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EPA JOURNAL

Superfund

Hazardous
Chemicals
Spilled In
Train Wreck

Administrator Anne M. Gorsuch and Deputy Administrator John W. Hernandez at meeting of EPA employees in Washington.

Administrator Pledges Environmental Protection, Regulatory Reform

In her first address after taking office, EPA Administrator Anne McGill Gorsuch last month told Agency employees that she will work for environmental protection as well as other goals to improve EPA's operations and make the Agency more efficient.

Speaking to several hundred Headquarters employees gathered outdoors in brilliant Spring sunshine, Gorsuch said she was honored that the President had selected her as Administrator and that she greeted the challenge with great enthusiasm.

"In our meetings, President Reagan impressed me in a number of ways, not the least of which was his commitment to protect our environmental values by the importance which he placed on the shoulders of this Agency," she declared. "I strongly share that commitment. Our Chief Executive is also determined to achieve other important goals—economic recovery, development of domestic energy sources, new jobs and a decrease in the Federal deficit and the size and influence of the Federal Government. The American people presented President Reagan with a wide mandate to carry out his programs, and as a member of the new Administration, I am committed to that work optimistically."

Gorsuch added that she believed EPA could contribute greatly "by seizing the initiative in two of President Reagan's new policy areas—regulatory reform and the new Federalism. In the future, EPA will contribute to the new Federalism by constantly watching for ways to shift the decision-making process from the banks of the Potomac to the local courthouse and State capitols. Deserting an adversary role, EPA will seek to bring State governments in as full and active partners in the achievement of our environmental goals.

"As to regulatory reform, it is my hope that the EPA of the Reagan Administration be remembered for the amount of money it has saved the taxpayers because we streamlined regulations, cut down on permit-processing time and cut back on the required paperwork for EPA projects. Through regulatory reform, efficiencies can be promoted that produce savings in the products and services purchased by American consumers. We should work to keep a lid on those unnecessary regulations which have created hardships in our National industries, driving up the cost of consumer goods. On America's farms, in the steel mills, on the auto assembly lines and as Americans search for domestic energy resources, the EPA should move in accordance with President Reagan's goals for our country without sacrificing the important environmental considerations of cleaner air, cleaner water and more productive land."

The Administrator introduced Dr. John Hernandez, the n[illegible] Deputy Administrator, "wh[illegible] for the first time in this Agency's history, brings a tech-

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Anne McGill Gorsuch, Administrator
Charles D. Pierce, Editor
Truman Temple, Associate Editor
John Heritage, Managing Editor

EPA is charged by Congress to protect the Nation's land, air and water systems. Under a mandate of national environmental laws focused on air and water quality, solid waste management and the control of toxic substances, pesticides, noise and radiation, the Agency strives to formulate and implement actions which lead to a compatible balance be tween human activities and the ability of natural systems to sup port and nurture life.

Articles

Departments

Front cover: Derailment of a train carrying chemicals near Claxton, Ky. The burning car contained vinyl chloride. EPA Region 4 Environmental Emergency Branch and other agencies responded.

Photo credits: Mike Davidchik, EPA Region 7; George Houghton, EPA Region 3 Central Regional Laboratory; Al J. Smith, Jr., EPA Region 4; John Gilbert; Northern States Power Co.; Mich. Dept. of Natural Resources; National Institutes of Health; U.S. Navy; EPA EMSL—Las Vegas/Environmental Photographic Interpretation Center; EPA Environmental Response Team, Edison, N.J.

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Defusing Chemical 'Time Bombs'

By Larry O'Neill

A new technique using ultraviolet light is being employed in Missouri to help clean up two major sources of liquid wastes contaminated by "TCDD dioxin," one of the most toxic compounds known.

The treatment of the two chemical waste sites, both located in southwestern Missouri, marks a promising advance in EPA's drive to provide protection against dumps which threaten people and the environment.

"The Missouri experience is significant for a couple of reasons," said Richard D. Wilson, EPA Acting Assistant Administrator for Enforcement. "The cleanup technique being studied and used on the dioxin wastes also may be useful in neutralizing other harmful compounds, such as PCB's. In addition, the willingness of the industry in question to seek cooperative solutions to difficult disposal problems can serve as a model for remedial actions at other dump sites."

Dioxin, an unintended by-product of the manufacture of 2,4,5-T herbicide and related chemicals, is poisonous in extremely small amounts and also is thought to be capable of causing cancer and birth

Workers in protective clothing cleaning up wastes containing dioxin near Aurora, Mo.

defects among people, based upon its effects on laboratory animals.

One of the Missouri dump sites is a rusting 20-foot tall tank in Verona, containing about 4,300 gallons of oily liquid laced with dioxin at levels up to 350 parts per million (ppm). By comparison, a major U.S. chemical firm now can manufacture finished 2,4,5-T products containing less than 0.05 ppm of this contaminant. (The wastes from this process may contain higher levels.)

The second Missouri dump, a 20 by 65-foot trench on a farm near Aurora, may hold up to 140 steel drums with dioxin levels as high as 319 ppm.

Both sites had the potential to poison people and the environment. In fact, some wastes from the Verona tank did so. In 1971, liquids from this cauldron, mixed with waste oil and sprayed on three Missouri horse arenas to control dust, made a six-year-old girl seriously ill, killed 63 horses, six dogs, 12 cats, and other animals. In addition, the tank is located in a part of Missouri occasionally visited by tornadoes. The 10-year-old site near Aurora threatened to contaminate underground drinking water and nearby Flat Creek.

The toxins came from the same source: a chemical plant in Verona leased during 1969 through 1971 by North Eastern Pharmaceutical and Chemical Co. During this time, North Eastern produced an antibacterial agent and chemical relative of 2,4,5-T, called hexachlorophene. This process resulted in the dioxin waste which wound up in the tank—located on the plant property—and at the Aurora-area farm. The owner of the Verona plant during most of this period was, and is, Syntex Agribusiness, Inc., headquartered in Palo Alto, Calif.

EPA has been consulting with Syntex on the Verona tank since the mid-1970's. This somewhat informal cooperation became a necessity in March 1980 when the Agency, concerned primarily about another dioxin disposal problem in Arkansas, issued an order prohibiting any disposal of the toxin without EPA approval. Two months later, the Agency gave permission to Syntex to use a new treatment technique developed by a company contractor.

The technique is called "photolysis." The details on how and why it works are regarded by the company as trade secrets. But basically, photolysis consists of extracting dioxin from the liquid waste with a solvent, then exposing this material to ultraviolet light which degrades the dioxin to levels below 0.5 ppm.

Syntex so far has detoxified about 4,000 of the 4,300 gallons in the tank. This treated liquid is being held at the plant site, while the company plans for permanent disposal. One option being considered is incinerating the wastes on board the ship *Vulcanus* which successfully destroyed 10,400 metric tons of surplus Herbicide Orange defoliant during 1977 and 1978.

EPA's involvement with the dump near Aurora began in October 1979 with a phone call from a former North Eastern and Syntex employee who reported a chemical burial ground on the farm of a current Syntex employee named James E. Denney.

Kenneth S. Ritchey of the air and hazardous waste division in EPA's Kansas City office received the call. "It seemed quite factual and legitimate," he recently recalled, "and later interviews with the caller left no question that the tip was for real."

Indeed it was. Visits by EPA investigators to the site confirmed its existence. But its contents remained a mystery until April 22, 1980, when an EPA team "with an armed guard, firefighters, and a semi-trailer decontamination unit—and enough equipment to support a moon walk," according to one newspaper account, returned to take samples from the waste drums and from nearby drinking water wells. These samples were studied, and in May 1980, the Agency announced that dioxin was present in the drums and surrounding soil but that the well water was clean.

In the meantime, EPA had been negotiating with Syntex officials to undertake cleaning up the Denney trench. In a consent decree of August 1980, the company agreed to develop a plan for detoxifying the site, to reimburse EPA for $100,000 the Agency spent in preliminary work at the dump, and to assume responsibility for monitoring the safety of well water in the area.

On March 6, 1981, EPA's Kansas City office concurred with Syntex's proposal for detoxifying the Denney farm. Under this plan, the company will again use the photolysis process at its Verona plant to neutralize liquid wastes found in the drums. In addition, the company will use sealed concrete vats at the farm to mix dioxin-laden soil with special bacteria to determine if they can transform the poison into more benign substances.

During the cleanup operation, the trench will be surrounded by a steel shed to prevent wastes from escaping into the environment. Workers at the site will wear protective clothing and breathing equipment to minimize their exposure to the toxic wastes. Syntex will provide physical exams for these workers both before and after the cleanup. In addition, the company has agreed to monitor air quality around the site and to periodically check ground water to determine if harmful contaminants are leaching from the trench.

The company expects to remove the wastes from the trench and to restore it within five months. Other aspects of a complete cleanup may take longer. For example, the bacteria are not likely to have neutralized contaminated soil in less than five years. EPA has estimated that the entire project may cost Syntex between $2 million and $5 million.

But the problem of toxic chemical dumps in one midwestern State gives only a glimpse of the national picture on improper waste disposal." Most States have several, and some States considerably more, dump sites with the potential to trigger significant damage to human health and the environment," according to Wilson. "Under the recently enacted Superfund law, EPA, cooperating with the States and other Federal agencies, is developing a plan for ranking these dumps so that the worst can be tackled first."

EPA is planning cleanup action at more than 100 sites using Superfund money that will total $1.6 billion by 1985. At the same time, the Agency is using money transferred to Superfund from the oil and chemical spill cleanup fund of the Clean Water Act to continue taking protective actions at 23 especially hazardous sites identified some time ago. These include:

- The notorious 70-million-gallon Kin-Buc landfill in Edison, N.J., which has been leaking toxic wastes into the Raritan River;

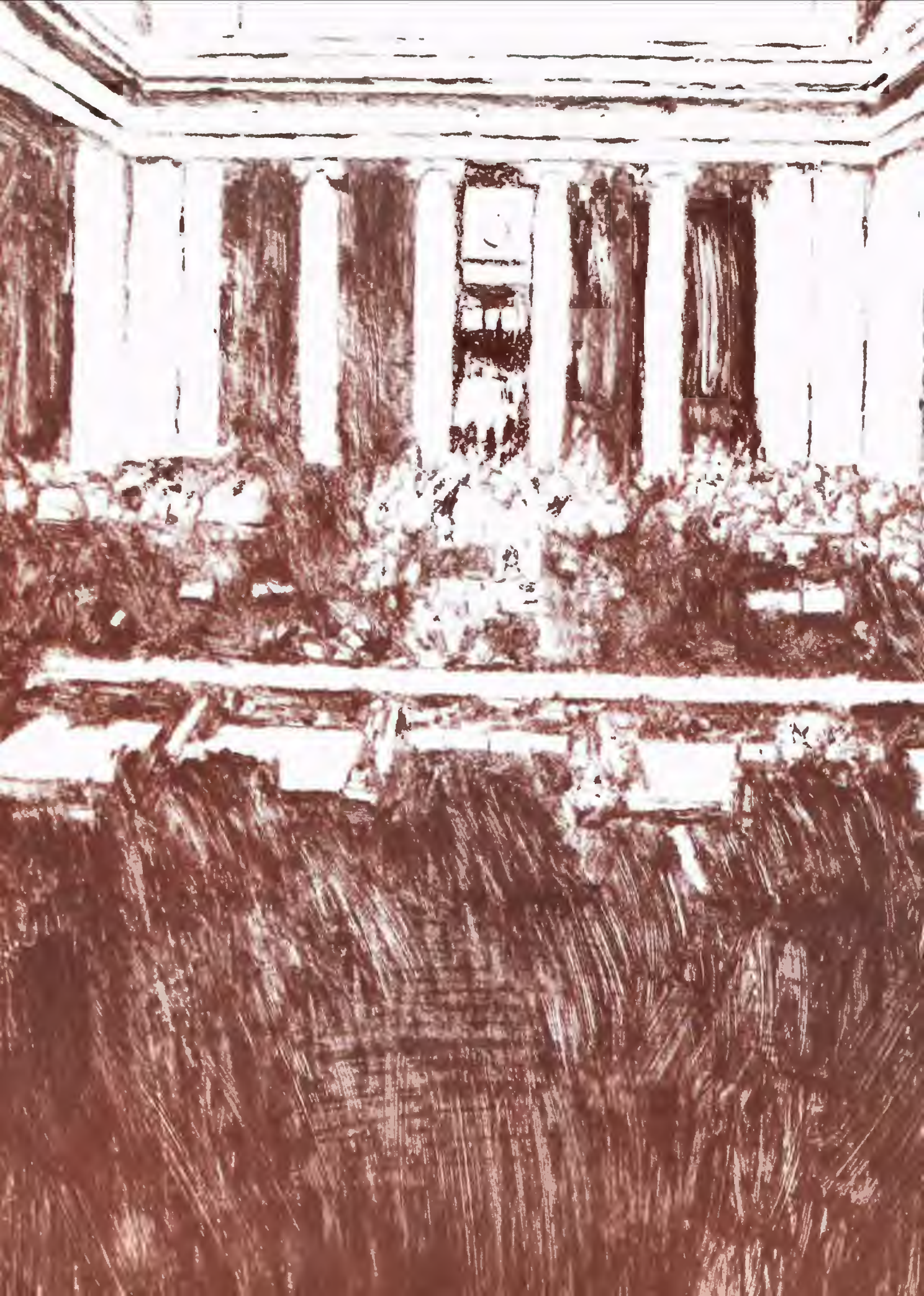
- The 40,000 to 60,000-barrel dump at Seymour, Ind., whose toxic and explosive wastes have caused groundwater contamination;

- The Ottati and Goss Inc. dump near Kingston, N.H., where wastes including the suspect carcinogen chloroform and other toxic materials posed both a fire hazard and the threat of poisoning nearby surface and groundwater;

- A Youngsville, Pa., site where leaking drums of harmful PCB chemicals at one time jeopardized the city's drinking water supply.

These dumps represent just a smattering of the 1,200 to 2,000 waste sites that may be imminently risky to people and the eco-system. Figures like these indicate that much remains to be done to defuse chemical waste "time bombs." The pace of this work will depend in large measure on whether government and industry can work together as they were able to do on the dioxin threat in two small Missouri towns. □

The author is a Public Information Officer in the EPA Press Office.



Managing Michigan's Hazardous Wastes

By Bill Marks

By conservative estimates, about 1.3 million tons of hazardous wastes are presently being generated in Michigan annually. For most of these wastes, no adequate permanent disposal capability has existed. Millions of pounds of hazardous wastes from years past are in storage today awaiting proper disposal. Unfortunately, large quantities of other wastes never were properly stored, and the costs of cleaning up lands and waters contaminated with these materials have been enormous. Millions upon millions of dollars have been spent in just the past few years by the State and by private industry to clean up abandoned waste sites, to monitor and analyze soils and waters, to purge groundwaters and to respond to pollution emergencies. While most companies have been responsible about storage and control, a few have used irresponsible methods for disposing of their wastes; after all, it's cheaper to "midnight dump" or ignore wastes than to control them properly. And with the volume of hazardous wastes ever increasing, we are faced with a very real potential for severe and long lasting environmental and human health consequences, conditions which can be tolerated no longer.

In his opening remarks to the International Conference on Hazardous Materials in Detroit in 1978, Michigan Governor William G. Milliken declared:

"No issue is more important or more urgent today than the management of hazardous materials. The States collectively must put in place the steps necessary to achieve agreed-upon measures to assure protection of human health and the environment. They must do it soon—and by soon, I mean one year."

The Michigan Legislature quickly responded to the Governor's challenge and six months later the Hazardous Waste Management Act of 1979 (also known as Act 64) became law. Hailed as the most significant piece of State environmental legislation since the "Earth Day" initiatives of the early 1970's, this new law set the course for finally resolving our State's hazardous waste problems.

Michigan Department of Natural Resources Director Howard A. Tanner said that the law "finally gives us the tools we need to tackle our most significant environmental problem."

Because of the widespread concern about hazardous wastes, the open, public process which was used to draft and enact this important legislation will also continue to be used to implement the Act. Local government officials and the general public will have a strong role in selecting disposal sites and in the planning for treatment and disposal facilities. "'For this program to be successful," Tanner said, "the public must be involved every step of the way."

The first of these steps was establishment of a 14-member Hazardous Waste Management Planning Committee which will prepare a waste management plan by January 1, 1982. Appointed by the Governor, the committee consists of one official each from a township, a city, and a county unit of government, a hazardous waste hauler, a hazardous waste disposal facility operator, a member of an environmental group, a representative of a conservation group, three members of the general public, and representatives of the directors of the State Departments of Natural Resources, Commerce, and Public Health. In developing the management plan, the committee will identify all present obstacles to siting and methods of encouraging development of environmentally sound facilities.

The Act also creates local site approval boards, consisting of five permanent and four temporary members. The boards will be responsible for reviewing, and granting, or denying approval for each site recommended for approval by the Department of Natural Resources. Board members represent the State Police, the Department of Natural Resources, and the Department of Public Health. The remaining two permanent positions are public members appointed by the governor, one a geologist

Hazardous waste specialist investigating a buried drum near Holland, Mich.

Navy Equipment May Help Locate Waste

By Linda Young Boornazian

EPA officials are looking into some exotic Navy ordnance equipment that may help to detect and handle buried hazardous waste drums in the future.

The equipment includes a small, unmanned tank-like vehicle that armed services use to examine explosive items at a safe distance.

The need for such equipment has been growing in recent years as the magnitude of America's hazardous waste problem has become apparent. EPA, State, and local specialists have been finding toxic chemicals that have been improperly stored or disposed of in rusted or otherwise deteriorated drums in uncontrolled hazardous waste sites across the country. Chemical wastes disposed of in this manner can explode without warning, releasing lethal fumes. Sometimes the containers are buried far underground and are costly to locate by simple excavation. Often there are no records, no maps, and no description of what dangerous mixtures may lie in these toxic time bombs.

For all these reasons, EPA personnel are welcoming cooperation from military ordnance specialists who have had long experience in dealing with dangerous and explosive materials and have developed highly sensitive devices to detect buried drums, and other equipment to handle the drums safely once they are located.

Last August, members of the Surveillance and Analysis Division of EPA's Region 3 including this writer, as well as persons from EPA Headquarters and the Region 4 field investigation team, had a first-hand look at this equipment in a demonstration hosted by Capt. Richard M. Dunbar, Commanding Officer of the Naval Explosive Ordnance Disposal Technology Center at Indian Head, Md. Officials of the Center described equipment that they had developed or modified for ordnance that may be utilized in investigations of uncontrolled hazardous waste sites.

Driving "The Wheelbarrow"

The unmanned vehicle is nicknamed "The Wheelbarrow" and is used by both the Navy and Army to examine ordnance items of various types. Powered by two auto batteries and controlled by a cable-connected remote unit, the tracked vehicle is three and a half feet long, 20 inches wide, and resembles a miniature tank with an A-frame mounted on top of it in place of a turret. Various devices can be attached to the frame, including a closed-circuit TV camera which enables the operator 100 feet away to get a close look at the explosive object. The Wheelbarrow can move from side to side as well as forward and backward.

EPA officials believe The Wheelbarrow could be used in several ways including sampling of drum contents, remote site survey using detection devices, as well as drum removal.

Navy ordnance specialist (far left) operating magnetometer to locate underground objects. Cable-controlled "Wheelbarrow" (center and right photos) can carry devices to manage hazardous waste containers at a distance.

Underground Detection

Other devices demonstrated at Indian Head are the magnetometer and the gradiometer, detectors that respond to changes in the earth's magnetic field due to the presence of ferrous (iron-containing) objects.

The Navy and Army use these devices to locate ordnance items, but they could also be used to locate iron or steel drums. The magnetometer consists of a sensor system, digital display, battery belts, harness assemblers, and battery charger. This system is worn by one person or may be carried on a remotely-operated vehicle. A one-acre site can be surveyed in one day by setting up 5-feet wide aisles and swaying the devices from side to side along the aisle. Interpretation of the audible as well as digital receiver data from this device can usually be done on-site. If the data is complex, a computer may be used. The magnetometer's ability to detect underground metal decreases as the distance to the object increases. The gradiometer, much like the magnetometer, is used for the detection of ferrous objects but is much simpler to operate and less expensive. However, its ability to detect iron decreases faster with the increase in the distance than that of the magnetometer. Both instruments are limited in their range. The magnetometer should detect a 55-gallon steel drum down 14 feet and possibly down to 25 feet in depth, whereas the gradiometer should detect a 55-gallon drum down to 10 feet.

Another limitation of these devices is interference from various objects. This can be caused by ferrous objects such as fences, pipelines, cars, stoves, and refrigerators.

Region 3 officials have been very interested in the magnetometer and gradiometer and have asked the Naval Center to train personnel from the Surveillance and Analysis Division and members from our Field Investigation Team on the use and interpretation of these devices. A three-day training session was conducted in December by Jim Hershey, a supervisor electronics engineer with the Center. This included lectures on the theory of magnetics and a description of how the magnetometer and gradiometer work. On the last day, the class was taken to a field site where ordnance items were buried at known depths. Members were asked to locate them and estimate their size and depth. Each item was found by the students and the depth was estimated within 15 percent.

Subsequently, the Center loaned EPA a gradiometer to use on one of its site investigations last March, and arrangements are being made to use the magnetometer on two other investigations.

The evaluation of hazardous waste sites is becoming more complex and the need is becoming more frequent. The use of surface detectors allows us to picture what lies below the surface in a quick, safe, and efficient manner. The cost of the project can thereby be reduced in the long run, and the time of the work crews is also reduced. The effectiveness of the magnetometer and gradiometer can be enhanced by using other detection devices such as ground penetrating radar, electromagnetics, seismic techniques, and aerial photography. The coordination of efforts between government agencies and the private sector to resolve these problems is extremely important. But it is equally important for government agencies to coordinate efforts among themselves. Together, they can make possible site assessment accurately, safely, and cost effectively. □

The author is an environmental engineer with Region 3's Surveillance and Analysis Division.

Why Superfund Was Needed

By Senator Robert T. Stafford (R-Vt.)

The country has waited a long time for the Superfund law dealing with chemical poisons in the environment. What we have now is, in my judgment, the major preventative health law passed by the Congress in the past four years.

Together with the other members of the Senate Committee on Environment and Public Works, I worked on this legislation for nearly three years. I will not say that it was a labor of love, because the process was trying. We were beset with problems at nearly every turn.

But it has been a three-year trial well worth it. Eighty percent of the American people wanted some legislation. That sentiment was reflected in the Senate, where 24 Senators joined as sponsors of the legislation. And, judging from what we know, those concerns are well founded. The Surgeon General of the United States considers toxic chemicals to pose the major threat to health in the United States for the decade of the 1980's.

Modern chemical technology has produced miracles that have greatly improved this Nation's standard of living. But the increased generation of hazardous substances associated with these new products has proved to be a serious threat to our Nation's public health and environment.

The legacy of past haphazard disposal of chemical wastes and the continuing danger of spills and other releases of dangerous chemicals pose what many call the most serious health and environmental challenges of the decade. Chemical spills capable of inflicting environmental harm occur about 3,500 times each year, and an estimated $65 million to $260 million is needed to clean them up. More than 2,000 dumpsites containing hazardous chemicals are believed by the Environmental Protection Agency to pose threats to the public health. The cost of containing their contents is estimated to be an average of $3.6 million per site.

Pervasive Chemicals

The acceptance of man-made chemicals—to the extent that they are hardly recognized as such anymore—has become a fact of daily life in the United States. We are dependent on synthetic chemicals for health, livelihood, housing, transportation, food, and for our funerals.

But within recent years, there has been a realization that what is our meat may also be our poison. Here are some examples:

- In a report dated March 1980, the Library of Congress concluded that damages to natural resources of the United States because of toxic chemicals were "substantial and enduring." The report identified damaged resources ranging from all five of the Great Lakes to the aquifer underlying the San Joaquin Valley, possibly the richest agricultural area in the United States.

- In a report to the President of the United States, the Toxic Substances Strategy Committee concluded that the cancer death rate in the United States had increased sharply and that "occupational exposure to carcinogens is believed to be a factor in more than 20 percent of all cases of cancer."

- In a report released in the spring of 1980 by the Congressional Office of Technology Assessment, agricultural losses because of chemical contamination were placed at $283 million. The report said the value was based on economic data from only six of the 50 States and was therefore "likely to be a gross underestimation of the actual costs."

- In 1979, the total production of chemicals in the United States was 565 billion pounds. Of this amount, 347 billion pounds was of chemicals officially classified by the United States Government as hazardous. Production growth was increasing at a rate of 7.6 percent in 1979. At that rate, production will double in 10 years.

This is not to say that chemicals are necessarily bad. On the contrary, they have contributed mightily to American prosperity. We rely increasingly on them because of this contribution which they made to American life in a changing and sometimes hostile world. In fact, most chemicals are benign. Only a small number of them cause cancer, birth defects, or other illnesses. But the fact remains that, small though the relative number of these dangerous chemicals may be, they can cause terrible damage when set loose on the public. Moreover, because we do use these substances in such a large volume, the number of incidents involving them has increased dramatically in the recent past.

EPA Survey

Using existing documentation, the Environmental Protection Agency identified some 250 hazardous waste sites involving damages or significant threats of damages. Among the reported incidents were 27 sites associated with actual damages to health (kidneys, cancer, mutations, aborted pregnancies, etc.), 32 sites which have resulted in the closure of public and private drinking water wells, 130 sites with contaminated groundwaters and 74 sites where natural habitats have been damaged and are adversely affecting indigenous species.

The preliminary findings of a joint States/EPA survey of pits, ponds, and lagoons used to treat, store, and dispose of liquid wastes identify 11,000 industrial sites with 25,000 such surface impoundments. At least one-half of the sites are believed to contain hazardous wastes. The survey found that virtually no monitoring of groundwater was being conducted and that 30 percent of the impoundments, or 2,455 of the 8,221 sites assessed, are unlined, overlie usable groundwater aquifers, and have intervening soils which would freely allow liquid wastes to escape into groundwater.

Thomas Jorling, the former EPA Assistant Administrator for Water and Waste Management, testified before the Senate Subcommittee on Environmental Pollution and Resource Protection in 1979, saying:

"... there are about 3,500 incidents involving chemicals per year from sources which have the potential of releasing significant quantities of hazardous substances either onto land or into water. Of these, it is estimated that about 50 percent of 1,700 spills would reach navigable waters ... there are about 700 to 1,200 significant spills per year."

Some examples of the type of accidents that have resulted from spills and other non-waste disposal incidents include:

- PCB's, a cancer-causing insulating fluid whose manufacture is now banned, leaked from an out-of-service transformer, entered the food chain and spread through 19 States and two foreign countries. Hundreds of thousands of hogs, chickens, turkeys, and a large quantity of other foodstuffs had to be destroyed.

- One-third to one-half of the drinking water and irrigation wells in the San Joaquin Valley have been contaminated by a pesticide, DBCP. In sufficient amounts, this pesticide is known to cause sterility in males. It is suspected also of causing cancer.

- From 1970 to 1977, the number of railroad transportation incidents involving hazardous substances increased 700 percent. Fatalities increased by 300 percent. A witness from the National Transportation Safety Board testified that 85 percent of those increases would have been prevented by the installation of relatively inexpensive safety devices.

- Portions of Lakes Ontario and Erie have been closed to commercial fishing because of chemical contamination. The taking of coho salmon, stocked through the lakes to encourage a viable commercial and sport fishery, is banned because of chemical contamination.

Additional studies reveal that the spread of dangerous chemicals by spills and other incidents is presently a major environmental problem in this Nation:

- The Congressional Research Service of the Library of Congress recently completed a catalogue of natural resources lost or destroyed through releases of hazardous or toxic substances. It is almost 250 pages long, yet the Congressional Research Service says it is an incomplete effort.

- In a recent report, the Department of Agriculture identified surface water basins which were contaminated by chemicals. These basins included practically the entire middle South.

The Surgeon General of the United States, in a report to the Senate Committee on Environment and Public Works, said that, in his opinion, toxic chemicals posed a major threat to public health in the United States. There is not one adult American who does not carry body burdens of one or several of these substances, many of which have now been removed from the market because of their dangers.

What I have just described is the scope of the toxics problem in the United States. The scope is not just of inactive hazardous waste disposal sites, as tragic as Love Canal may be. Nor is the scope confined to accidental spills into rivers, as disastrous as they may be. The problem is just as broad as the benefit.

I am not suggesting, nor have the members of my Committee suggested, that chemicals be banned. What we have proposed through legislation is that we reduce the number of people who may become victims of chemical poisoning incidents.

Legislative History

For three years, the Senate worked on a bill that would respond to emergencies caused by chemical poisons, and to seek to discourage the release of those chemicals into the environment. In many ways, the Senate bill was analogous to the natural disaster assistance programs we have enacted into law. When those natural disaster assistance laws were enacted, no one suggested that we should respond to floods, but not to earthquakes.

It makes no more sense to make that kind of distinction when dealing with chemical emergencies than it does when dealing with natural emergencies.

There is simply no good reason for us to respond to one type of release of a poison, but not another. The test should not be whether poison was released into river water rather than into well water; or by toxic waste buried in the ground rather than toxic waste discharged to the ground. The test should be whether the poison was released. I assure you that the victim does not care to make those distinctions, nor should we. □

Senator Stafford is Chairman of the Senate Environment and Public Works Committee. He has served in Congress for two decades, first as a Representative 1961-71, and since then in the U.S. Senate.

A training session in hazardous waste management at the EPA Region 3 Central Regional Laboratory, Annapolis, Md.

Superfund—A Major Task Ahead

Interview with Michael B. Cook

Deputy Assistant Administrator
Office of Hazardous Emergency Response

Q As director of the new Superfund, would you briefly explain what it is and why it was created by Congress last December?

A The Superfund was created when Congress passed the Comprehensive Environmental Response, Compensation, and Liability Act of 1980. The Act provides the Federal government with the authority, tools, and funding mechanisms to deal effectively with threats to the public health and the environment resulting from uncontrolled hazardous wastes. Using the provisions of the Act, the Federal government can "respond first and ask questions later" in an emergency created by a spill of hazardous chemicals. We can diagnose the problem and design and build the remedies for dumps that have presented health or environmental dangers to local, surrounding residents for years. The actions will be financed with a five-year $1.6 billion Trust Fund, built up primarily (87 percent) from industrial taxes on oil and certain chemicals and through Federal appropriations (13 percent). Actions will also be financed by responsible parties where they can be found and have the resources to clean up a site or a spill.

Q How many hazardous waste sites are critical?

A Somewhere around 2,000 sites in the country are serious enough to warrant attention by the Federal Government. There are many thousands more sites that may be creating a problem, but we feel that that problem could be solved with State or local resources of some type or other.

Q What measures could EPA take to encourage greater State participation in cleaning up the hazardous waste sites?

A The main vehicle that we perceive is to provide money from the Superfund to the States for cleanup or for enforcement actions, and let them carry out the cleanup in accordance with Federal guidelines and Federal procedures.

Q How much does EPA have in the Superfund now?

A The taxes began to flow on April 1, and they will come in at the rate of about $22 million a month. In addition to the tax money, we also will have some money appropriated from general tax revenues, and we will gain interest on the money in the fund, probably in excess of 10 percent.

Q Do you have any demands on the fund right now?

A We have quite a growing list of projects that need to be done and plans that are ready to be funded. They cannot actually be funded, though, until we have an appropriation in Congress of moneys from the fund.

Q Are you satisfied with the measures being taken now to improve community relations in places like Love Canal and other hazardous waste sites?

A I think there's a lot more that the Agency needs to do at individual sites. We really need to develop a brand-new capability that has not existed in the past—to go out and work with residents around the site on a day-to-day basis, discussing their concerns and working through the planning for site cleanup and carrying out that plan.

Q In sites where radioactive material is discovered, what are the respective roles of EPA and the Department of Energy in cleaning this up?

A Most sites with large amounts of radioactive materials will be the responsibility of the Department of Energy. In sites where there's a small content of radioactive material and mostly other kinds of hazardous waste, Superfund will have the lead on cleanup activities and the Department of Energy will provide us with technical assistance and expertise. We are currently working with them to further detail and define each Agency's role in both situations.

Q Will the new freeze on regulations have any impact on your program at this point?

A Not yet. At this point we don't see any serious problems. The law is structured with incentives to get out regulations. Industry is very interested in having us get those regulations out, and we think that we can get the necessary release from the Office of Management and Budget to do that.

Q We're interested in reports on advanced equipment and technology that have been developed to deal with possible explosions and leaking gas at hazardous waste sites. Where is this equipment?

A The Research and Development arm of EPA in Edison, N. J. , has been working very closely with us in developing equipment for all kinds of emergency response. The beauty of our relationship with them is that they build the equipment and then they go out on an actual emergency and help us deal with it at the same time they are trying to decide whether their equipment is effective. The result is that we get free help in dealing with the emergency at the same time they test their equipment.

Q Are the States eligible to participate in the training program that EPA has at its facility in Edison?

A Within the last fiscal year, 55 State people have participated in our courses in the Edison program. We also intend to expand both the number and type of training programs that we put on and also the participation by other groups, and certainly States would be invited.

Q What responsibilities will the States have in sharing the cost of permanent remedies for waste sites now?

A States are required to provide 10 percent of the cost of cleanup and to also provide 10 percent of the cost of operation and maintenance in facilities left on site, except in the case of publicly owned facilities. There the cost sharing is 50-50.

Michael B. Cook

Q In view of the shortage of trained, experienced specialists to cope with the problem of hazardous waste site cleanup, what are we doing to try to correct that problem?

A We are certainly doing a lot of training of both our own people and also personnel hired under contract, and that is resulting in an improved level of knowledge on how to deal with problems. Also, the academic world and private industrial sector are giving a lot more attention to training people in this area because of the demand for experienced and knowledgeable people.

Q What professions would they be? Toxicologists, engineers of various types?

A We obviously need people who are experienced and knowledgeable in analyzing and dealing with hazardous substance, including the sorts of people you're talking about. Right now the oil companies are snapping up available hydrogeologists at a high price, and it's hard to find these people. It's also difficult to find enough experienced field investigators who know how to conduct a field investigation safely. There are just not that many people in the country compared with the current demand for those who have much experience.

Q What is the biggest problem you anticipate now in implementing the Superfund?

A I think the major problem we potentially could face in the future is the tremendous sensitivity on the part of all the interested parties to the actions that are undertaken in the program. The question is whether we will have to devote such a high level of resources to explaining and coordinating and adjusting, and things of that kind, that we are left with the capability of actually only cleaning up a relatively small number of sites.

Q What about this toll-free phone number where the public can obtain or give information on waste spills or releases? Is this proving effective and useful?

A The National Response Center of the Coast Guard has been in operation now for many years and it has been effective for reports of releases, spills of oil and some kinds of hazardous substances. We have not yet, though, seen a significant increase in reports coming in as required under the new Superfund legislation, and we will have to take steps to publicize the new requirements in the future.

The number, incidentally, is 800-424-8802 except in the Washington, D.C. area where it is 424-2675, -6, -7, or -8. Coast Guard personnel staff this Center around the clock and will both receive and give information concerning spills and discharges. They work in cooperation with EPA and its Regional offices, and also—where radioactive material is concerned—with the Department of Energy.

In conclusion, I might add that we have been working with a variety of groups coming up with their implementation plans for Superfund, including environmental groups, States and local governments, and some other special interest groups. What has been most gratifying in this process is that the chemical and petroleum industries have been very constructive and supportive. They have devoted a lot of resources to working with us in technical areas to help solve some of the difficult issues, and we feel that we've established a good relationship with them, in a large measure because of their attitude that they want to make this law work and work well. □

Superfund Fact Sheet

What is Superfund?

Superfund, enacted on December 11, 1980, creates a trust fund of up to $1.6 billion during a five-year period beginning in 1981, to provide emergency and long-term cleanup by the U.S. Government of chemical spills and abandoned hazardous waste sites that threaten people or the environment.

The Superfund law actually is named the Comprehensive Environmental Response, Compensation, and Liability Act.

What does it cover?

It covers abandoned hazardous waste dumpsites and spills of dangerous substances on land or in waterways that threaten to harm human health or the environment. Certain chemical mishaps, such as a spill in a workplace that affects only employees, cannot be corrected with Superfund money, but are covered under other Federal laws.

Where does the money come from?

About 87 percent of the fund will be derived from taxes imposed on oil (the raw material for many synthetic chemicals) and on 42 specific chemical compounds. For example, the Superfund tax on a barrel of oil will be about three-fourths of a cent. The chemical taxes will vary from $4.87 per ton of benzene to 22¢ per ton of potassium hydroxide. The Internal Revenue Service began collecting these taxes on April 1. About 13 percent of the trust fund money will come from general tax revenues. EPA estimates that about $138 million from both sources (industry fees and general revenues) will have accumulated in Superfund by October 1, 1981. However, no Superfund money becomes available for use until Congress appropriates it. Limited appropriations should occur later this year.

Are the rules in place to operate the program?

Two key documents will provide the basic blueprint for carrying out cleanup actions under Superfund. The first is an Executive order which will assign various responsibilities under the law to certain Federal agencies, such as EPA, the Coast Guard, and the Federal Energy Management Agency.

The second is a National Contingency Plan which will detail methods for discovering and investigating dumps; methods for evaluating their cleanup; the roles of Federal, State, and local governments in these actions; methods for assuring that remedial actions are cost-effective; and criteria for determining which waste sites shall be cleaned up first.

In addition, the Superfund law says that at least one dump from each State should be included among the 100 to receive priority cleanup.

Both the Executive order and National Contingency Plan now are being revised and will be issued later this year.

What is EPA doing now to remedy "Love Canal" type situations?

It is taking several actions:

- EPA is continuing emergency cleanup work, monitoring, or other protective action at 23 sites in 11 States (Illinois, Indiana, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, and Texas). These dumps contain wastes including solvents, PCB's and other possible carcinogenic compounds, heavy metals, and other discards that have contaminated or threaten to contaminate nearby surface and underground waters and may cause other environmental or human harm.

- The Agency has selected 17 waste sites around the country for engineering studies and designs to determine how to best clean up those sites. Several of these studies will be carried out through agreements between EPA and the States. It is likely that the 17 sites will later qualify for major long-term cleanup funding.

- EPA, the States, and private parties have identified more than 8,800 dumpsites, have evaluated the dangers at 5,400 of them, and have completed investigations on 2,300 of these. In addition, the U.S. government has filed 56 enforcement cases regarding dumpsites, and issued 31 administrative cleanup orders. Emergency actions have been taken at 46 sites, and more than 100 are in the planning stages.□

The Public and Superfund

By James R. Janis

A number of surprises may be in store for EPA's new Superfund program. Judging from past experiences at uncontrolled hazardous waste sites, this program is likely to operate under circumstances very different from what EPA is accustomed to. EPA staff could find themselves working in a highly charged political atmosphere, where some unusual personal skills are routinely required for daily tasks. Consider the history of just two sites that we visited recently.

In Riverside, Calif., near Los Angeles, liquid wastes released from the Stringfellow impoundment site, originally managed by the J. B. Stringfellow Quarry Co., periodically flooded a residential area during storms before flowing to a nearby river used for drinking water. Groundwater contamination was also thought to be caused by leachate from the impoundment ponds, located in a mountain canyon. Public opposition to the facility began when it opened in 1956, intensified over the years, and reached new heights in 1979. In 1980, the staff of the local water quality board, acting on the advice of consulting engineers, recommended capping the site to prevent further problems, at an estimated cost of $3 million. The board, however, confronted by demonstrating parents and statewide public attention, decided instead to recommend the excavation and removal of all materials from the site, at a cost of $14 million. The State body responsible for funding subsequently allocated $4 million for the effort. Public opposition to the less costly proposal stopped action at the site for some time.

The "Valley of the Drums," located in a rural area near Louisville, Ky., is a former so-called "drum recycling facility" that was found to be releasing oil and hazardous wastes into an adjacent stre-

Although neighbors of the site had complained about the situation for years, most area residents displayed only minor concern, even when EPA performed an emergency containment action in 1979. The State environmental agency, seeking a permanent resolution of the problem, in the meantime encouraged the private development of plans for a hazardous waste incinerator for the site. When word of these plans first reached the public through the press, a petition drive was rapidly organized, and sympathetic local officials—who apparently had known nothing about what was under consideration for the site—refused to grant the necessary zoning variance, effectively scuttling the plans. Public opposition to the proposed remedial action halted construction of the incinerator.

Encountering Hostility

EPA staff traditionally wear "white hats" when entering a locality to respond to a threatening environmental emergency such as a chemical spill. But the usual warm welcome will not always be waiting when work under the Superfund program is to be performed. In fact, EPA staff may sometimes find a degree of suspicion and even hostility. The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 requires remedial actions taken under the program to be cost-effective. More often than not, that will mean the use of on-site containment or treatment, insofar as hazards can be adequately dealt with by those means, rather than the vastly more expensive measure of removing wastes to an off-site location for treatment or disposal. Yet the two cases discussed above show that some of the people who have lived near a hazardous waste dump for years may refuse to rest content with an on-site remedy. EPA staff, trying to help a community with an environmental problem according to the provisions of the Superfund law, could find their efforts opposed by citizens who feel the government is refusing to give their problems the attention they deserve. While that may not be the reception in the majority of Superfund actions, it is likely to be a common one. Unless handled properly, this is capable of raising costs substantially and of greatly delaying or even disrupting the implementation of the Superfund program.

These conclusions are based on an analysis of 21 case studies at hazardous waste sites conducted by ICF Incorporated in the past year. The study was requested by the EPA Office of Hazardous Emergency Response to help develop the Agency's Superfund program. The information acquired has been used not only to understand the social and political aspects of hazardous waste problems, but also to help evaluate State capabilities, to estimate the resources needed to carry out the Superfund program, and to analyze the economic impacts of proposed amendments to the National Contingency Plan and other regulations. Our staff and subcontractors met with EPA regional personnel, State and local officials, and interested citizens at sites in every EPA Region across the country. Some of these sites—such as Love Canal or the two discussed above—are well known; others have received little notice so far.

We did not examine the technical merits of alternative solutions in any of the cases, and thus do not know whether the citizens' attitudes were well-founded or not. In the end, it doesn't matter. These cases convinced us that significant public opposition to remedial actions under Superfund is a real possibility. Without public acceptance, a proposal stands little chance of being smoothly carried out. If the public outcry is not well-founded, it can delay remedial actions that could save lives and prevent the deterioration of property values. Moreover, unfounded construction delays could cause the cost of work to skyrocket—and some of the $1.6 billion Superfund to be wasted.

Much was learned through these case studies about who becomes involved in a hazardous waste site problem and why. Of greater significance, however, is that there are clear practical implications for the management of the Superfund program—definite steps that can be taken to increase the chances of success. *The key thing to remember is that the technical adequacy of the proposed remedy in no way ensures its popular acceptance.*

The degree to which the local public has become involved with a problematic hazardous waste site has varied from community to community. We found bitter conflict in some cases and seemingly-complete indifference in others. Invariably, however, the peak of interest occurs when a long-term solution to the problem is proposed. As the "Valley of the Drums" case shows, a site that appears to be routine and placid can hold the potential for public concern and agitation at a late stage of remedial action—especially if a proposal is sprung suddenly on an unsuspecting community.

People who have become involved in hazardous waste problems have tended to organize rapidly into *ad hoc* single-issue groups, often under the leadership of one individual. Lois Gibbs, president of the Love Canal Homeowners' Association, an articulate and highly regarded local leader, is the best-known example. We found many others. Locally-organized *ad hoc* groups have without exception taken the lead in mobilizing local citizens and prodding recalcitrant government agencies. We never found local politicians or parties in the forefront of these movements; nor were "outside agitators" commonly present on scene. Most important, however, is that established environmental groups—either nationally or through their local chapters—rarely had any major involvement in these problems. We think there is a distinct chance that a new national citizens' organization will develop around these issues with a membership very different from traditional environmental organizations. If so, we expect that the new organization will extend its concern to attempts to site new waste management facilities.

In general, the people most likely to become involved in these situations are those who believe their health or their pocketbooks are endangered by hazardous chemicals, *regardless of their political or social backgrounds or the part of the country in which they live.* But we found that the people affected by a problem do not always become either alarmed or involved. In some cases—in Charles City, Iowa, for example—people living near a site publicly branded as an extreme environmental hazard have not expressed much concern. So the potential severity of the threat to human health and the environment and the technical complexity of remedying the problem do not determine when or where public concern and involvement will arise.

'Good Neighbor' Industries

What does seem to matter most is the social and political history of the hazardous waste problem and its community context. For example, if the local government has a history of responsiveness, citizens may see no need to dramatize their concerns or to become enmeshed in the situation. In Charles City, the industry that owned the dump site in question was a "good neighbor" with a reputation for trustworthiness, and it was able to assure the local populace that the problem was being handled as well as possible. Factors like these are always site-specific; *predicting the likelihood of public acceptance of a proposal for a site is impossible without a first-hand understanding of the community.* EPA staff, therefore, should not begin remedial action at any site without first spending some time understanding the community's attitudes about the site and its past history.

There are steps that can be taken to decrease the possibility that a cost-effective action will frustrate the expectations of a community with a problematic hazardous waste site. Some of these steps can become standard operating procedure; others are more a matter of the attitudes that individual EPA technical staff members must bring to their work. Perhaps the most important thing to keep in mind is

Michael B. Cook (left) and Henry D. Vancleave, Acting Director, EPA Emergency Response Division, at the podium during a briefing on Superfund in Washington, D.C. last January. Participants (right photo) included representatives from industry and environmental groups. More than 500 attended.

that people at many of the sites we visited felt neglected by *all* levels of government and powerless to change the situation.

Thus one of the early stages of planning for a remedial action should include an on-scene study of the problem's development over the years, and of the attitudes of the neighboring community about the site. This study should be an integral part of the data collection phase of all remedial actions (and for planned removals as well). The site-specific information can help prevent some bad stumbles. For instance, the acquiescence of local officials is usually necessary to execute plans for a site, and EPA staff should ordinarily maintain close contact. Nonetheless, local officials are sometimes held suspect by those concerned about a hazardous waste problem. (For example, at one site we studied, well contamination was allegedly caused by the local government's town landfill). In such a situation, it would be a mistake for EPA staff to ally themselves too closely with local officials. But that could be learned only by analyzing the community beforehand.

Using the information obtained from this study, a community relations program should be designed and put into effect at each site where remedial action is planned. Sometimes the community relations effort need only be minimal; elsewhere it will require a large commitment of resources. No single plan will suit every case. In general, this kind of effort will be wider-ranging than a traditional public relations or public information program. The goal is to keep the local public well-informed about what is being done at the site and, at the same time, to enable EPA staff to understand better the concerns of the community, so that a remedial action with a good chance of winning acceptance can be planned.

An important finding from our case studies, however, is that some of EPA's standard techniques for dealing with the public may not work in connection with hazardous waste problems. It is standard EPA practice to rely upon national environmental organizations and their members across the country to represent the public. But mailings to these organizations, or the automatic inclusion of their members on task forces and advisory groups, will only coincidentally find the people EPA needs most to reach. The people who have been most directly affected by and most involved in hazardous waste problems have rarely, to our knowledge, been members of established environmental groups.

Small Meetings Useful

Large public meetings are EPA's traditional format for relations with the public, but they will often be unsatisfactory in these situations. Hazardous waste problems are full of emotionally-charged issues—the health of children, in particular—that once introduced, quickly turn a public meeting into a shouting match. There are some issues that can be constructively considered in a public meeting; other arrangements, such as small discussions in living rooms, are more suitable for broaching the more controversial issues.

In summary, *careful attention to the community context of an uncontrolled hazardous waste site is as important in planning a remedial action as geohydrologic and engineering studies.* This is not an easy thing for someone like me, trained in engineering and economics, to say. It will be difficult for the EPA technical staff, too. A concerted effort at community relations can never guarantee that the public at large will be wholly satisfied with EPA's work. People who fear the effects of hazardous chemicals on their health may be understandably unwilling to accept any solution, however effective it is said to be, that leaves wastes on site. Still, an attempt to deal sensitively and compassionately with the public is the only way to reduce the likelihood of facing needless delays and skyrocketing costs in implementing the Superfund remedial action program. EPA staff members should remember that while Superfund is a Federal program, with significant State cost-sharing, the problems to which it responds are local in every case—and it is the local people who have to live with its solution. □

James R. Janis, a Project Manager at ICF Incorporated, is former Deputy Assistant Secretary of Energy for Planning and Evaluation and former Director of EPA's Program Evaluation Division, Office of Planning and Management.

Brazil's 'Valley of Death'

By Jim Brooke

Cubatao, Brazil—The birds and the butterflies are long gone. Dead trees line the mountain ridges. And now the pollution here is cutting into the human population.

Labeled "the Valley of Death" by local environmental groups, Cubatao contains Latin America's largest petrochemical complex. It also suffers Brazil's highest infant mortality rate—one-third of Cubatao's children fail to make it through their first year. A recently released study indicates that 8 percent of live births suffer from such abnormalities as spinal problems, missing bones and brain deficiencies.

"The effects are similar to that of thalidomide," says Prof. Reinaldo Azoubel of the Riberao Preto school of medicine. "These people are like guinea pigs in an experimental laboratory," he added.

Azoubel recently concluded a year-long survey of births in this city of 80,000 and this month he is to start submitting real guinea pigs to local pollution levels, seeking to determine a link between pollution and birth defects.

Most of the birth abnormalities are concentrated in Cubatao's Vila Parisi, widely considered the most polluted place in Brazil. About one hour outside Sao Paulo, Vila Parisi is a gray slum of 15,000 residents, boxed in on four sides by a steel plant, a fertilizer plant, a cement plant and a mountain wall.

"Theoretically by the level of pollution, there shouldn't be life there," Dr. Albert Pessoa de Souza, city health director, said in a recent interview. "It shows how extraordinarily adaptable the human organism is."

In 1977, a device was installed in Vila Parisi to monitor the clouds of smoke and gases that belch daily from the region's 30 heavy factories. But after 18 months the machine overloaded and broke down.

It recorded that the 50-square-mile area around this industrial complex received a daily barrage of 473 tons of carbon dioxide, 182 tons of sulfur, 148 tons of particulate matter, 41 tons of nitrogen oxide and 31 tons of hydrocarbons.

At Vila Parisi, residents receive a daily bombardment of 1,200 particulates per cubic meter, more than twice levels that the World Health Organization says provoke "excess mortality."

Plagued by water pollution, the slum is 18 inches below sea level and high tides regularly overflow the open sewers into the muddy streets. One river boils with chemical effluents, another is blanketed by detergents and a third occasionally emits toxic clouds. Residents say that any fish pulled from these rivers are usually blind and skeletally deformed.

Once covered with lush tropical banana plantations, today the landscape is bleak. High-tension pylons march over brown mountains, yellow flames burn at chimney mouths, and tube-shaped trailer trucks painted *corrosivo* rumble heavily through the valley.

At dusk, men in $2 shirts walk home against a backdrop of cement vats and fertilizer tanks. After dark, residents take in their laundry and close their shutters. Companies here routinely release their largest discharges under the cover of nightfall.

The city seal includes two billowing smokestacks. When risks of environmental pollution first became widely known a decade ago, Brazil and many other developing nations dismissed pollution controls as a luxury they could not afford. One Brazilian state, Goias, even went so far as to advertise for investment under the slogan: "We want your pollution."

Today attitudes have moderated. Earlier this year, the Sao Paulo antipollution agency opened a $100 million credit line to help small- and medium-size factories buy equipment for cleanup. In Cubatao, where airborne corrosion has damaged metal structures, Sao Paulo Steel prides itself on having spent $10 million to eliminate rust-red clouds of ferrous oxide that used to billow from the plant's chimneys.

"If the air corrodes iron, imagine what it does to people's lungs," Randolfo Lobato, president of the Brazilian Association for the Prevention of Air Pollution, said.

Despite cleanup efforts, Lobato noted that from January to June of last year, Vila Parisi's first-aid clinic registered 4,400 visits for respiratory illnesses, up 50 percent over the year before.

Last February, when preliminary results of Prof. Azoubel's birth-defect research leaked out, the minister of interior hastened to announce that the slum residents would be moved to a healthier site. But last month a Cubatao city health official said the evacuation is still "under discussion" and no timetable has been set.

Many residents interviewed here say they do not want to move. Most are from the impoverished Northeast and some say they feel protected by the daily quart of milk that companies give them.

"If we have to move we'll be far from work and have to pay for buses," said Jamie Bradassi de Abreu. City bus fares cost about 20 cents, expensive for workers who earn the minimum salary of $100 per month.

One city councilman has circulated a petition against the move, reportedly obtaining 4,850 signatures from 5,000 surveyed.

Jose Benvindo da Silva, a longtime resident, complained: "If we have to leave here, I will be one of the last. It's a shame, my new house needs only doors and windows."

This article, reprinted by permission, appeared in The Washington Post May 10, 1981.

Hazardous Waste and U.S. Export Policy

By Wendy Greider

The safe treatment and disposal of hazardous wastes is an environmental and health problem which has been receiving increasing attention over the past several years both by the United States and other nations.

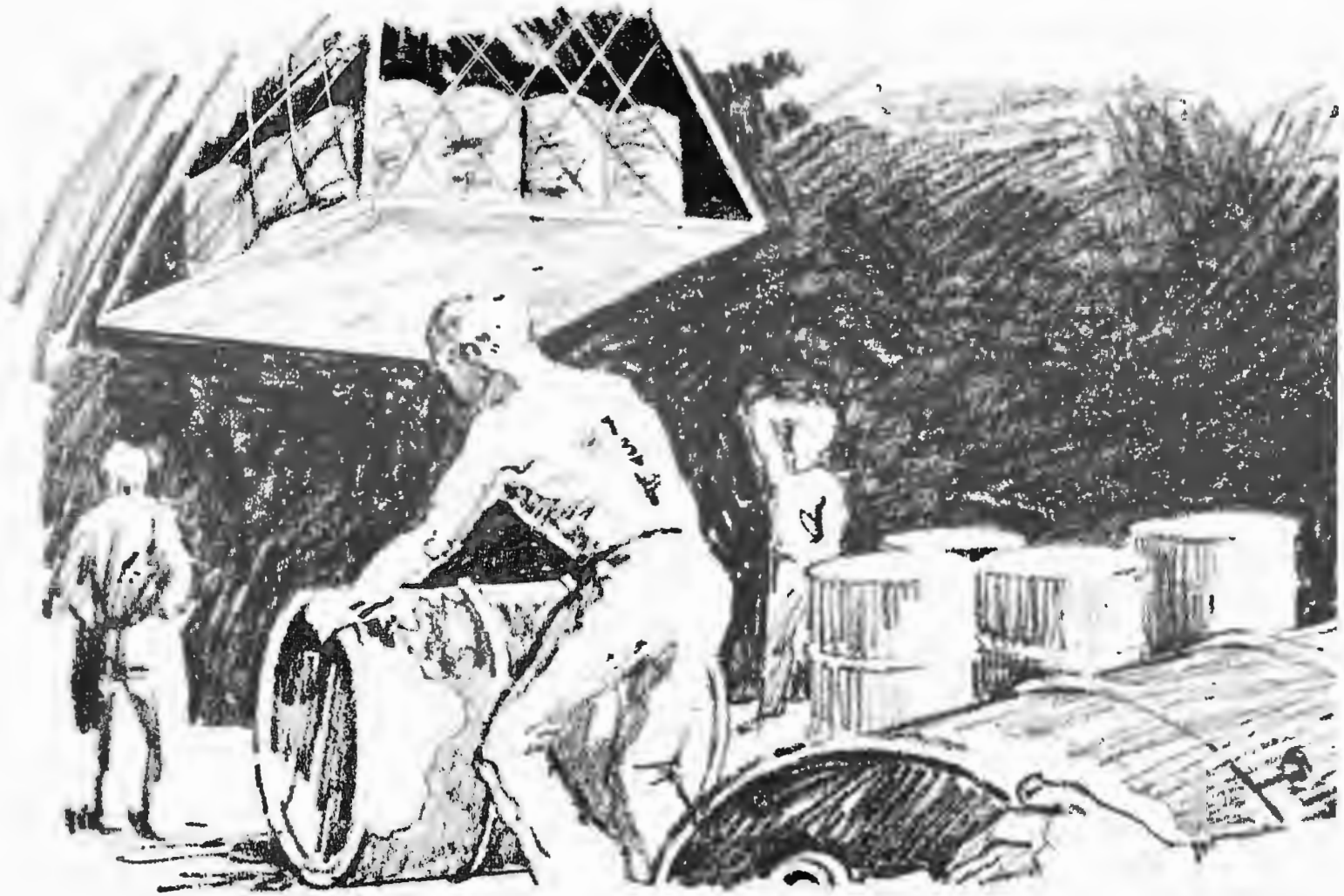
The tragedies of Love Canal in New York and Lekkerkerk in the Netherlands are reminders that many hazardous wastes are persistent and highly toxic, and that ways must be found to deal with them adequately. In both cases, homes were located close to areas contaminated by the industrial dumping of toxic waste without proper safeguards and residents were exposed to highly dangerous chemicals.

Attention has also been given to the responsibility of the U.S. and other industrial nations concerning the export of hazardous waste. This is of particular interest to some developing countries which lack adequate treatment and disposal facilities. Within the last year alone, two instances of proposed exports of hazardous waste to developing nations have provided evidence of potentially adverse environmental and foreign policy consequences of such shipments.

In late 1979, the U.S. Embassy in Sierra Leone in Africa reported that a U.S. firm was negotiating within that country for the establishment of a waste disposal and processing facility, allegedly in return for a $25 million annual fee. U.S. officials both in Sierra Leone and in Washington felt that the proposal was a potentially harmful one to U.S. interests and could lead to accusations that the U.S. was not properly disposing of its own waste. In early 1980 several major U.S. newspapers described the proposal, and the reaction in several African countries was swift and furious. Newspaper editorials appeared throughout Africa, and in the midst of the adverse publicity and international pressure, negotiations for the facility were halted.

License Denied In Bahamas

In another more recent case, a company based in Alabama held discussions with a private company in the Bahamas about the disposal of hazardous waste in that country. The company, established to collect U.S. hazardous waste solely for export but with little experience in hazardous waste management, did not demonstrate thorough technical planning for the proposal. Upon being informed of the proposed transaction, the Department of State notified the government of the Bahamas and subsequently, the Bahamian Minister of Health denied a license for the disposal site. Since



the negotiations took place directly between the U.S. waste broker and the private consignee, the Bahamian government was originally not provided information which it would need in order to evaluate any risk of injury to health or the environment.

In addition to these two cases, there have been several other less detailed reports of U.S. companies proposing hazardous waste exports to Haiti, Chile, Honduras and several unnamed African countries.

Hazardous waste exports from the U.S. to Canada and Mexico present a unique situation because of our common borders and common environmental protection interests. In order to protect our close relationship with these two neighboring countries, special consultative procedures have been established with Mexico's Subsecretariat for Health and Environmental Improvement and with Environment Canada. As a result of these consultations, at least one case is now pending concerning the unlawful entry of wastes from the U.S. into Mexico, and several shipments from Canada to bona fide U.S. waste reprocessors are being facilitated.

In some instances, where there are adequate resource recovery and recycling operations and appropriate treatment and disposal facilities (or regional approaches to environmentally sound waste management, e.g., between the U.S. and Canada), waste export may be acceptable and beneficial to all concerned. In other cases like those described here, waste exports may lead to real or perceived adverse environmental or health effects, and could have harmful repercussions on U.S. foreign relations. A variety of wastes meet one or more of the criteria for being defined as "hazardous" under the Resource Conservation and Recovery Act (RCRA), and the state-of-the-art for safe handling and disposal also varies considerably. Some hazardous wastes can be handled quite safely using safeguards that are in widespread common practice; others require extremely sophisticated techniques and facilities that are available in only a few locations worldwide.

Law Stimulates Waste Export

The principal U.S. law governing hazardous wastes in the United States is RCRA, passed in 1976. In November 1980, regulations implementing major RCRA provisions came into effect providing national U.S. standards for the management of hazardous waste. The regulations establish a manifest system designed to track hazardous waste from "cradle to grave." The regulations also require owners and operators of facilities that treat, store, or dispose of hazardous waste to obtain a permit, and operate according to the regulatory and permit conditions. RCRA provides for severe civil and criminal penalties for violations.

One of the potential results of the regulations may be to increase the level of interest among U.S. hazardous waste generators to export the waste, since the Act imposes no controls over exported hazardous wastes after they have left U.S. jurisdiction.

The U.S. has no regulations under RCRA that prevent the export of hazardous waste, but EPA has established a notification system for such exports, which do take place, in recognition of the potential problems. The regulations stem from the Act's requirement that all wastes within U.S. jurisdiction must go to a treatment, storage or disposal facility which has been approved by EPA. Since the Agency does not approve sites outside U.S. jurisdiction, a notification of any export to a foreign consignee is required to be given to EPA.

RCRA regulations that went into effect last November require generators of materials that are to be exported and are classified as hazardous under the Act to notify EPA Headquarters (Office of Inter-

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Power Plants, Roses, and Catfish

By Chris L. West

Northern States Power Co. plant with greenhouse in foreground.

It's no secret to the American homeowner —or even the average renter, for that matter—that the loss of household heat from furnaces, clothes dryers, ranges, toasters and other sources is a drain on the pocketbook.

But if you think *that's* a big expense, imagine how much money a large power plant loses every day in the form of "waste" or rejected heat. Only about a third of the heat produced by even the most efficient of fossil-fuel power plants can be converted to electric energy.

This is not a criticism of the power industry, but rather a consequence of the second law of thermodynamics. It simply isn't possible to avoid the loss of heat energy in converting fuel sources into electric energy. Most of the unused heat at power plants is either discharged directly into the air or is absorbed by cooling water.

To protect aquatic life, the heat in the cooling water pipes normally would be released into ponds or to the atmosphere through large towers.

Let's look for a moment at another important and even larger industry—agriculture. The good news in agriculture is that the "Green Revolution" continues around the world.

There is a link between power plant heat losses and agricultural production. Finding a way to convert thermal waste into improved crop production or to reduce the fuel needed for generating a given electrical energy level would help reverse the seemingly-unavoidable chain of increased pollution resulting from better living; cut the cost of producing electricity; and at the same time boost production of cheaper, more-plentiful food.

With this concept in mind, EPA's Industrial Environmental Research Laboratory at Research Triangle, N.C., teamed up in 1975 with the Northern States Power Company of Minneapolis, Minn. and the University of Minnesota for a three-year study to demonstrate the concept.

Their goal was to show that warm water from a coal-fired power plant could be used to heat commercial greenhouses—and at the same time, to cut fuel costs. Objectives of the study were to:

- Productively use waste heat from electric power generation;
- Demonstrate methods for economically and reliably heating and managing this novel form of greenhouse;
- Encourage private operators to build their own greenhouses at a power plant site to take advantage of the low-cost heat source;
- Determine the costs and problems associated with building, operating, and maintaining such innovative waste heat recovery systems.

"We consider this project an unqualified success," said Frank T. Princiotta, Laboratory director. "Using the utility's Sherburne County Generating Plant near Minneapolis as our 'laboratory,' we have found that using warm water from electric generating plants to heat commercial greenhouses can cut annual costs about $13,000 per acre and save 50,000 to 60,000 gallons of fuel oil per year in northern U.S. climates.

"These savings, which consider capital and operating costs, are based on 1978 oil prices, I might add. Because the 1981 fuel prices would be more than twice that high, savings would be even greater today."

Princiotta said the $1 million demonstration project was jointly funded, with EPA providing 54 percent of the money and Northern States Power contributing the other 46 percent. The University of Minnesota's Agricultural Experiment Sta-

tion at St. Paul provided technical assistance.

During the demonstration, part of the power plant's 85-degree cooling water was diverted from its normal circuit and piped about half a mile to the greenhouse complex, said Dr. Theodore G. Brna, EPA project officer for the study. Heat exchangers located in each of the 14 interconnected sections of the greenhouse, aided by large fans, heated the inside air during the winter. Warm water also was pumped through an underground grid of pipes to heat the soil in the half-acre facility.

The greenhouse itself was constructed of materials proven effective in minimizing heating requirements in cold climates. The outside walls were strong, corrugated fiberglass to protect against the elements, with a layer of polyethylene inside to provide an insulating air space. The roof was a double layer of polyethylene.

Battling 40-Below Winters

Nighttime temperatures inside the greenhouse averaged about 60 degrees Fahrenheit (16 degrees Celsius) during the winter, even as temperatures outside fell as low as 40 below zero (minus 40 is the same on both the Celsius and Fahrenheit thermometers).

Crops were irrigated through a system of tubes which allowed water to soak into the soil. All plant feeding was done through the irrigation system.

Water left the growing area about 10 degrees cooler than when it entered. From the greenhouse, it was pumped to giant cooling towers. The towers reduced the water's temperature another 20 degrees before it was returned to the power plant to be re-used in the process of generating electricity.

In January 1976, University of Minnesota horticulturists planted the first crops: 5,250 rose bushes, 3,400 tomato plants, and 500 green pepper plants. Lettuce and snapdragons were planted the following summer, and geraniums were introduced in December.

During a highly-successful, two-year period (1976 to 1978), all the crops yielded impressive returns (all were marketed):

- 51,172 pounds of tomatoes (the harvest of two full growing seasons of six months each).
- 3,450 pounds of leaf lettuce (one six-month season).
- 5,000 green peppers (one six-month season).
- 5,489 bunches of snapdragons (one 11-month season).
- 6,000 pots of geraniums (one six-month season).
- 2.8 million roses (grown during the entire 24-month period).

A commercial nursery also planted and maintained a bay of containerized tree seedlings early in the study. That planting consisted of 57,000 Mugho Pine, 2,000 Colorado Spruce, 2,000 Black Hills Spruce, and 2,000 Austrian Pine. The year-around controlled growing climate speeded the evergreens to field planting size four times faster than would have been expected in an outdoor nursery.

"There are many facets to consider in deciding the feasibility of this type of program on a commercial scale," Dr. Brna said. "Such things as the price charged for waste heat and its availability, the weather in the area and the location of the greenhouse with regard to market.

"The location is an extremely important factor, because most power plants are located a distance from metropolitan areas for air quality and other reasons. The greenhouse operator must, therefore, calculate additional transportation cost. After weighing these variables, the operator must decide whether the project is economically feasible.

"In the case of our demonstration in Minnesota, the economic incentives definitely were there."

Russell V. Stansfield, administrator of Agricultural Research for the utility, also speaks of the study in glowing terms. "I don't think the outcome could possibly have been any better," he said.

Soviet Visitors

"The greenhouse complex has become an international showcase. Industrial and governmental officials from all over the world have visited the site in hopes of adapting our model to their own particular needs. We have had scientists and engineers from as far away as the Soviet Union inspect the facility and request technical data on it."

Not all of the interest has come from great distances, however. In 1977 the utility leased an acre of space adjacent to the Sherburne County Plant—along with a continuous supply of warm water—to a Minnesota floral company. Starting with one acre, the firm has since expanded to include nearly the entire additional half-acre demonstration facility, and is now in the process of doubling that growing area.

Today the commercial florist maintains more than 32,000 rose bushes of different colors and varieties in its greenhouse. The plants are cut daily, and the roses are sold wholesale to Minnesota florists.

The nursery company also leased one bay of the demonstration facility to grow containerized evergreen seedlings.

A third commercial firm has leased one-fourth of an acre at the power plant and is successfully growing vegetables in a liquid nutrient solution mixed with the warm water. Its crops include tomatoes, cucumbers, lettuce, spinach and watercress. This firm also plans to expand in the near future.

Fish Farming

Spin-offs from the successful demonstration project doesn't end with horticulture,

Tilapia, food fish native to Africa, are nurtured at the utility's aquaculture project.

however. Aquaculture—or fish farming—is the latest experiment being conducted with warm water from condensers at the plant. Researchers want to see if fish will survive and grow faster than normal in water that has been used for power plant cooling.

While others have experimented successfully with aquaculture, Northern States Power is testing fish in warm water from a closed-cycle power plant cooling system. EPA is indirectly funding about 10 percent of the cost for the $130,000 project through "income" received from the sale of produce during the three-year horticultural demonstration.

Researchers are growing approximately 1,000 catfish, a species that does well in warm water.

If enough fish reach an edible size, about 12 ounces each, and contain safe levels of plant waster concentrates, the University of Minnesota will conduct taste tests.

The next step in the experiment would be to study the market potential for the fish. Possibilities include fresh, year-around food for people, sport fish for the area, or bait fish.

As with the commercial horticultural operations now thriving at the plant, utility officials hope to attract fish farmers, who would lease land and warm water to begin their own aquaculture facilities.

Taking the waste heat possibilities still a step further, Northern States Power is using warm water from the fish farm (now containing fish effluent enriched with nutrients) to irrigate open fields of farm crops on its property. Researchers already have used the warm water to irrigate a 1.5 acre test plot of alfalfa and corn.

"The present greenhouse, fish farming and irrigation operations at Sherburne County consume only a fraction of the plant's waste heat," Dr. Brna said. "Therefore, there's a high probability of further expansion of these projects. The company has projected that there will be another 14 acres available for waste heat utilization facilities in the near future, and up to 100 acres could be added at a later time.

"The only other limiting factors in future commercial development at this agro-industrial complex are the number of entrepreneurs who are willing to build near the plant and the ability to raise the capital necessary to build the facilities.

"In view of what we've learned through these experiments, I believe we now have an excellent key for solving the problem of waste heat from the power industry. We are firmly convinced that the economic benefits demonstrated at the Sherburne Plant will lead other large industrial operations to follow suit." □

Chris West is Public Information Director with EPA's Environmental Research Center in Research Triangle Park, N.C.

FYI—Background Reading

A new and important guide for professionals who respond to chemical and other spill emergencies, is *Managing Hazardous Substances Accidents* by Al J. Smith, Jr. (McGraw-Hill, 1981, $19.95). Written in simple, straightforward language, the book is a useful text for government officials, medical personnel, firefighters, police, and others concerned with hazardous substances incidents.

Smith is Chief of the Hazardous Emergency Response Branch, EPA Region 4. He also serves on the faculty of Vanderbilt University's Toxic Substances Control Laboratory's Hazardous Materials Training School and has managed the mitigation of damages in several thousand accidents and spills over the past decade. He holds degrees in civil and environmental engineering and law.

His book is dedicated to Kenneth E. Biglane, Director of EPA's Oil and Special Materials Control Division. Of Biglane, Smith declares: "Without question, he has been 10 years ahead of his time in this vital business. His innovative leadership inspired this book and is evident throughout the instructional content and conceptual techniques. The excellence of Ken's concepts concerning the planning for and management of spill contingencies is equaled only by that of the technology he has personally advanced."

Environmental Careers

Interested in a future protecting the environment?

The U.S. Department of Labor has just released a 205-page publication, *Environmental Protection Careers Guidebook*, describing responsibilities and requirements for 106 different occupations in this field.

Many of the occupations have never officially been described before, according to Jules Spector, the analyst who heads the guidebook program. In fact, because environmental protection continues to be a developing field, many of the jobs described in the guide did not exist a decade ago.

Although many environmental careers are highly technical and require years of undergraduate and graduate work, there is a broad range of other jobs that meet important community needs but do not require advanced training or schooling. An example is "water-filter cleaner" in a municipal treatment plant, which the guidebook says is "elemental work and requires no previous training. Most employers probably prefer someone with an eighth-grade education, although less is sometimes sufficient."

The guide lists other skills such as fish biologist, forester, landscape architect, air chemist, and radiation engineer. Where applicable, college and other training programs available are given.

The guide is generally available for job-seekers and counselors at the 2,700 local Job Service offices throughout the United States affiliated with the U.S. Employment Service. Many public and school libraries also keep them on hand. For an individual copy, write the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Price: $6.50.

Toxics Guide

The World Environment Center has published *CONTACT: Toxics*, a guide to a national network of over 1,000 specialists in toxic substances. These specialists come from government, industry, labor unions, universities, and environmental organizations, and have agreed to answer news media queries as a public service.

The project received a $90,000 grant from the National Science Foundation, and additional funding from foundations and corporations including Monsanto, Atlantic Richfield and Ashland Chemical. The guide is being distributed to members of the media free of charge and contains listings of names, addresses, affiliations, biographical information, and telephone numbers.

The toxics guide is not available to the general public, but professionals in the toxics area, government representatives, and non-profit groups can order the guide from World Environmental Center, 300 East 42nd St., New York, N.Y. 10017. The cost for non-profit organizations is $37.50, and for all other groups, $49.50.

EPA and Federal Information Centers

By Valerie Whitney

Have you ever wondered where EPA gets the mileage figures it uses for your car? Or what the Agency considered to be "hazardous waste?" Or as a businessman, do you know what implementation of the "bubble policy" could mean for your company?

Last year almost 40,000 people found the answers to these and other questions on EPA budgets, programs, policies and even copies of reports through a Federal service that supplements EPA's efforts as well as those of other agencies in keeping the public informed.

The service is performed by 41 Federal Information Centers located in key cities across the country.

According to Warren Snaider, a staff member with the program's national office in Washington, D.C., questions regarding cars such as emission controls and tampering were the topics of most inquiries nationwide. Many of the requests were for copies of reports on these subjects, said Snaider. This is subject to change, however, depending on which EPA-related issue is in the news at any given time.

Just a couple of years ago, questions about gas mileage were the basis of most inquiries in cities like Atlanta, Ga., which in the past has gotten quite a few calls concerning EPA. Today, most callers to the Atlanta center are interested in many new EPA programs such as the Superfund.

Other issues that generate numerous calls are requests for information on clean water, clean air, toxics and hazardous waste. This has been particularly true of the Center in Cincinnati, Ohio.

"Unless there is something currently in the news about EPA, most of the calls involve water-related issues such as swamps or drinking water," said Marion Bailey, manager of the Center there.

Deloris O'Guin, manager of the St. Louis, Mo., Center, reported that water is the subject of many inquiries there, as is the labeling of pesticides and the discharge of toxic chemicals. But she emphasized that once any issue becomes a news item, the number of calls about it increases.

Although each Center contains a collection of reference material on government agencies, programs and services, very technical questions are usually referred directly to the agency in question.

Trained personnel at the Centers usually search out the information themselves for callers, cutting through red tape and going directly to the source of the information needed. Publications such as the *Catalog of Federal Domestic Assistance*, the *Federal Register*, the *Weekly Compilation of Presidential Documents*, and the *Government Manual* contain valuable information. The primary source at each Center is a directory of government and related private service and resource providers, indexed by key words to make access to information easy and fast. These directories are developed individually for each Center and reflect the needs and sources available in the area.

The key to getting a problem solved or at least referred to the right office, whether it is environmentally-related or another subject, is to provide the Center with as much information as possible regarding the problem.

"Often people fail to articulate their questions correctly and as a result, do not get the information they really need," said Linda S. Neighborgall, deputy national coordinator for the program. Sometimes this is a result of the confusion that people experience in trying to figure out what each agency does.

For example, one woman called a Center in California requesting information on how to get an EPA permit to cut down a tree. Following further questioning, it was revealed that the tree was a landmark. Under county rules, in order to cut down such a tree, you had to have a good reason; in this case the tree was diseased. As it turned out, a county inspector just needed to look at the tree and certify that it was all right to cut it down.

By asking the right questions, staffers have been largely successful at getting to the heart of most inquiries, which is half of solving the problem; as a result almost eight million people used the service last year.

Questions routinely concern the environment, veteran's benefits, social security, immigration and naturalization, patents, copyrights, tax assistance, wage and hours laws, Medicare, and Federal job information among others.

In addition to those classified under "environment," a large number of calls listed in other categories dealt with subjects actually mandated by EPA, but under State or local control.

Accessibility to a Center is an important factor in the service. In 43 cities that do not

have a Center, direct access is available through free tieline service. This has proven to be invaluable in many instances. In addition, Statewide, toll free "800" telephone service is currently available in Florida, Iowa, Kansas, Missouri, and Nebraska.

The Federal Information Program was established in 1965 by Presidential directive. The first Center opened in Atlanta in 1966, and major expansion of the program occurred between 1970 and 1973. In 1978, a permanent system of Federal Information Centers was established.

Center staff specialists in many cities speak other languages in addition to English, with Spanish being the most frequently available. A variety of interesting and useful publications on consumer topics are on display and available to visitors and callers. The Centers also work closely with information and referral agencies of State and local governments.

From the first, the aim of the program has been to provide people with a one-stop source of information on Federal government-related programs, policies, and activities. Sometimes people get more than they bargain for.

For example, in St. Louis, two walk-in inquirers concerned about a chemical company disposal in their area were able to talk directly to the EPA regional office in Kansas City, Mo., courtesy of the Federal Information Center there.

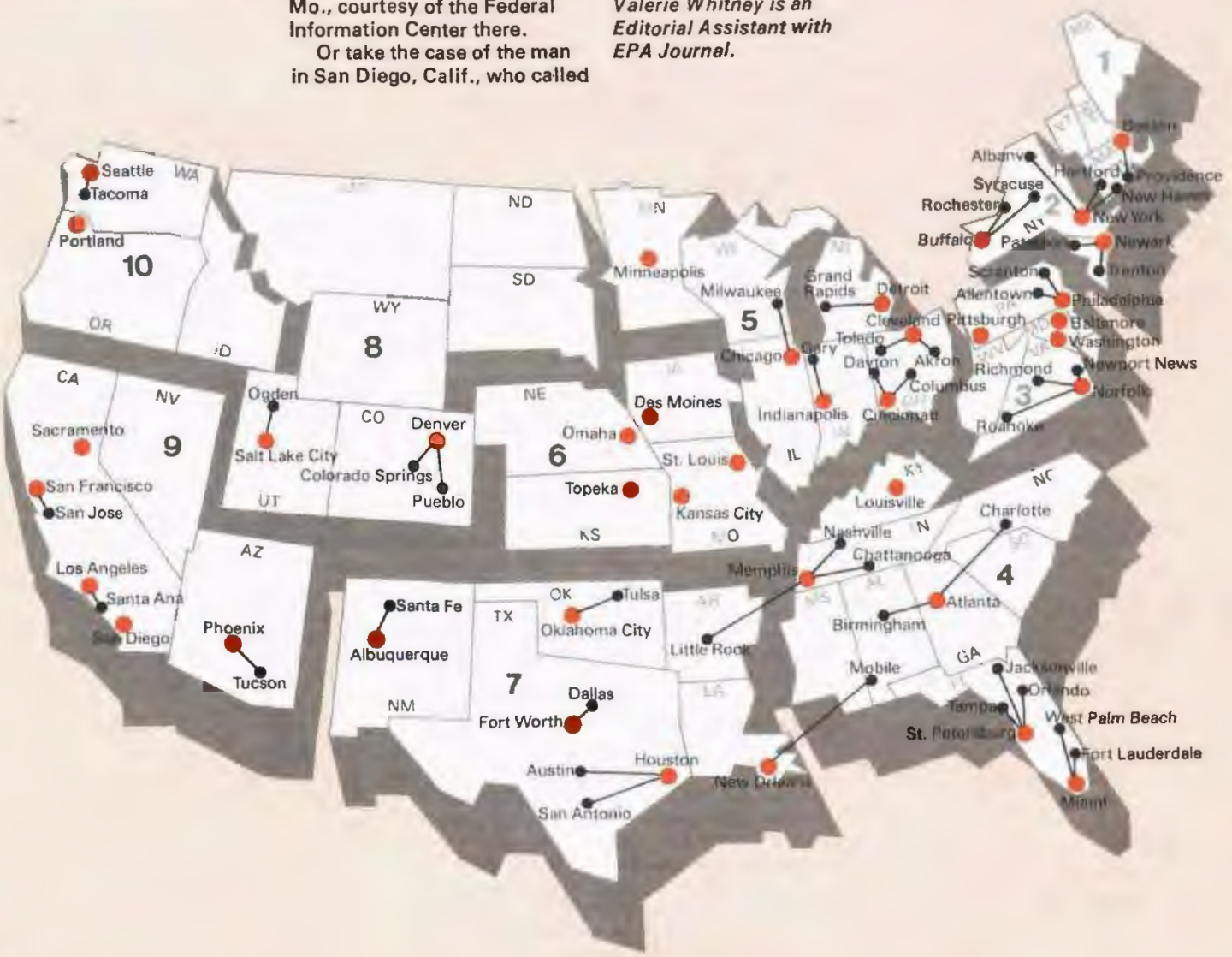
Or take the case of the man in San Diego, Calif., who called his local Center to inquire about a report on asbestos and insulation. During the course of a routine search, the staff person at the Center discovered that EPA had participated with several other government agencies in the publication of a report on asbestos. She contacted the EPA regional office in San Francisco which forwarded a copy of the report to the caller. In addition, someone from the San Francisco regional office telephoned the man. He was impressed, to say the least, and called the Center in San Diego to let them know.

" 'Gee, thanks. I didn't know any persons like you were there to help,' is how they usually put it," said Neighborgall. □

Valerie Whitney is an Editorial Assistant with EPA Journal.

For a brochure about the Federal Information Centers, contact the Consumer Information Center, Pueblo, Colo. 81009 or in major cities consult your phone book under "U.S. Government—Federal Information Center."

If you need to contact EPA directly, the Agency has 10 regional offices which can often provide assistance. For the location and phone number of the EPA Regional Office which has jurisdiction for your State, see the listing on Page 39.



Dr. Julius Axelrod, Nobel prize-winner, in his laboratory at National Institutes of Health.

N.I.H. and Pest Control

By Dr. M. Sayeed Quraishi

Scientists at the National Institutes of Health work under highly unusual conditions. We have patients whose maladies have baffled the physicians. We need to locate them in a research center where doctors and research scientists are in continual attendance, collaborate closely, and have immediate access to research laboratories on a round-the-clock basis. Because of this, in the Clinical Center twice as much space is devoted to laboratories as to patient care.

In addition, to help us understand life and the disease processes, we maintain large animal collections and breeding stations all over the country and abroad. In these we rear, among others, germ-free animals, specific genetic strains, and hundreds of vertebrate and invertebrate species. Animals, especially primates such as Rhesus monkeys, also are imported for research and are quarantined before experimental use.

So it is obvious that the Institutes must exercise unusual precautions to make sure no foreign substances or alien bacteria find their way into the sites of this research where they could disrupt studies and distort the findings of scientists.

Every year we bring hundreds of millions of dollars worth of materials and animals inside N.I.H. In this environment, therefore, introduction of pest or disease-carrying insects could create a potentially dangerous situation.

The whole picture is made even more complex by the very delicate nature of research being conducted in our laboratories. Scientists at N.I.H. are working to understand how biological systems function both in healthy persons and in diseased patients. The whole process is so complicated that scientists must handle it piece by piece, not only to unravel the mysteries associated with each segment but also to understand how the pieces interlock with the almost unfathomable jigsaw puzzle of life.

This research of course involves very powerful microscopes and cell and tissue cultures that must be handled with extreme care. To enhance our knowledge of biological systems we are trying to trace the progress of molecules through experimental models to understand better the make-up of each component and how they interact in a system.

Unwelcome 'Passengers'

Unfortunately, many of the warehouses from which we obtain supplies are not free of disease-carrying insects or pests, and as we do not have the resources to examine every consignment thoroughly for infestation, many of these unwanted vectors or organisms transmitting pathogens arrive with incoming materials. Also, we allow free access to persons visiting NIH for consultations or to see patients. Occasion-

ally they unwittingly introduce insects with various gifts that they bring to patients.

There is still another problem complicating this whole picture. The very nature of the research at N.I.H. requires an atmosphere conducive to the growth and development of life. Unfortunately this also encourages the growth and multiplication of pest-bearing forms of life that accidentally enter, and they continue to spread and develop. Constant monitoring therefore is essential to catch these infestations in their early stages, so we must maintain an efficient surveillance system.

Insects of course exist almost everywhere—30 species even in Antarctica. And without them life on earth as we know it could not exist, since many legume crops depend on the honeybee for pollination, and wilderness vegetation important to soil formation needs insects for reproduction. Yet insects, whose ancestors appeared on earth probably 350 million years ago, also number villains among their ranks.

Research has implicated a number of pests as suspects in transmitting infections in hospitals. For example, some recently reported cases include Staphylococcus aureus and gram-negative bacteria transmitted through a species known as the pharaoh ant, a little red ant that is a common household pest. Bacteria; salmonella which can cause food poisoning and gastrointestinal inflammation; coccidia, which are often parasites that make their way into the digestive tract; and toxoplasma, another type of parasitic microorganism, all can be carried by cockroaches. In addition there are other disease-producing organisms that may be transmitted through various arthropods, a group that includes insects. Since insects such as cockroaches frequently take shelter in sewer systems and during the night wander in buildings if not controlled, their potential as carriers of disease cannot be ignored.

N.I.H. scientists also have found that for some reason mites are attracted to fungus cultures, and the capacity of mites to be just about everywhere makes them another concern. The risk of infections therefore spreading by means of such vectors and pests exists for both patients and staff, though of course our greatest concern is for the patients with reduced resistance to disease.

The need to control these insects at N.I.H. therefore cannot be overemphasized —but for the reasons I have just described, we must give careful attention to which methods and materials we employ.

The first step of course is to eliminate as much as possible the hiding and breeding places of these disease-carriers, to deny them the opportunity to flourish and multiply once they gain access to the various buildings. We try to employ nonchemical methods to achieve this control. One of the simplest and most obvious techniques is to block the many cracks and tiny holes in a building's surfaces with caulking compound. In addition, since insects like to harbor themselves in any convenient crevice of a package, we recommend to the laboratories that they avoid the use of cardboard boxes containing corrugated materials.

Delicate Research

However, it is not possible to have effective controls by such means alone, so we must also use pesticides in some areas. It is in the choice of chemicals that we have to take the greatest precautions, because the highly delicate and sophisticated nature of N.I.H. investigations limits the choice of materials that can be introduced into the research environment.

At the Bethesda, Md. site alone, for example, there are more than 1,400 research projects in progress at any given time. Some of these are so delicate that even a few parts per *trillion* of an undesirable chemical could throw them off balance. So any extraneous chemical that is introduced has to meet rigid tests and requirements. Not only is the parent chemical scrutinized with respect to its structure, and environmental, physiological and toxicological interactions, but also its degradation and metabolic products are carefully investigated to determine their potential effects on the experiments in progress. In our choice of chemicals, we consider only those that have been approved by EPA, but the fact a chemical has a label for indoor use and is considered "safe" when used according to the label is not enough.

Information on the subtle physiological effects of several environmental chemicals is growing. In themselves these chemicals may appear innocuous at the concentrations usually found in the environment, but our main concern is to investigate their less obvious interactions because even though the latter may be totally harmless or negligible from the point of view of human or animal health, they can disturb or distort research results. Barely detectable concentrations can produce subtle but statistically significant changes in experimental readings.

Natural pyrethrum, for example, is considered to be one of the "safest" insecticides in use. It has been with us a very long time, and is derived from the dried heads of Old World chrysanthemums. (EPA Journal, September, 1978.) However, there are several areas at N.I.H. where we cannot use it because nearly all available preparations of pyrethrum become more potent when mixed with piperonyl butoxide, a synergist, and often with an additional synergist. The latter compounds are added to pyrethrum to enhance the insecticidal effect by inhibiting drug metabolizing enzymes in the target pest. Obviously the use of formulations containing this synergist in areas where microsomal enzyme-related research is being done will seriously interfere with investigations.

Malathion is considered relatively "safe" in some animal rooms, such as those used to keep monkeys in quarantine at our facility in Poolesville, Md., but occasionally we hesitate to use it because of its possible interference with some delicate experiments.

We at N.I.H. are leaders in many areas of neurochemistry. For example, Dr. Julius Axelrod's pioneering work on chemicals that transmit nerve messages in organisms brought him the Nobel Prize in 1970 (shared with Sir Bernard Katz and Ulf von Euler). In laboratories doing this type of work, naturally no pesticide that has the potential of interference with research can be used. We therefore try to achieve control without employing any chemical means at all.

The truth is, there is a whole chemical jungle involved in pesticides, and we have to select very carefully from it and do the best we can, supplementing this with constant scrubbing and cleaning work.

At this point the reader may be wondering if there is any pesticide that can be used in our work. The answer is yes, and one of the most curious is an amorphous silica gel that does the job in an unusual way: It kills by abrasion.

Generally packaged as a powdery product, the substance is dusted in surface cracks of buildings and other areas where insects like to hide. Indeed, it has no more interference with experiments than ordinary house dust would—and almost no vapor pressure, a term meaning that very few molecules escape from the surface of the product to the air.

The way amorphous silica gel works is that after it comes in contact with the outer waxy coat of an insect, it breaks this protective layer down by abrasion from the insect's movements. Nature gives this wax coating to insects for a special reason—to prevent them from losing moisture. When the wax wears away, the creature literally dries up and dies from lack of water.

Such are the methods we use—some very elementary and some rather futuristic-sounding to the layman—in our constant battle against disease-carrying organisms at one of the great medical research centers of the world.

The author is Chief of the Pest Control and Consultation section at the National Institutes of Health. He is the author of Biochemical Insect Control: Its Impact on the Economy, Environment, and Natural Selection *(John Wiley & Sons, New York, 1977) and numerous articles in scientific journals.*

EPA ACCEPTS REFINERY RULING

EPA has accepted the ruling of an administrative law judge supporting construction of a Pittston Company oil refinery in Eastport, Maine. Administrative Law Judge Spencer T. Nissen ruled in favor of issuing a wastewater discharge permit to Pittston allowing construction of the oil refinery. EPA has been reviewing the permit request since 1975, including analysis of all environmental risks and economic benefits of the refinery. Pittston has agreed to make several concessions beneficial to the environment, including protection of the bald eagle and two species of whale, all endangered species.

Nissen concluded that there is no reasonable likelihood that construction and operation of the refinery will jeopardize the continued existence of bald eagles or whales in the area. In his decision, Nissen ruled that Head Harbor, the passageway to Eastport, is adequate for the safe navigation of supertankers. One tanker would enter the harbor per week and only a single tanker would be able to enter the passageway at one time, both factors limiting the risk of a major oil spill taking place, according to Nissen.

EPA PROPOSES RESCINDING HYDROCARBON STANDARD

EPA has proposed rescinding an unused air quality standard for hydrocarbons as a class of pollutants. A review of the scientific data underlying the standard confirmed the regulation has no utility under the current Clean Air Act and should be dropped. EPA has determined that smog control plans across the country can be carried out more effectively through monitoring ozone levels rather than attempting to monitor hydrocarbon levels. The hydrocarbon standard has not been enforced since it was set in 1971, but has been used only as a guide in meeting EPA's national atmospheric standard for smog. The proposed action will not affect the Congressionally mandated tailpipe emission hydrocarbon standards for automobiles.

Superfund Community Relations Policy

By Steven Cohen

For the past year, EPA has carefully studied relations between communities and governments during hazardous waste emergencies. The Office of Hazardous Emergency Response has issued interim community relations guidance based on studies by ICF, Inc., a private research organization, and the experiences of EPA Regional Offices.

This policy recognizes the fact that abandoned hazardous waste sites and spills of hazardous materials are not simply environmental matters, but are political, economic, psychological, social, and human health problems as well. There are good reasons why people are likely to be highly concerned about hazardous waste problems and proposed clean-up efforts. Unless community relations are arranged with care and skill, there can be a tense, agitated public looking for help but unsure where to turn and likely to be suspicious of any response that seems to be half-hearted.

EPA intends to handle the concerns and expectations of local communities with foresight, care, and compassion. The purpose of the policy is to assure that actions at uncontrolled hazardous waste sites are understood, accepted, and supported by those communities requiring assistance. The policy stresses the importance of carrying out clean-up actions without disrupting the normal life of the community. EPA intends to give local communities the opportunity to influence the conduct of clean-up actions, and is committed to informing the community of proposed actions.

Superfund community relations policy requires EPA Regions and States to develop community relations plans for any hazardous waste site where Federal funds will be spent for more than two weeks. The plans require that a substantial level of effort be devoted to interacting with local communities at each site. The amount of interaction is determined by projecting both the degree of citizen concern and the complexity of the environmental problem at the site. The more visible and serious the hazardous waste site, the more active the community relations program.

The policy establishes the following principles for sound community relations:

- Inform the public about proposed plans and programs.
- Be sympathetic and understanding of local concerns.
- Learn about the history of the waste site and about the community affected by the site.
- Avoid generating unrealistic expectations about the amount of help that government can provide.
- Be open and forthright with information.
- Seek out and work with local groups concerned about waste sites.
- Coordinate actions with local officials.
- At serious problem sites, assign a community relations coordinator whenever possible.
- Be flexible, and use a variety of techniques to interact with the community.
- Consider establishing a Citizens' Advisory Committee at any site or spill having a high degree of citizen concern.

The Superfund legislation requires the implementation of cost-effective solutions to hazardous waste problems. A well thought-out program of community relations is an integral element of EPA's strategy to achieve cost-effective solutions. It is believed that unless the concerns of affected communities are understood and addressed in the planning process, it is quite possible that misunderstanding will cause long delays and cost overruns. The problems at some hazardous waste sites are often difficult to understand, and occasionally frightening to the uninformed. The Superfund program takes very seriously its responsibility to deal honestly and effectively with the concerns of these local citizens. □

Steven Cohen is an environmental protection specialist in EPA's Office of Hazardous Emergency Response.

EPA Crisis Training for Hazardous Materials

By Thomas C. Sell

An abandoned storage warehouse catches fire. Local volunteer firemen extinguish the blaze, but observe many drums, containers, and cartons with labels and signs indicating they contain a variety of chemical compounds. Pungent odors are also noticed by the firemen. Realizing their lack of expertise in dealing with chemicals which could present a serious toxic threat to themselves and inhabitants of the area, the firemen seal off the warehouse and request outside help.

In another episode, at 9:30 a.m. at an intersection off a freeway exit, a flat-bedded tractor trailer rig, placarded with diamond shaped signs reading "DANGEROUS," spills its load. A number of 55-gallon drums and boxes of various sizes litter the site of the accident. A deputy sheriff arrives on the scene, reroutes traffic around the site, informs his office by radio that a serious situation involving hazardous materials could exist, and that expert assistance is needed immediately to assess the situation and provide advice on cleanup.

These two scenarios are examples of situations involving the release or potential release of hazardous substances which, if uncontrolled, could have had an adverse effect on the public's health or a detrimental impact on the environment. The incidents, however, were staged at EPA's Region II Surveillance & Analysis Laboratory located at the GSA Raritan Depot, Edison, N.J. In the simulated accident, the assistance was provided by participants in a training course entitled "Hazardous Materials Incident Response Operations." The culminating activity of a week of instruction, the staging of the hazardous waste incident provides a mock crisis to which the class acting as a team

responds. The situations are designed to approximate real events as closely as possible.

Before September 1979, the Federal revolving fund for emergency hazardous response was limited to releases or discharges of oil into navigable waters. The Clean Water Act and its Amendments, the legal basis for response activities, provided for the revolving fund to handle incidents involving oil and certain hazardous substances. On September 22, 1979, a list of approximately 300 specific hazardous substances was published in the *Federal Register*. However, it was realized by EPA, other government agencies, private environmental organizations and Congress, that this law was inadequate for dealing with the magnitude of the problems presented by abandoned or uncontrolled hazardous waste sites. As a result, in December 1980, the Comprehensive Environmental Response, Compensation, and Liability Act (Superfund) was promulgated providing a broader legal mandate and additional money for remedial actions at abandoned sites and for emergency response to environmental episodes. This enables EPA to respond to hazardous materials released on land, surface or ground water, air, and any combination of the above.

To prepare EPA response personnel better for managing environmental episodes involving a wide range of hazardous materials, the Oil and Special Materials Control Division (now the Office of Hazardous Emergency Response) assigned its Environmental Response Team to plan, organize, and carry out a training program. As a result, six courses were developed to train personnel in five areas of hazardous environmental response: monitoring and sampling, hazard evaluation, mitigation and treatment, personnel protection and safety, and a general introductory course for inexperienced personnel.

During the initial planning, discussions were held with the U.S. Coast Guard regarding the need for a practical "hands-on" course. Neither EPA nor the Coast Guard, the two lead Federal agencies for managing environmental episodes, were aware of any available courses that met their needs for field-oriented training. As a result of these discussions, they cooperatively developed and funded the "Hazardous Materials Incident Response Operations." The EPA Region 2 Surveillance & Analysis Division's location at Edison, N.J., was selected as the training site because of its available space and facilities and the proximity to the Environmental Response Team and other support services.

The goal of the course is to provide practical knowledge about activities during the initial phase of an incident involving hazardous materials. It focuses on team functions, methods, procedures, organization, and safety in responding to such episodes. The emphasis is on using information presented by the lecturers in critical situations. Each lecture period is immediately followed by problem-solving sessions in the classroom or in outdoor exercises.

The course emphasizes the concepts and principles associated with all response activities. General considerations are:

- Recognizing the hazards associated with specific materials.
- Determining the risks to the public and the environment.
- Developing methods to reduce or prevent the effects of an incident.
- Insuring protection and safety of response personnel.

Although each release of a hazardous substance presents a unique situation, principles remain the same, but are adapted to meet the requirements imposed by the specific incident.

The course is limited to 18 participants per session. Students are divided into smaller work groups which operate independently during the first part of the instruction on problem-solving and decision-making involving hazard recognition and evaluation, risk determination, and the selection of appropriate personnel protective equipment and methods.

The next block of instruction concerns protective clothing and breathing equipment, the first line of defense in protecting the body from hostile, toxic environments. All students receive a self-contained breathing apparatus and full-face air purifying mask. After thorough instruction in the uses, limitations, and inspection procedures with this equipment, students use it in a smoke-filled environment, on obstacle courses, and while operating field instruments. The participants also practice wearing various types of fully encapsulating suits, over the self-contained breathing apparatus. Both laboratory and outdoor exercises provide students with a basic understanding of the fundamental instruments available for initial hazard assessment and site characterization. Students operate field instruments while wearing protective clothing and respiratory apparatus so that they can learn the difficulties of working under adverse conditions. Students also set up a series of decontamination lines for demonstrating the correct procedures for removing chemicals from protective clothing during response operations.

As students move through their exercises, they begin to develop an awareness of the complexities involved in hazardous substance incidents. Each situation that might be encountered involves factors dictated by the specific incident that must be evaluated and managed, based upon the information that is available. The class learns to organize, develop and carry out a team effort capable of effectively reducing the impact of the incident on the environment.

The final exercises are designed to test the participants' ability to use the information presented to them in a full-scale environmental episode. Although the incidents are simulated, they represent events that have happened. These present a series of problems for the response team to solve. Throughout the course, the principles and procedures are discussed. The final test is the application of the discussions to the environmental episode.

To date, seven operations courses have been presented at the facility in Edison, with approximately 150 students participating in the courses. Attendees have been from EPA, U.S. Coast Guard, State and local emergency response offices, other Federal agencies, and private organizations. Plans call for at least one presentation per month for the next fiscal year.

Thomas Sell is Training Coordinator for EPA's Environmental Response Team. For more information about this course, contact him at:

26 West St. Clair Street
Cincinnati, Ohio 45268
Tel. (513) 777-2750 or FTS 684-7537.

EPA's Environmental Response Team— On Call Around the Clock

By Stephen Dorrler

Last March a holding lagoon for waste chemicals in Epping, N.H., was in imminent danger of spilling over due to heavy precipitation. EPA's Environmental Response Team was activated by EPA's Region 1, with headquarters in Boston. The team was requested to use its mobile treatment trailer to treat the wastes and lower the liquid level in the lagoon. "Within 24 hours of the initial request," according to Ed Fitzpatrick, chairman of the Region 1 Regional Response Team, "the unit was in place at the site. In light of all the confusion that can accompany an environmental emergency, it was a welcome sight to see this methodical and well-orchestrated operation."

The environmental response team was established in October 1978 by authority of the National Oil and Hazardous Substances Pollution Contingency Plan. This Plan directed EPA to establish the team to advise the on-scene coordinators and regional response teams on environmental issues related to spill containment, clean-up, and damage assessment. The March 24, 1981, draft of the new National Contingency Plan continues this direction by outlining the team's responsibilities. As spelled out in this document, the unit is to provide expertise in biology, chemistry, and engineering for emergency disaster incidents. The team also provides special equipment to control and clean up chemical discharges.

Expanded List of Substances

Mike Cook, EPA's Director of the Office of Hazardous Emergency Response in Washington, states that the team makes it possible for EPA to provide around-the-clock support to the Regional offices through personnel whose sole responsibility is to respond to environmental emergencies. This support comes at a time when EPA is becoming increasingly concerned with environmental emergencies and the problems of such waste sites.

Ken Biglane, the chairman of the national response team and Director of the Hazardous Response Support System, emphasized that the magnitude of the problem requires a massive commitment of resources by government and private industry. The Comprehensive Environmental Response, Compensation and Liability Act of 1980 includes a greatly expanded list of hazardous substances and signals greater responsibilities in the area of environmental emergencies.

The Environmental Response Team is EPA's focal point for technical assistance to the Regions and Program Offices during emergency episodes involving toxic and hazardous materials and hazardous wastes. The team, which is a branch in Biglane's new division, has two locations: Edison, N.J. and Cincinnati. In general, requests for help from the unit come from each Regional Administrator's Emergency Response coordinator once the conclusion has been reached that technical assistance is needed. "In case of a chemical spill into a river, for example," Biglane said, "the Response Team will provide immediate assistance to the Regional On-Scene Coordinator. The aid will include monitoring the chemicals, predicting when they will pass a certain water intake pipe, and providing emergency water treatment technology or

Drums of white phosphorous, brought to Fort A. P. Hill, Va. as part of a cleanup by EPA of hazardous waste, are exploded by Army personnel under controlled conditions. A member of the EPA Emergency Response Team (right photo) briefs personnel at a waste site near Pittston, Pa.

arranging to have alternate water supplies provided. The team will assist in developing solutions, techniques, and measures to minimize the immediate threat."

The team consists of 13 individuals with long experience in dealing with various types of environmental emergencies and responding to requests for assistance at uncontrolled hazardous waste sites.

Since the work is physically demanding and requires exposure to hazardous wastes and toxic chemicals, team members are highly trained in use of the latest safety equipment and decontamination requirements. The unit is constantly striving to upgrade safety practices and medical monitoring programs. Its basic operating philosophy is to err on the side of safety when considering respiratory protection and clothing protection requirements.

National Contingency Plan

The team concept had its origin in Section 311 of the 1972 Water Pollution Control Act which called for the preparation of a National Contingency Plan to handle spills of oil and hazardous substances. The plan, which is currently undergoing a substantial revision under the direction of Biglane, coordinates Federal clean-up and response efforts. Responsibility for on-scene coordination rests with EPA for inland incidents while the Coast Guard is responsible for spills of oil and hazardous materials in coastal waters and the Great Lakes.

EPA draws its On-Scene Coordinators from the 56 emergency response specialists in the Regional Offices. They are trained in disciplines such as biology, chemistry, engineering, and groundwater hydrology, and are experienced in cleaning up and removing spills or mitigating their adverse environmental effects. They also review and inspect the spill prevention, control and countermeasure plans that facilities handling oil and hazardous materials must prepare. EPA provides help for about 3,000 spills a year, but only about 50 require an On-Scene Coordinator to supervise the cleanup operation. In addition to these emergencies, EPA is also involved in over 50 accidents at uncontrolled hazardous waste sites including the preparation of emergency action plans, and cleanup operations.

The team is responsible for coordinating the Environmental Emergency Response Unit. The latter involves a cooperative effort between the Team, the Office of Research and Development's Oil and Hazardous Materials Spills Branch, and contractor personnel. This provides the most effective use of new methodology and equipment being developed. Services which are available through the Response Unit include prototype spill control equipment such as the mobile physical/chemical treatment system; a mobile flocculation/sedimentation system; the mobile stream diversion system; contract laboratory analytical services, and pilot plant treatment studies.

Other special mobile equipment will be added to the Team's arsenal in the future, including a special mobile incinerator now undergoing final fabrication and testing.

Since its founding in 1978, the Team has responded to over 150 emergency incidents and hazardous waste sites. In addition, it has provided direct technical help to another 250 incidents. Responses have been provided for all 10 EPA Regions, including Alaska, Puerto Rico, and the Commonwealth of the Northern Marianna Islands (Saipan). At the request of the government of Mexico, technical aid was provided for control of the Ixtoc blowout in the Gulf of Mexico. The average response lasts about four days, but some have taken over four months.

"With this team," Biglane said, "we hope to bolster State and local programs for disaster assistance. After all, the local communities are the ones on the receiving end of all environmental catastrophes. They need help. This Team is programmed to focus that help through EPA's Regional Offices." □

Stephen Dorrler is Branch Chief of EPA's Environmental Response Team in Edison, N.J.

Update

A review of recent major EPA activities and developments in the pollution control program areas.

AIR

Conference Held

EPA recently hosted a regional conference on regulatory reform and cost-saving approaches to controlling air pollution.

The conference, held at the Doubletree Plaza Hotel in Seattle, Wash., focused on how EPA's national regulatory reforms can help western business interests improve air quality at less cost and with less government intrusion.

Representatives from industry, the environmental community, and State and local governments reviewed the latest reform developments and discussed with top EPA officials the applicability of these reforms to their own particular situations.

EPA and the States are now developing and carrying out a series of important regulatory reforms called Controlled Trading, which lets companies meet air pollution laws by securing needed pollution reductions from other firms, or from other sources within their own facilities. This, in turn, can increase industry's flexibility in meeting existing requirements while sharply reducing compliance costs.

ENFORCEMENT

Agreement Signed

EPA and ASARCO, Inc. recently announced the signing of a consent decree settling issues relating to air quality control at the company's copper smelter in Hayden, Ariz.

The agreement, filed with the U.S. District Court in Tucson, caps 12 months of discussions, and resolves such issues as the amount of emission reduction and the timing of modernization. Under the pact, ASARCO will bring the smelter into compliance with air pollution standards by April 1, 1984, unless circumstances beyond the company's control force a deadline extension.

Such smelters basically melt copper ore in a furnace to obtain relatively pure copper. The Hayden plant has the capacity to smelt 720,000 tons per year of copper ore concentrates.

The agreement calls for the present roaster and reverberatory furnaces at the Hayden plant to be replaced by a flash furnace, which can melt ore more quickly and efficiently, and further reduce emissions of sulfur dioxide and particulate matter.

Penalties Sought

EPA has filed an administrative complaint asking for $1,428,000 in penalties against Atlantic-Richfield Company of Philadelphia, Pa., charging that the company violated Federal regulations under the Clean Air Act by using leaded gasoline in company vehicles which are designed to use unleaded gasoline.

Specifically, the complaint charges that company vehicles located at its refinery in Philadelphia were fueled with leaded gasoline in the time period between May 25, 1978 through September 14, 1979, when they required unleaded gasoline to protect the pollution control equipment.

Violators of the unleaded fuel regulations can be assessed administrative penalties of up to $10,000 per violation. EPA considers the seriousness of a violation when setting a penalty and may consider actions taken by the violator to correct violations and prevent future recurrence before assessing a final penalty.

The company has indicated that it intends to contest the charges, and may request a formal hearing.

HAZARDOUS WASTE

Survey Underway

A survey to pinpoint the precise location of all of the thousands of abandoned hazardous waste sites across the United States is being taken by EPA.

The Agency said it will obtain the information primarily from companies and individuals that owned, operated or used sites where dangerous chemical wastes have been deposited.

The Superfund law requires these reports to be submitted, and EPA is preparing to supply notification forms and establishing receiving points in EPA regional offices. The law provides penalties not to exceed $10,000 or one year in jail or both for failure to comply with the provisions of the notification program.

The law establishes a broad Federal-State capability using a fund to locate, investigate, and clean up those hazardous waste sites causing the most serious environmental and public health problems.

Consent Order

EPA recently obtained a consent order with the operator and users of a hazardous waste storage facility in Hidalgo, Texas, requiring the removal of 797 drums of hazardous waste, including highly toxic mercury, from the facility in compliance with Federal hazardous waste regulations.

The facility, operated by Inserv, Inc., served as a freight forwarding depot for the ultimate disposal of wastes at other locations, including those outside the country. According to EPA, Inserv had not notified the Agency of the existence and operation of the facility, in violation of EPA's new hazardous waste regulations.

The parties in the consent agreement include: Inserv, Inc., which owns and operates the facility; Monochem Inc., which generated and secured the transportation of wastes to the facility; Borden, Inc. and UniRoyal Inc., owners of Monochem Inc.; and Diamond Shamrock Inc., which generated and secured the transportation of wastes to the facility.

Under the order, Monochem and Diamond Shamrock must remove the drums and ship them to a facility which complies with the hazardous waste regulations. □

People

Lawrence W. Reiter

He has been named director of EPA's Neurotoxicology Division of the Health Effects Research Laboratory at Research Triangle Park, N.C. He was most recently chief of the Division Behavioral Toxicology Branch.

In his new role, Reiter will supervise both in-house and extramural neurotoxicological research in the Division which studies the effects of toxic substances on the function and structure of the nervous system.

Reiter joined EPA in 1973 as a research pharmacologist to study the neural and behavioral toxicology of environmental agents in what was then the Experimental Biology Laboratory.

Prior to joining the Agency, he was a postdoctoral fellow and lecturer in environmental toxicology at the University of California at Davis.

Reiter holds adjunct faculty appointments in pharmacology and toxicology at the University of North Carolina, Chapel Hill, and in zoology at North Carolina State University, Raleigh.

He received his bachelor's degree in chemistry with a minor in biology from Rockhurst College in Kansas City, Mo. He earned a doctorate in neuropharmacology from the University of Kansas Medical Center in the same city.

Pack Horse Ford

A frightened and bleeding stag burst through the dawn fog, plunged into shallow water in the Potomac River about a mile below Shepherdstown, W. Va., and lurched across in great splashing leaps to the Maryland shore.

Once safely on shore the buck snorted mightily and paused before crashing through some underbrush and then disappearing into the nearby woods. On the West Virginia shore a hunting hound howled in frustration as the poacher who had shot the deer called the dog to give up the chase and return.

Only a scarlet pool of blood on the river's muddy bank marked where the buck had rested momentarily after crossing the river some 60 miles above Washington at a low-water crossing known as Pack Horse Ford.

This ford, which provided a river crossing for animals and Indians long before the white man arrived in America, has often been stained with blood. Predator animals waited here for their prey. Indian tribes fought each other at this water crossing.

During the Civil War both Union and Confederate troops frequently used this ford because the bridge at Shepherdstown was burned early in the war. After Gen. Lee and his Confederate troops were defeated at Antietam, Md., the Confederate forces built bonfires on the night of Sept. 19, 1862, to deceive the northern troops into thinking the southeners were still there, while thousands of these men made a crossing at Pack Horse Ford under cover of darkness into what was then Virginia.

Pioneer settlers bound for the Shenandoah Valley also often used this ford which got its name from the heavily loaded pack horses the travelers brought with them before wagon roads were built.

A sign along the C & O Canal marking the approximate location of the ford has been erected by the Maryland Civil War Centennial Commission. Although rarely traveled by people now that there is a bridge at Shepherdstown, the ford is still occasionally used by hikers and fishermen.

Normally water at the ford is low enough to permit crossing about eight months in a year. Even when the river flow is down, we discovered while crossing the ford a few years ago that the current is powerful. Walking through the ford water can be dangerous and use of a stout stave is helpful to keep your body from being pushed over.

Apart from its historic importance in commerce and warfare the ford is a centerpiece in an unusually striking section of the Potomac River and the parallel C & O Canal.

Along the canal in this area a stunning assortment of wild flowers marks the seasons. In spring nearly a half acre of pink shooting star flowers can be seen in a protected location above the river bluffs. Wild columbine nod from rocky outcroppings.

Dutchman's breeches, squirrel corn, star of Bethlehem, sweet cicely, bloodroot, mayapple, anemones, toothwort, saxifrage, Virginia bluebells and great clumps of violets are among the other flowers that adorn the C & O Canal path.

Bird life is also abundant in this area. Bluebirds nest in tree holes drilled and abandoned by woodpeckers, osprey can sometimes be seen carrying fish to their young, and the song of the Louisiana water thrush whistles through the woods.

On the river banks, great sycamores and box elders lean out over the water. River birch grows in sand bars off shore. The river current will carry the seeds of this birch downstream to other sand bars and river banks where its new shoots quickly spring up and hold the land against the assault of the water currents.

As evening descends, tree swallows soar and dip over the river in an aerial ballet as they catch flying insects for a final meal of the day.

Some teen-age boys arrive with fishing poles and a kerosene lamp. As the lamp flickers in the darkness, a summer wind whispering in the tree leaves carries the perfume of the blooming honey suckle which carpets much of the area—an enticing whiff of the environmental richness free to anyone in the Washington area who can walk.—C. D. P.

Managing Michigan's Hazardous Wastes

Continued from page 5

and the other a chemical engineer. The temporary members include two residents of the municipality and two residents of the county in which the facility is proposed to be located.

The site approval boards were created to recognize concerns that both the State and the local communities have in dealing with hazardous waste disposal and treatment. These boards face the toughest decisions because they select the locations where waste disposal facilities will be located. For every individual who may object to the location of a facility, there will be hundreds who will need that facility to maintain local jobs and to provide goods and services to the people of Michigan.

When a site approval board approves construction of a facility the Department of Natural Resources will then issue the necessary construction permits. Once facility construction is complete, the facility owner or operator must then apply for and obtain a facility operating license. All these safeguards and inspections are designed to prevent future environmental and health problems, because safety is of paramount concern. State specialists are required to inspect each operating facility and to file a written report on the facility at least four times each year. And as an example of the State's desire to maintain close communication with local units of government, the Act provides that local officials may notify the State whenever they are concerned that a disposal facility, or a transporting unit, or a processing facility may not be operating safely. Upon such notification, the State must immediately investigate the concern and provide a written report to the local unit of government.

Although all presently existing facilities will also have to be licensed, Act 64 is not a program to clean up past disposal practices. Those must be dealt with separately. Instead, this new law is a program which deals with present and future needs to manage wastes safely. Sophisticated waste treatment systems must be developed for substances which can either be destroyed biologically or treated to convert them to a non-hazardous form. Resource recovery methods will be used whenever possible, because certain wastes can be recycled for reuse by industry. Such recovery programs can provide economic benefits while reducing total waste volume, as well as lowering levels of toxicity. High temperature incineration will be employed where necessary for disposing of certain types of difficult wastes.

A common misconception is that all hazardous wastes must be disposed of in landfills. That's simply not the case. In fact, prior to using a landfill for hazardous wastes, the new law requires that a legal document be signed by all owners of the land and by the Department of Natural Resources stating that the land has been or may be used for hazardous wastes and that future filling, grading, excavating, building, drilling, or mining will not be allowed under most circumstances.

Act 64 also establishes a "cradle-to-grave" system for tracking hazardous wastes from their point of generation to their ultimate disposal. The Act contains specific manifest requirements which must be complied with by all hazardous waste generators, haulers, and owners or operators of waste management facilities. That is, for each shipment of wastes, detailed documentation must be recorded and given to the Department of Natural Resources and other agencies. This review will allow the State to confirm that the wastes are being properly handled and properly disposed of in accordance with the new law's requirements. In addition, the Act requires the annual licensing and inspection of waste hauler vehicles to ensure that safety is maintained.

Two funding sources were established by the new law to ensure long-term care of the facilities and to make sure the State has the financial means to properly respond to emergency situations. A Disposal Trust Fund created by user fees will provide resources for long-term care of disposal facilities after any facility closes down. Under the Act the fund may collect as much as $2 million annually, and up to $30 million over a period of years, to cover the expenses of long-term facility care after closing down. However, the Act requires that an owner or operator of a facility must monitor and maintain the facility for 15 years after closure before a determination will be made on the future ownership or use of the land.

The Act also establishes a Hazardous Waste Service Fund of not less than $1 million. This fund will be used to respond to actual or potential emergencies caused by hazardous waste. After an expenditure from the fund has been made to deal with an emergency situation, the Department of Natural Resources must immediately request the State Attorney General to recover the expenditure from those individuals responsible for the emergency.

Supplementing the Act, Michigan's new Hazardous Waste Management Rules became effective April 15, 1981. Within 120 days after that date, hazardous waste haulers and disposal facility operators must file completed applications to continue operating.

Alan Howard, Chief of the State's Hazardous Waste Management Office, said the 95-page set of regulations provides the mechanisms needed to carry out the concept of controlling hazardous wastes prescribed by 1979 Michigan legislation.

"That means generators of hazardous wastes will be under regulation, as well as transporters and disposers of hazardous materials," Howard said. "Generators of hazardous materials must adhere to a manifest system from now on, listing hazardous

Management of waste drums at Ankerson Development Co., Oakland County, Mich.

wastes being shipped to ensure safe arrival at their destination. The new rules require disposal facilities to issue certificates of disposal as each load of hazardous waste is properly disposed of according to law.

"Michigan's new hazardous waste rules closely correspond with Federal regulations under the Resource Conservation and Recovery Act (RCRA)," said Howard. "We are applying for interim authorization from the Environmental Protection Agency to run the hazardous waste program in Michigan. RCRA regulations are being promulgated in phases. Final authorization will allow Michigan to carry out all aspects of the Federal program."

The State's objective in creating its new hazardous waste management legislation and rules is to bring together a wide range of interests in the hope that balance, common sense, and understanding among all parties will lead us to a suitable long-term solution to our hazardous waste problem. □

Bill Marks is Assistant Chief of the Michigan Department of Natural Resources' Bureau of Environmental Protection. Persons seeking more information about Michigan's hazardous waste program should contact the State's Department of Natural Resources, Environmental Services Division, Box 30028, Lansing, MI 48909. Tel. (517) 373-2730.

Around the Nation

REGION 1

Arsenic Investigation

The regional office has been involved in investigating widespread arsenic contamination in New Hampshire's well water. Preliminary studies indicate that the contamination is not coming from illegal dumping of hazardous waste. Thus far, the Agency has determined that the arsenic is probably coming from bedrock or deep wells and virtually none is in wells where one would expect to find it if it were coming from surface contamination.

The regional office will continue to investigate how widespread the contamination is, and what kind of arsenic is actually present.

Ecology Program

Nearly 4,000 teachers representing 110,000 children in New England participated in this year's Elementary Education Ecology Poem and Poster Program sponsored by Region 1. Award ceremonies citing those youngsters who excelled in the program were held in each State. Joining in helping EPA present the awards in their States were U. S. Senators William Cohen of Maine, Christopher Dodd of Connecticut, Edward Kennedy of Massachusetts, Patrick Leahy of Vermont, and Warren Rudman of New Hampshire. Plaques and certificates were presented to those submitting the best entries.

REGION 2

Violations Cited

Region 2 has issued an administrative order to the city of Buffalo, N.Y., citing violations of the Clean Water Act at the Bird Island Wastewater Treatment Plant.

Buffalo has a National Pollutant Discharge Elimination System permit authorizing the discharge of pollutants at restricted levels from its Bird Island plant into the Niagara River. Based on discharge monitoring reports and information provided by the New York Department of Environmental Conservation, EPA has reason to believe that the facility has been discharging pollutants in excess of permit requirements for suspended solids and phosphorous. The Agency also believes the plant has not been properly operated and maintained for long periods of time.

At EPA's order, officials of Buffalo appeared before the Regional Director of Enforcement to explain why the Agency should not refer this facility to the U.S. Department of Justice for civil and/or criminal sanctions. EPA's decision in the case is expected in early June.

REGION 3

Legal Opinion

EPA has issued a legal opinion on whether a hazardous waste disposal facility meets the requirements for "Interim Status" under the Resource Conservation and Recovery Act.

The case involves the Sunny Farms Ltd. facility in Seven Valleys, Pa. It was EPA's opinion that Waste Management, Inc. of Oak Brook, Ill., owners of the Sunny Farms facility, had met the requirements of Interim Status. Under Federal law, any hazardous waste facility that meets Interim Status requirements has temporary authorization to continue construction and/or operation until standards for such facilities become effective and a final permit can be considered.

Local officials and residents had questioned whether Sunny Farms met the legal requirements of an existing facility. These requirements called for operation or construction of the site to begin by November 19, 1980 and for the facility to have obtained all required State and local permits. Citizens also claimed that the location of the facility was unsuitable for hazardous waste disposal.

In its opinion, EPA decided that the owners had performed a sufficient amount of construction activity to meet the requirements of the law. It was also decided that a local ordinance, requiring a permit to operate a waste disposal facility, did not apply to the issue in question.

The Commonwealth of Pennsylvania recently suspended the Sunny Farms permit because of operating irregularities at another facility in the State owned by Waste Management, Inc. EPA's ruling does not overrule the suspension, and all work at the facility has been halted until the issues with the State are resolved.

REGION 4

Emissions Program

A mandatory automobile exhaust emissions program began recently in a three-county area of Atlanta, Ga. The metropolitan Atlanta area exceeds the standard set for vehicle-related air pollutants, specifically ozone and carbon monoxide.

Drivers of gasoline-burning automobiles and light duty trucks are having their vehicles' emissions tested at the same time safety checks are made. The air control test costs $3. Inspections are required, but repairs, if needed, are voluntary until April 1, 1982 when both inspections and repairs become mandatory.

The emissions testing, administered by the Georgia State Patrol, exempts any vehicle 10 years and older, motorcycles, off highway use vehicles, other gasoline powered vehicles, and trucks with gross weight of 6,000 pounds or more.

Memphis and Nashville, Tenn., Charlotte, N.C., Louisville, and Boone County, Ky. are preparing to install similar programs. Two other Kentucky counties, Campbell and Kenton, chose not to adopt the program. Hence, both counties have been denied Federal funding assistance for sewers and certain highway projects as required by the Clean Air Act.

REGION 5

Grant Awarded

Region 5 recently awarded a $19 million grant to the Ohio Environmental Protection Agency to begin administering municipal wastewater treatment plant construction grants projects in the State. Under terms of an agreement signed by the Federal and State agencies, the grant will be used to fund a new Office of Construction Grants within the Ohio EPA which will take over most of the administrative and managerial tasks in the program which had previously been performed by Region 5.

The Clean Water Act, which authorized grants to local governments for the planning, design and construction of wastewater treatment facilities, also provided that EPA should delegate administration of the program to the States when they were prepared to undertake the task.

The agreement gives the Ohio EPA authority over 600 active grants made to Ohio municipalities.

REGION 6

Fine Levied

The Louisiana Department of Natural Resources levied the largest water pollution penalty assessed so far by a State in the Region when it fined Georgia-Pacific Corp. $350,000 for massive dumpings of the toxic chemical phenol into the Mississippi River in early February. One hundred and ninety thousand

dollars of the fine was for failure to notify authorities of the dumpings.

From February 6 through February 8, the company dumped almost 46,000 pounds of phenol into the river. Immediate notification of authorities could have prevented the phenol from getting into New Orleans area drinking water supplies, state officials said.

EPA commended the State for its quick, decisive action and the EPA regional office will complete work on its administrative order, issued March 2, determining what action the company has taken to remedy problems and to prevent this kind of incident from recurring.

Fuel Violations

EPA recently filed an administrative complaint against the Yellow Cab Company of St. Joseph, Mo., for using leaded gasoline in company vehicles which are required to use unleaded fuel and for other violations of the Federal Clean Air Act's fuel regulations. A penalty of $58,100 is being sought by EPA.

The complaint alleges that leaded gasoline was repeatedly introduced into seven of the firm's vehicles and that the gasoline pumping facility operated by the taxi fleet had an unleaded gas nozzle on a leaded gas pump. The company is also charged with failing to post required labels and warning signs.

Aquatic Study

Region 7 has announced that the University of Kansas will receive $201,593 for a study on the effects of agricultural herbicides on the aquatic food chain. The three-year project will be led by Dr. Frank de Noyelles of the Department of Systemics and Ecology.

The cooperative agreement with the school came after the Water Quality Planning Branch of the Water Division and the R&D staff of the Regional Office recommended approval by the EPA Corvallis Laboratory and R&D Headquarters.

Grant Awarded

South Dakota's Oglala-Sioux Tribe will take an important step toward establishing a complete air pollution control program including air quality monitoring and emission control on its reservation with the help of an $83,155 grant from EPA Region 8.

The money will help the tribe monitor air quality on the 2.7 million acre reservation. Information on particulates, meteorological influences on air pollution and visibility problems caused by air pollution will be collected for analysis. Also, the tribe will evaluate its scope of legislative authority to regulate air pollution on the reservation.

Alleged Violations

Colorado Chemical Specialties Inc., of Golden, Colo., which was partially destroyed by fire recently, faces a possible fine of $20,000 by EPA for alleged violations of Federal hazardous waste control regulations found during routine EPA inspections in February 1981.

In an administrative action filed by EPA, the company was cited on four counts. They include: failure to have an adequate fire control system for the chemical wastes on the site, failure to have a contingency plan for responding to emergencies involving hazardous wastes at the plant, failure to mark accumulation dates on 150-plus drums of hazardous waste stored at the facility, and failure to submit to EPA a permit application required of all hazardous waste storage facilities. Toluene is the specific hazardous waste generated by the facility.

The company was ordered by EPA to correct the deficiencies immediately. Additional penalties of up to $25,000 for each day of continued noncompliance with hazardous waste regulations may be imposed for failure to comply with the order.

Erosion Training

As a result of the 208 Grants Program, the Santa Cruz County Resource Conservation District, in cooperation with the Soil Conservation Service, has developed a highly successful erosion control training program.

The program will provide training for persons implementing erosion control practices. The demand for this training in Santa Cruz County has become so great that the course is now being offered in the local community college. Training sessions have been covered by the local and national media and other Resource Conservation Districts are planning or sponsoring similar courses modeled after the County program. In August 1981, the District will offer an Advanced Erosion Control Training Course. Graduates of this course will be recognized by the District as qualified preparers of erosion control plans.

The District has also prepared a document entitled, "How to Develop an Erosion Training and Registration Program." Copies can be obtained from the District Conservationist, Santa Cruz County RCD, P.O. Box 267, Soquel, Calif. 95073, Tel. (408) 475-1303 or Thomas Mix, EPA Project Officer, Region 9, (415) 556-8042, in addition to further erosion control information.

Air Pollution

Idaho, with no funds appropriated by the 1981 Legislature, has been left completely without a State air pollution control program as of July 1, a situation that is forcing EPA to assume as much as it can of the air quality work performed by 24 State employees in the Idaho Department of Health and Welfare.

Region 10 Administrator Donald P. Dubois has started preparations for EPA to assign personnel and financial resources to protect and maintain air quality in the State. "EPA can come nowhere near replacing the Idaho air program personnel, neither in terms of numbers nor in their 'hands-on' familiarity with industrial sources of air pollution in the State," Dubois declared.

While acknowledging that EPA's efforts will be "minimal" compared to work done previously by the State, Dubois said that careful marshalling of available EPA resources will enable the most critically important planning, monitoring and compliance actions to continue. □

States Served by EPA Regions

Region 1 (Boston)
Connecticut Maine Massachusetts New Hampshire Rhode Island Vermont
617 223 7210

Region 2 (New York City)
New Jersey New York Puerto Rico Virgin Islands
212 264 2525

Region 3 (Philadelphia)
Delaware, Maryland, Pennsylvania Virginia West Virginia District of Columbia
215 597 9814

Region 4 (Atlanta)
Alabama Georgia Florida Mississippi, North Carolina, South Carolina Tennessee Kentucky
404-881-4727

Region 5 (Chicago)
Illinois Indiana, Ohio, Michigan Wisconsin Minnesota
312-353 2000

Region 6 (Dallas)
Arkansas Louisiana Oklahoma Texas New Mexico
214 767 2600

Region 7 (Kansas City)
Iowa Kansas, Missouri, Nebraska
816 374 5493

Region 8 (Denver)
Colorado, Utah, Wyoming, Montana, North Dakota South Dakota
303 837 3895

Region 9 (San Francisco)
Arizona California Nevada Hawaii
415 556-2320

Region 10 (Seattle)
Alaska, Idaho Oregon Washington
206-442-1220

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national Activities, A-106) four weeks prior to the initial shipment each year of a given hazardous waste to a given foreign consignee. Additionally, the U.S. generator must obtain written acknowledgment from the foreign consignee of receipt of shipment. The notification to EPA must include the name and address of the waste generator; the name and address of the foreign consignee; the EPA waste classification number; and the Department of Transportation number and shipping description, which indicate the characteristics of a given hazardous waste.

Upon receipt of this, EPA's Office of International Activities, through the State Department, notifies appropriate officials in the country receiving the hazardous waste shipment. During the four weeks prior to shipment, the receiving country has the opportunity to review the information and request additional details concerning the waste. The notification helps a country to evaluate any hazardous waste entering its jurisdiction and to determine if any action should be taken. The U.S. government does not require any response to its notice from the foreign government, and the exporter may proceed with the shipment at the end of four weeks if it does not hear from EPA.

No PCB Exports

Although RCRA is the principal U.S. law governing hazardous wastes, the Toxic Substances Control Act (TSCA) also contains limited authority to regulate the export of chemicals and chemical wastes which are regulated domestically under TSCA if EPA finds the export will present an unreasonable risk of injury to the health or the environment within the United States. It is under TSCA that wastes contaminated with polychlorinated biphenyls (PCB's) or TCDD (dioxin) are controlled for export. Under present regulations, PCB's may not be exported for disposal unless the U.S. and the other country have entered into a Memorandum of Understanding which establishes mutually agreed-upon criteria for their storage, transportation and disposal. At the present time there are no such Memoranda between the U.S. and any other nation, and exports and imports of PCB wastes are banned. For wastes containing TCDD, EPA requires a 60-day advance notice of shipment, and exports are dealt with on a case-by-case basis.

The hazardous waste export notification procedures and export policy are part of a larger U.S. concern about exports of domestically regulated substances in general. Several laws which are administered by EPA, the Food and Drug Administration and the Consumer Product Safety Commission require some type of notification and consultation procedures for exports of certain hazardous products, pesticides and other chemical substances. A 2½ year study by an interagency working group led to an Executive Order signed by President Carter in January 1981 implementing a hazardous substances export policy. However, the Order was rescinded by President Reagan in February 1981 as part of an effort to simplify regulatory procedures. President Reagan has directed the Departments of State and Commerce to work with relevant agencies to consider alternatives which would be less costly and less administratively burdensome.

In addition to the United States, many other countries recognize the need for adequate hazardous waste treatment and disposal. This concern is reflected in several hazardous waste projects in international organizations.

Since 1973, NATO's Committee on the Challenges of Modern Society has conducted a major pilot study on hazardous waste disposal. This Committee of 15 member nations of NATO has compiled up-to-date reports in six areas, including chemical, physical and biological waste treatment and landfill practices. Work is continuing on the development of additional techniques for the treatment and disposal of hazardous wastes.

The Organization for Economic Cooperation and Development is made up of 24 industrialized nations working together on matters relevant to economic, environmental and social policy. One major project deals with the control of hazardous wastes emphasizing studies on the transportation of waste across frontiers, costs of industry for treatment or disposal, and the assurance of safe operations for storage, transport and disposal.

In April 1980, the Governing Council of the United Nations Environment Program passed a resolution calling on member governments to exchange information on hazardous waste disposal and to develop notification procedures and controls for international transfers of such wastes. In cooperation with the World Health Organization, it now is drafting guidelines on hazardous waste which will be presented to member countries.

In addition to participation in international organizations, the U.S. has several bilateral activities with other countries on hazardous waste and resource recovery. Under the U.S.-Japan Environmental Agreement, American and Japanese scientists are cooperating on projects in solid waste management and EPA is working with the Federal Republic of Germany's Ministry of Interior and research universities on exchanging advanced technologies for safe hazardous waste disposal and resource recovery.

With the increasing interdependence of countries and the growing volume of hazardous waste being produced all over the world, the need to find improved methods for its safe treatment or disposal becomes more and more urgent. The U.S. and the international community share a responsibility to protect health and environment through continued cooperation on all aspects of safe hazardous waste treatment and disposal. □

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Back cover: Explosion of chemical wastes at a site in Elizabeth, N.J. last year.

nical background to a top administrative position." Dr. Hernandez holds graduate degrees in sanitary engineering, environmental engineering, and water resources, and has had extensive experience in these fields.

Gorsuch also paid tribute to Walter C. Barber, Jr., who served earlier this year as Acting Administrator. Presenting him with the EPA Special Achievement Award, she said of Barber: "His understanding, tact, patience, and tireless efforts to launch a new team at EPA are much appreciated."

Turning to the future, the new Administrator declared:

"The Environmental Protection Agency of the 1980's will hopefully evolve into a changed but more efficient and thrifty organization than its predecessor of the last decade. But protecting the health and surroundings of our citizens will remain unchanged. The budget increases of the 1970's have turned into the necessary cutbacks of the 1980's as EPA is asked to share in the battle to fight inflation and enhance economic recovery. But just as President Reagan has asked us to run a tighter ship, it is the job of every crew member aboard EPA not to lose sight of what it means to be a public servant. We must become more sensitive to the special needs of small business and smaller communities on whom the fiscal burden of regulation has fallen especially hard. It will become increasingly urgent to cut down on response time to public inquiries and to process permits with greater efficiency. It is also vital that EPA shed the image of inflexible regulators and actually find ways to ease the paperwork and the reporting burden of businesses and communities.

"President Reagan has made it clear that EPA will be at center stage in his ongoing regulatory reform process, and I am excited that this Agency has been chosen to lead the way in making government more responsive to its citizens."

Gorsuch, who was sworn in as Administrator May 20, had a personal message for her audience.

"Within the framework of the initiative I have just mentioned," she said, "there are three goals which I hope will be adopted by each EPA employee. First, each worker should strive for improved individual initiative and personal productivity, creating a more efficient Agency even with scaled-down budgets. Second, EPA staff must avoid the adversary role when dealing with the public and other Federal, State and local agencies. Third, EPA employees must remind themselves each day that they are public servants, paid every two weeks by the American people to serve the public.

"As the U.S. Senate confirms our nominees for Assistant Administrators, employees in each division will receive more details on the policies of the new Administration and how that relates to the work of each individual. Dr. Hernandez and I are moving quickly to fill key management slots in Washington and in the Regional offices so we can get on with the business at hand. However, the real key to improving or changing any organization for the better is the attitude of the people who show up for work every day. Without the dedication of our career employees, in reality, little can change. And although we are asked to work in a physical plant that most of us consider a mess, I am impressed with the people who work here, with the talent of our scientists, researchers, managers, lawyers, and communicators. The mess that besets most government agencies has not totally escaped EPA, and a bit of house-cleaning should be in order. But I am convinced that within our organization lies the creative potential to turn this situation around and make EPA even more responsive to its mandate and the citizens it serves."

The Administrator said that President Reagan "has created the opportunity for EPA and the rest of our government to participate in the New Beginning which the American people demanded last November.

"The President has assured me personally that EPA will be a 'keystone' as the Administration moves forward with its national goals of economic recovery, new Federalism, and protection of our environment. Certainly we must take our share of the budget cuts and serve within the framework of efficient austerity. But the President has asked EPA to take much less of a reduction than many agencies. This underscores President Reagan's personal commitment to the mission of this Agency, which continues to be the enhancement of our environment."

Calling EPA "an important and strong organization," Gorsuch said: "In fact, this country needs the Environmental Protection Agency.

"Ronald Reagan believes this, Anne Gorsuch is committed to this and would enlist EPA workers in Washington and in every Region in attaining our goals. What I ask is that we work with each other to make this a result-oriented operation, and thus confirm the confidence that President Reagan places in all of us.

"I am aware that within EPA lies the knowledge, skill and management talent to turn the corner on the problems that face all agencies. But the road to success begins at the desk of each EPA employee each working day. Dr. Hernandez and I encourage your participation and enlist your creative dedication and hard work on behalf of our new EPA team, our new Administration and for the American environment we are all sworn to protect." □

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