to get folks charged up about something that may happen in 1985, about an accident that **MIGHT** occur. All this speculation and theory doesn't work with folks worried about now problems of inflation, job security and the mortgage on the house. For example, it is the reality of the problems with the 600,000 gallon tank at West Valley and the

leaking burial trenches that have to be pumped out on a regular basis that has made an AFR at West Valley an issue for many folks in New York State - it is this present threat and *not* a hypothetical future threat regarding a planned AFR that has been the key to successful organizing.

X. Be flexible. Do not try to replicate a strategy that has worked in one region. Each organizing situation has its own internal dynamics, its own set of conditions. One can learn from models of other actions such as the New York State Radioactive Waste Campaign but this model must be adapted, tailored and shifted to meet your region's needs. Besides, our opponents after a certain time, learn the strategy we are following and adapt accordingly. So we must, continuously, be developing strategy in a creative and imaginative manner.

XI. Have a good time.



# Shipping Accident II . . .

continued from page 3

**Pressure Cooker** The Kyoto paper also brings to light information not previously known in the U.S. Under normal (non-accident) conditions, the maximum internal temperature is 572°F. The shipping cask should, therefore, be considered a travelling pressure cooker. Under a loss-of-coolant accident, steam, not water, would, according to the Japanese researchers, immediately exit the cask. The Aug./Sept., 1979 *Waste Paper* assumed that it would take several hours before water reached the boiling point and exited the cask as steam.

Neither the Kyoto calculation, nor any U.S. calculation of which we are aware, takes the phenomena of horizontal assemblies into account. Because the fuel assemblies lie horizontally within a rack in the cask cavity, some localized temperatures within the cask are expected to be higher yet.

If the racks were standing vertical, the heat could be circulated by convective flow since hot water rises. This means that even the Japanese calculations may be conservative on the issue of internal heat of the cask.

Finally, the Kyoto paper notes that lead, used in cask construction to shield gamma rays, would become molten in highway accident conditions, and that molten lead would not be nearly efficient in shielding gamma rays. Thus, the radiation dose near the cask would rise, even if no radioactivity escaped.

**Phenomena Denied** Since the Federal agencies continue to deny that high temperatures would be reached in a cask accident, they also deny that much cesium will be released. Under a severe accident, Sandia Labs estimates that only up to 0.4% of the cesium could be released, and only 0.05% if steam were in the cask. *The Waste Paper* postulated that up to 90% could be released if a zirconium steam reaction took place since the reaction and possible hydrogen explosion would shatter the fuel cladding and expose the fuel pellets. Sandia based their estimates of minimal cesium release on experimental tests whose design was truly absurd. Fuel frag-

ments were submerged in flowing water. The amount of cesium detected in the water supposedly represented the amount that would be released during an accident.

The heat and pressure factors of an accident were simply ignored. But, during the Three Mile Island accident, 50% of the cesium in the fuel assemblies was released to the water, and earlier government studies denied that such a phenomenon was possible.

Until these and other uncertainties regarding safety of nuclear transport are resolved, the Sierra Club Radioactive Waste Campaign continues to maintain that spent fuel should not be transported and that the DOT regulations, slated to go into effect February, 1982, which pre-empt local ordinances, should be withdrawn.

For more information on nuclear transport write to the Sierra Club Radioactive Waste Campaign, 3164 Main Street, Buffalo, NY 14214. Resources available include the Fact Sheet, "Shipping Casks: Are They Safe?" (\$.50), the Kyoto paper mentioned above (\$1.00), and the Aug./Sept., 1979 edition of *the Waste Paper* (\$.50).

Sierra Club Radioactive Waste Campaign  
 3164 Main Street  
 Buffalo, New York 14214  
 (716) 832-9100

Name .....

Address .....

City ..... State ..... Zip .....

Phone: Work ( ) ..... Home ( ) .....

Please make checks payable to the Atlantic Chapter Radioactive Waste Campaign. Send to the above address. Thank you.

- Yes, I would like to subscribe to the *Waste Paper* at the reduced introductory rate of \$6.00 per year. I am enclosing a check in this amount.
- Yes, I would like to volunteer some time for the Radioactive Waste Campaign. I will help with research, clerical, organizing, public speaking (please circle your interest).
- Yes, put me on your mailing list.
- Yes, I would like to stop radioactive wastes. Here is my contribution of \_\_\_\_\_ to the Campaign.

## The Swimming Pool . . .

continued from page 1

lacks both the massive, foot reinforced containment and most of the safety systems which Con Ed insists will contain any radioactive releases during an accident at the reactor.

**Stopgap Options** At this point, Con Ed has only two "acceptable" options. A third option, shutting the reactor down and thereby ending further production of irradiated fuel, might be welcome news to the *Waste Paper* readers but not to Con Ed's management.

The Indian Point #2 pool could be expanded at a whopping cost of \$10-20 million. For considerably less, about \$7.5 million, new spent fuel racks could be installed. These would re-rack the fuel assemblies (place them closer together) and allow room for more irradiated fuel. While there is room in the pools of both IP-1 and IP-3, the Power Authority of the State of New York, which owns unit #3 has told Con Ed it will not take the private utility's waste. IP-1's fuel pool building is not qualified as earthquake resistant. Furthermore, the pool does not have a steel lining.

As of this year's refueling, IP-2 has only about one core's worth of space left in the fuel pool. Most utilities like to try to maintain this "Full Core Reserve" of space in their fuel pools in the event that an accident or some other reason necessitates inspection of the reactor which would require emptying the fuel from the reactor vessel. Without Full Core Reserve, some types of emergency reactor vessel inspections could be held up for months, resulting in lengthy shutdowns which the utility wants to avoid (but Con Ed doesn't seem to manage to).

Indian Point's #2 currently proposed re-racking is the second the utility has requested since the reactor began operation only eight years ago. The original fuel pool was designed to accommodate 264 fuel assemblies. In 1975, Con Ed requested permission from the NRC to re-rack the fuel pool to almost double the storage capacity and allow up to 482 assemblies to be stored in the pool. Permission was speedily granted in seven months.

Con Ed knew, however, that the first compaction was only a stopgap measure. Sure enough in February of 1979, Con Ed requested the NRC for another compaction. This time the utility wants to sardine up to 1000 assemblies in the pool. This is about four times the original capacity.

The NRC is expected to rule on this request sometime in 1981. If the utility gets a go-ahead, the company will cram

additional racks in the pool. There will be even less space between the assemblies. Much of the remaining space will be taken up by boral plates. These absorb neutrons and prevent an actual chain reaction from getting started in the fissionable close quarters.

The ultimate safety concern, however, is the heat given off by the irradiated fuel. Without the cooling water to absorb the heat, the fuel rods can melt, releasing their contained radioactivity.

During the Three Mile Island accident, millions of Americans were dramatically introduced to the fact that nuclear fuel rods have a cladding made of a zirconium alloy called zircaloy. If the fuel rods get too hot (1688°F), the zircaloy chemically reacts with water to give off even more heat and hydrogen gas, which can be explosive.

**Boiloff** If some or all of the water in the spent fuel pool is lost, the fuel rods will heat up. Much or all of the remaining water may be evaporated. The most recent fuel additions to

### Indian Point #2's current proposed reracking is the second Con Edison has requested since the reactor began operating, only eight years ago.

the pool, which are very hot, can transfer their heat to older, cooler fuel rods, spreading the heat-zirconium-water reaction throughout the pool, according to NRC authorities. The more rods in the pool, the less time it will take to heat up and boil off the water in an accident situation. Further, the presence of boral plates will interfere with the circulation of cooling water.

Once the chemical reaction gets started, the affected rods become brittle, releasing gaseous waste products such as krypton-85. Additional heating would result in vaporization of radioactive materials such as cesium and iodine. If enough hydrogen is generated, an explosion could occur which could rupture the fuel pool building walls, which are made of sheet metal.

So what plausible event could cause the fuel pool to lose water or heat up? A fuel rod or shipping cask could be dropped from the overhead crane used for moving the hot fuel in the pool - knocking down other rods and causing a crack in

the pool. (Already, there have been a number of such incidents where rods were dropped but luckily none cracked the pool.) The pool's cooling system is tied to the reactor cooling system. If the reactor experiences an accident and there is a power failure, the pool's cooling system would also shut-down. If the reactor accident caused high radiation levels in the fuel pool building, workers might be prevented from making repairs to the pool cooling system.

The hazard is compounded at IP-2. The structure which houses the emergency generators for IP-2 does not meet current NRC standards for fire, earthquake or tornado protection. The emergency diesel generators needed to keep the reactor and spent fuel pool cooling systems operating in the event of power failure, could themselves be knocked out by the same accident. In other words, there is not a fail-safe back-up system.

The hazard of, perhaps, most concern to nearby residents is the potential for an earthquake along the Ramapo fault which passes within 3000 feet of the reactors and the spent fuel pools. The fault has experienced several small tremors, though the father of earthquake measurements, Charles Richter, feels the fault is incapable of significant quakes. While the scientists are weighing the probabilities, an unquantified but distinct earthquake hazard remains.

**Cramming** The irradiated fuel problems at IP-2 are being duplicated at dozens of reactors throughout the country. Citizen groups are faced with unattractive alternatives. They can press for the construction of new, stronger fuel pools with independent cooling systems. Even though this means more fuel on site for a longer time, this is probably the best option short of reactor shut-down. Or citizens can allow the utilities to continue cramming more and more fuel into pools that, along with the reactors, are getting older and older, and more unsafe. Or, the citizens can call for moving the fuel (a severe hazard in itself) into somebody else's community to be stored in pools that may be just as insecure as current sites. Faced with these unattractive options, more and more citizens are saying maybe the utilities should stop producing the poisonous fuel. As stated by the NRC's Director of State Programs, Robert Ryan, about Indian Point: "I think it's insane to have a three-unit reactor on the Hudson River . . . 20 miles from the Bronx. If you describe a 50-mile circle, you've got 21 million people. And that's crazy . . ."

Warren Liebold is on the Executive Committee of the Atlantic Chapter of the Sierra Club. He is a frequent contributor to the *Waste Paper*.

## Calling All Boots to Swamp Day

Frogs, turtles and mosquitoes can usually be found near swamps, but who would think that radioactive waste would be buried close to a swamp. Well, there are several swamps close to the solid waste burial ground at West Valley. From this, emerged the idea for Swamp Day. Swamp Day, which will be held in the Fall, is part of the Campaign's work to dig up the West Valley burial ground. The geology at West Valley is scandalous for burying radioactive waste. It will present a hazard for years to come. Below are some ideas for Swamp Day. Further details will be provided in the next *Waste Paper*. Send us your thoughts.

- 1) Go visit your local legislators wearing galoshes or preferably fishing hip boots and urge them to support a resolution to dig up the West Valley burial ground.
- 2) Put on the SWAMP play - a hilarious, one-act, comedy about a canny citizen prying loose information about the swamp from a wary bureaucrat. (Add your own additional acts, if you want to get ambitious.) Script available from the Campaign.
- 3) Sing the SWAMP DAY theme song - Down in West Valley.
- 4) Sponsor an informative talk on the West Valley burial ground (we have available excellent overhead transparencies and a slide show).
- 5) Circulate petitions to dig up the burial ground at West Valley (available from the Campaign).
- 6) Ask local physicians to write the NY Department of Health regarding their concern re the burial ground.
- 7) Sponsor a field trip to a local swamp (take binoculars to observe bird life).
- 8) Have a They Lie picket in front of the local Department of Health office. Think up your own picket slogans.
- 9) Encourage school children to write poems about swamps.
- 10) Encourage your local radio station to re-run a taped interview about the swamp which was broadcast in Buffalo this year (tape available on request).
- 11) Paint a swamp mural on a local building.
- 12) Have a poster painting contest for kids on why a swamp is not a good place for a dump site.

## The Nader Syndrome

Although the "China Syndrome" is a familiar term to citizens activists concerned about nuclear power, most would draw a blank on the "Ralph Nader Syndrome."

The folks at the Northern Rockies Action Group, Inc. (NRAG) have published a report entitled "Preventing Burnout in the Public Interest Community," by William Bryan. It is a helpful guide to the perils of the burnout problem that torment the staff of numerous public interest groups.

What is burnout and why people burn out is discussed. One reason stressed by the author, William Bryan, is that public interest groups are chronically running to respond to the rapidly moving agenda of their opponents. And in this process of reacting to never-ending external pressures, not only is staff over-worked, underpaid and frustrated, but the whole direction of the organization becomes confused, unfocused.

Bryan strongly recommends focusing on developing a long-term agenda with realistic goals and timetables and on carefully working on the internal health, dynamics and functions of the staff. Bryan has a lot of concrete suggestions to counteract such problems as budget uncertainties, lack of job security and the spartan existences so prevalent in public interest jobs.

The paper cites specific characteristics of people prone to burn out. Be careful. You may see yourself. If you are worried that you are on the fast track to burnout, Bryan has lots of ideas for you.

You can order this thought provoking paper by writing to Linda Wood, Editor NRAG Papers, 9 Placer St., Helena, MT 59601. Please enclose \$3.

## Word Power

**Critical Mass** - A church service you have to go to.  
**Electron** - Some people made this mistake last November.  
**Fission Products** - Seafood.  
**Fuel Cycle** - A real fool thought this up.  
**Kiloton** - A heavy murder rap.  
**Leaching** - What the nuclear industry is doing to the tax payers.  
**Neutrons** - You get these when your old trons wear out.  
**Radioactivity** - Anything done with broadcast music.  
**Radiohydrology** - The study of aqua-radios.  
**Radiological** - The way disc jockeys think.  
**Reactor** - Marlon Brando coming out of retirement.  
**Spent Fuel Pool** - Irradiated billiards.  
**Threshold Hypothesis** - What they don't know, won't hurt them or if you believe that one, I have a deal on a bridge in Brooklyn.  
**Transmutation** - Not your normal trans.  
**Yellowcake** - Not from Betty Crocker.  
**CANDU Reactor** - Who told them they could?

by Jack Luzier

Jack Luzier is a special education teacher in Buffalo, NY. He is active in the Radioactive Waste Campaign and the C.A.N.C.E.R. Coalition.



**Peter's Express** Peter Dalton of the Campaign staff moving out some of the hundreds of literature and T-shirt requests received weekly. Some of our recent information seekers have been from Guam, Holland, the New York State Department of Health, Sen. Levin from Michigan and a sailor on the USS America.

# Late Breaking News

## New York State Taxpayers to pay MILLIONS MORE for West Valley clean-up?

An agreement between the U.S. Department of Energy (DOE) and the New York State Energy Research and Development Authority (NYSERDA) establishing the ground rules for the solidification of the 600,000 gallons of high level, liquid radioactive waste at West Valley is under attack. Known as the Cooperative Agreement and signed on in December, 1980, the agreement has three key provisions:

1) The federal government would pay 90% and New York State pay 10% of the costs of the solidification project. Costs of the project are currently estimated at \$284 million, but are likely to run into the BILLIONS.

2) New York State would pay for the 10% not in cash, but by being credited for services provided by NYSERDA and other state agency staff and by crediting an estimate of the value of the buildings and facilities on site as part of the 10%. These facilities would be used by DOE during the project.

3) During the solidification project, the site may not be used for any other purposes such as an away-from-reactor storage facility (AFR), reprocessing or other activities. This provision does not apply to the state-licensed burial ground, which was excluded

from the agreement.

Congressman Manuel Lujan of New Mexico and Tom Bevill of Alabama, among others, are leading the attack on the Agreement. The CLEAR DANGER is that once back at the negotiating table NYSERDA will either have to promise to cough up extra cash which the state legislature may refuse to do or to "give" something the nuclear industry wants such as opening the West Valley site for other nuclear activities.

And what can the state "give" that the industry and its advocates in the Department of Energy want? — the promise to re-open the state-licensed burial ground. The situation is urgent. Please write immediately to members of the New York State delegation and to members of the subcommittee on Investigations and Oversight (listed below). It is this subcommittee which is re-examining the agreement. Some points you might want to make:

1) The federal government through the U.S. Atomic Energy Commission encouraged New York State to enter into the reprocessing business, but failed to identify the long term waste problem generated by reprocessing. It is appropriate, therefore, for the federal government to assume a significant share of responsibility for this mess.

2) Only 5% of the fuel reprocessed at West Valley came from reactors in New York State, the rest came from the defense industry (about 55%) and the rest from reactors in other states. Why should New York taxpayers have to pay the cost of cleaning up the mess left by reprocessed fuel from reactors in New Jersey, Illinois, Wisconsin, and Michigan?

3) The Cooperative Agreement makes no mention of the corporation who ran the West Valley facility, Getty Oil and W. R. Grace, or of the utilities whose fuel was reprocessed at the facility. Why shouldn't these entities also share in the costs of cleaning up the hazardous byproducts of their profitable enterprises?

Write today before it is too late. How costs are allocated at the West Valley site will set important precedents for the nuclear industry as a whole.

Address your letters to the U.S. Congress, House of Representatives, Washington, D.C. 20515. Members of the Subcommittee looking into this matter are: Albert Gore (Tenn.), Bob Shamansky (Oh.), Harold Volkimer (Mo.), Robert Walker (Pa.) and Manuel Lujan (N.M.). ☸

## Resources

*Radioactive Waste Slide Show* — Includes review of the nuclear cycle, problems of low level radiation, hazards of transportation and an in-depth portrait of West Valley. Excellent for community groups and teach-ins. Available

with cassette or written script. \$55.00 purchase, \$15.00 one week rental.

*Nuclear Waste: The Myths and Realities*: Important information about the current myths

and realities concerning nuclear waste. Available in Spanish too. \$1.

**For a complete listing of information send for our Resource Sheet today.**



The Sierra Club Radioactive Waste Campaign T-Shirts are great gift ideas for any time. Buy one for a friend as well as for yourself. Shirts are white, all-cotton with 6 color design. Non-toxic dyes. They only cost \$5.95 each, plus 75¢ postage and handling. (N.Y. residents, add 7% sales tax.) Bulk rates available. Now in Polish too!

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3164 Main Street  
Buffalo, New York 14214

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