

EPA JOURNAL

Controlling Hazardous Waste



Controlling Hazardous Waste

The protection of the American public from threats posed by hazardous waste is the top priority of the EPA. In this issue, the EPA Journal reviews this urgent concern.

Administrator William Ruckelshaus leads off the issue with an overview of the hazardous waste problem. In an interview, Lee Thomas discusses the EPA effort to control hazardous waste. Thomas is Assistant Administrator for Solid Waste and Emergency Response. EPA Deputy Administrator Alvin Alm discusses the controversial question of where to dispose of hazardous waste.

An article offers an explanation of why the nation now finds itself with the tough environmental and public health problem created by hazardous waste. Another piece reports on a special concern — hazardous waste around the household and what can be done about it.

The agency's Environmental Response Team is featured, as well as EPA's program of emergency cleanups. Another article reports on steps to insure that wastes from federal facilities are controlled. EPA's attention to possible alternatives to disposing of wastes on land is reviewed.

EPA Region 4's extensive involvement of the public in efforts to protect Florida's Biscayne Aquifer from hazardous wastes is reported. This article is the second in a series in the Journal on major environmental problems which EPA's regional offices are addressing.

Six respected observers comment from a national perspective on a key question—how clean is "clean" in restoration efforts at a hazardous waste site? The purpose of Clean Sites, Inc.—a recently-formed private group seen as complementary to EPA's cleanup efforts—is explained by the organization's leadership.

Concluding the issue are Update and Appointments—two regular features in the Journal. □



Leaking drums and overflowing waste lagoons symbolize America's hazardous waste problem.

EPA JOURNAL

William D. Ruckelshaus, Administrator
Josephine S. Cooper, Assistant Administrator for External Affairs
Jean Statler, Director, Office of Public Affairs

John Heritage, Acting Editor
Susan Tejada, Associate Editor
Jack Lewis, Assistant Editor
Bob Burke, Contributing Editor

EPA is charged by Congress to protect the nation's land, air, and water systems. Under a mandate of national environmental laws, the agency strives to formulate and implement actions which lead to a compatible balance between human activities and the ability of natural systems to support and nurture life.

The *EPA Journal* is published by the U.S. Environmental Protection Agency. The Administrator of EPA has determined that the publication of this periodical is necessary in the transaction of the public business required by law of this agency. Use of funds for printing this periodical has been approved by the Director of the Office of Management and Budget. Views expressed by authors do not necessarily reflect EPA policy. Contributions and inquiries should be addressed to the Editor (A-107), Waterside Mall, 401 M St., S.W., Washington, D.C. 20460. No permission necessary to reproduce contents except copyrighted photos and other materials.

Putting the Hazardous Waste Issue in Perspective
By William D. Ruckelshaus **2**

EPA Fights Hazardous Waste
An Interview with Lee M. Thomas **4**

"Not in My Backyard": Facing the Siting Question
By Alvin L. Alm **8**

Why We Have a Hazardous Waste Problem
By H. Lanier Hickman, Jr. **10**

Household Hazardous Waste: Everyone's Concern
By Jack Lewis **12**

Chemical Detectives at Work: EPA's Environmental Response Team
By Susan Tejada **14**

Taking Emergency Action Under Superfund **18**

Choices in Disposal of Hazardous Waste
By Donald White and Bob Burke **20**

Cleaning Up Federal Facilities
By Josephine S. Cooper **22**

Protecting Against Hazardous Waste: The Front Line in Region 4
By Gordon Kenna **24**

The Idea Behind Clean Sites, Inc.
By Charles W. Powers **26**

How Clean is "Clean" at a Hazardous Waste Site?
Key Observers Answer **28**

Update: Recent Agency Developments **31**

Appointments at EPA **32**

Front cover: Sampling drum contents, part of a Superfund removal action at an abandoned hazardous waste dump in Northeast, Maryland. At this site, workers excavated 1,300 corroded drums, treated over 100,000 gallons of contaminated water, and removed 50,000 pounds of contaminated liquid waste and 5 million pounds of contaminated soil.

Photo credits: Steve Delaney, Tracey A. Finger; Allen Wilson; Susan Tejada; Mike Swartz, Valley Morning News; SCA Services, Inc., U.S. Army Aberdeen Proving Ground; Robert Rubik; Conservation Foundation; Richard Frear, National Park Service; Louisiana State Police.

*Design credits: Robert Flanagan
Ron Farrah*

The annual rate for subscribers in the U.S. for the *EPA Journal* is \$20.00. The charge to subscribers in foreign countries is \$25.00 a year. The price of a single copy of the *Journal* is \$2.00 in this country and \$2.50 if sent to a foreign country. Prices include mail costs. Subscriptions to the *EPA Journal* as well as to other Federal Government magazines are handled only by the U.S. Government Printing Office. Anyone wishing to subscribe to the *EPA Journal* should fill in the form at right and enclose a check or money order payable to the Superintendent of Documents. The requests should be mailed to: Superintendent of Documents, GPO, Washington, D.C. 20402.

EPA JOURNAL Subscriptions

Name-First, Last		PLEASE PRINT	
Company Name or Additional Address Line			
Street Address			
City		State	Zip Code

☐ Payment enclosed

(Make check payable to Superintendent of Documents)

☐ Charge to my Deposit Account No

Putting the Hazardous Waste Issue in Perspective

by William D. Ruckleshaus
EPA Administrator

EPA Administrator William D. Ruckleshaus addressed the hazardous waste issue in a recent speech in Philadelphia. He was speaking to the International Solid Waste Association/American Public Works Association Congress and Exhibition. Here are excerpts of his remarks:

"In the wake of the successful moon landings of the early 70's we often heard people say, 'If we can go to the moon, why can't we...,' and then fill in some intractable social problem supposedly solvable by a program matching the scale and determination of the space effort. This metaphor may be less common nowadays, having been tarnished by sad experience, but I believe that we in this country retain to some extent the idea that, having publicly embraced some goal, we will fail to achieve it only through the failure of our political will, or the intervention of some nefarious special interest.

"Ten years ago, for all practical purposes, we were unaware that there was a hazardous waste problem. To those concerned with solid waste in the mid-seventies the main problem seemed to be the management of trash and the need for recycling of materials. That curiously innocent world was, of course, destroyed forever by the revelations of the late seventies, when the careless disposal practices of the past began to turn places like Love Canal and the Valley

of the Drums into images of environmental calamity. To my mind it is impossible to assess where we are now in hazardous waste control without understanding how utterly shocking these revelations were and how unprepared we were to deal with them. Burial, after all, was the very symbol of ultimate disposal. Ground water was the very symbol of purity. People used to say, 'We don't worry about our drinking water; we get it from a well.'

"And consider this: in the late seventies when we began to write regulations for the control of hazardous waste disposal required by RCRA [the Resource Conservation and Recovery Act], we didn't know where the generators were; we didn't know what was in their waste streams, or how much there was of it or how hazardous it might be; and we didn't know where it was going. Moreover, the institutional structures for overseeing and controlling this immense traffic were embryonic. In contrast, when the federal government decided to take a leading role in air and water pollution control in the early seventies it was able to build on decades of experience and many active and capable state programs.

"We are building a set of very large national institutions from the ground up. The Superfund budget has grown from \$210 million in fiscal '83 to \$460 million in fiscal '84 and will reach \$620 million in '85. We are hiring hundreds of people; over 100 people have been added to the RCRA enforcement staff in the past year and the total Superfund staff planned for 1985, 1,357 positions, is double what it was in 1983.

"It is not enough to write rules; people have to understand what is expected of them under the rules, and the organizations at the different levels of government and in private industry have to learn to work together. This process requires the production, distribution, and digestion of an enormous mass of written information, as well as knowledge about who to go to for clarification. We have a RCRA/Superfund hotline at EPA headquarters that handled

50,000 calls last year. The point is that all this takes time. I'm not sure we could have got the system to where it is now any faster if we had twice as many people.

"It is also essential to remember that solving our hazardous waste problem is an immense *physical* undertaking. Quite literally, we are moving mountains. The RCRA regulations now in place influence the handling of tens of millions of tons of wastes from thousands of businesses. And proper disposal of hazardous waste—under both RCRA and Superfund—is largely a civil engineering operation of staggering complexity. A secure landfill, for example, is not just a big hole in the ground. It is much more like a ship. It may have a many-layered hull, internal barriers, extensive piping, drains, and pumps. It needs a crew to watch for leaks, and so on. Incinerators and other, more sophisticated, disposal techniques can be similarly complex, and all disposal methods are potentially dangerous if not managed correctly. There's a saying in government that you never have time to do it right but there's always time to do it over. This must be strenuously rejected as an operating principle in any actions connected with hazardous waste. We have to insist on the time to do it right.

"I make these points because I know how much the nation expects of us in controlling hazardous waste and because of how important it is that these expectations be tempered with realism about what we can and cannot accomplish in some particular length of time. That realism is particularly important now that our programs have built up some momentum. For example: we have taken emergency action to protect public health at 392 sites; we have stabilized or otherwise ended the threat of immediate damage at 328 sites,...Physical cleanup was underway at 120 sites [on the National Priorities List] in 1984 and will be underway at 221 sites in 1985. The important fact is that we



On September 28, 1982, a freight train of tank cars containing chemical compounds derailed near Livingston, Louisiana. Explosions rocked the site for three days. Fires burned continually. More than a dozen agencies and companies worked to control the disaster.

know of no NPL site that constitutes an immediate danger to the public.

"On the RCRA side, we have the operational pieces of a permitting program for treatment, storage and disposal facilities in place at the federal level and portions of the program have been established in more than thirty states. Over 200 Part B permits have been issued and we expect many more to be completed next year. We intend, as part of our new national permitting strategy, to focus our permitting resources on incinerators and landfills, which are the disposal options that represent the greatest potential for harm when improperly managed. Our target is 150 permits for these facilities alone. We also intend to carry out a massive inspection program on *all* major handlers of hazardous waste, and *all* recently closed sites, to determine if they are in compliance with RCRA requirements, especially where the monitoring of ground water is concerned.

"The emergence of hazardous waste as a major issue has forced us to think anew about the ultimate ends of our whole pollution control enterprise. We used to throw things away, until we realized that one person's 'away' was another person's 'here.' We used the air and the water as infinite sumps, and when we learned to stop such foolishness, we thought we could use the land in the same way. Now we have a system that is designed to prevent that too, to control hazardous wastes from 'cradle to grave.'

"Most of our attention has been focused on the 'grave' part of the problem, but sooner or later we are going to have to think about reducing the size of the little monster in the 'cradle' as well: that is, stopping the production of toxic residues. We have some evidence that the industrial system is evolving in the direction of less waste production. As the price of energy and raw materials increases, processes that produce a lot of waste will be abandoned in favor of those that don't. 'Waste not, want not' is back in fashion. Recycling of wastes also appears to be increasing. In our survey,

about half the generators reported that they intended to recycle wastes, a 25 percent increase from the previous survey, a year before.

"Most important, irresponsible dumping is no longer an option, and this has changed the economic picture for many important industries. Ten years ago an otherwise respectable firm could buy a farm in the back country, dig a hole, and forget about what they dumped there. That will never happen again. Superfund and RCRA have succeeded to this extent at least: industry is now reluctant to let any waste out the plant gate. Concern about the public health consequences of waste disposal, bolstered by fears of long-term liability and adverse publicity, is now strong enough to make major generators spend substantial resources on improving on-site control of hazardous wastes.

"But if the toxic mountain is slowly shrinking, it remains a fair-sized lump. Since we are not about to shut down the national industrial plant pending the arrival of total recycling, we must insure that what is produced is kept safely, and at the same time cope with the results of past negligence. It is a job that requires skill, determination, and patience. It requires well-run, stable organizations, like those we and the states are now building. I'm afraid that it is not as simple or as exciting as going to the moon. But there is a much nicer planet at the end of the journey." []

EPA Fights Hazardous Waste

An Interview with Lee M. Thomas

To help gain an overview of the hazardous waste issue and EPA's responsibilities in dealing with it, EPA Journal interviewed Lee Thomas, the agency's Assistant Administrator for Solid Waste and Emergency Response. The interview follows:



Lee M. Thomas

Q Would you describe the magnitude of the hazardous waste problem in the United States?

A There are two aspects of the hazardous waste problem that we have to look at when we talk about magnitude. First is the volume of hazardous waste that is being generated today, and will be generated in the future. We need to know who is generating it, who is transporting it, and who is treating it and disposing of it. In addition, we must look at what was done in the past, what was *not* done, and what this means to public health and the environment today.

There is a whole series of numbers available to describe and characterize the hazardous waste management problem today. We know that more than 260 million metric tons of hazardous waste are generated annually, a quantity equal to more than 70 billion gallons. These are enormous numbers, although large portions of the total are mixtures of hazardous and nonhazardous wastes, such as wastes mixed with industrial process liquids.

About 14,000 installations generate regulated quantities of hazardous wastes, while more than 4,800 manage them using various treatment, storage and disposal techniques. The overwhelming majority of hazardous waste generated in this country — 96 percent — is managed on site.

About 14.7 billion gallons of hazardous wastes are disposed of in or on the land each year, while about 500 million gallons are incinerated.

Hazardous waste generators and management facilities are concentrated in manufacturing industries. An estimated 85 percent of all generators and 72 percent of all treatment, storage and disposal facilities are associated with industrial manufacturing operations. Of the total quantity of wastes generated, manufacturers account for 92 percent. The chemical industry alone is estimated to generate some 68 percent of the total.

Turning to the legacy of inadequate waste management practices in the past,

we are still in the process of identifying where all of the uncontrolled sites are around this country. To date, we are aware of more than 18,000 *potentially* hazardous sites that have been reported to us from a variety of sources. We have conducted preliminary assessments for about half of these sites and found that approximately one in four requires a full field investigation.

Of more than 3,000 sites where field investigations have been conducted, we have identified 538 posing serious long-term hazards to public health and the environment. These are the sites which have been placed on our National Priorities List. That list will continue to grow over the coming months and years. We project it will eventually total between 1,400 and 2,200 sites.

Q There are many different wastes being disposed of in one way or another. How do we know which are most dangerous?

A Under the Resource Conservation and Recovery Act (RCRA), we have the specific mandate to determine which wastes are hazardous. We have developed a list of inherently hazardous wastes and waste streams, using criteria established by the statute. Additionally, a number of wastes exhibiting specific characteristics established in our regulations may also be regulated if they fail tests we have developed to measure their toxicity, corrosiveness, reactivity, or ignitability. Each generator has the responsibility to determine if its wastes meet certain hazardous characteristics. If so, the generator must manage those wastes according to RCRA's cradle-to-grave regimen — that is, from the point where they are generated through to their ultimate disposal.

Q How did we as a society get into this difficult situation with regard to hazardous waste problems?

A The hazardous waste issue is a byproduct of this nation's economic



At Bruin Lagoon in Pennsylvania, a workman gathers jars of soil samples for lab analysis. The site is on EPA's priority list for Superfund action.

growth over the last 30 to 40 years. As industry has expanded, we've developed more and more reliance on a broader range of chemicals and chemical byproducts in plastics, automobiles and other major manufacturing sectors. When chemicals are used to develop new products, they frequently yield wastes. As our economy has grown, and as our industries have diversified, we have seen the advent of many new waste streams. I think that we were slow to recognize the potential dangers of hazardous wastes. It was not until the mid-1970s that Congress enacted RCRA, the first major hazardous waste regulatory authority, and 1980 that it enacted the Superfund statute to deal with past inadequate practices. By that time, government was 20 to 30 years behind in protecting public health and the environment from hazardous wastes.

Q How long do you think it is going to take to bring the hazardous waste problem under control?

A We are right in the midst of bringing it under control. I think we've made significant progress in our regulatory program to establish rules that control the generation of hazardous waste and its transportation, treatment, storage and disposal. I think that over the next three years, you'll see the program firmly established in every state through our delegation process. The states have made real progress during the last two years in creating strong programs of their own.

You will see us work through the existing backlog of treatment, storage and disposal facilities that the law allowed to continue operating, and you'll see many of them close or upgrade their operations. We have begun an intensive effort to issue permits for the regulation of these facilities under RCRA. For the next two years, we will pay particular attention to permitting land disposal facilities and incinerators, those sites posing the greatest potential danger to public health and the environment.

As far as cleaning up wastes from past practices is concerned, I think again over the next two or three years you'll see us get a much better handle on defining the scope of the problem and implementing solutions. We'll improve our analysis of sites and we will make significant progress in cleaning them up. If we can maintain our momentum, you will see over the next several years a well-run cleanup program throughout this country. I think you'll probably see a majority of the work completed within ten years.

Q Under the Resource Conservation and Recovery Act, what's the National Permit Strategy?

A Congress gave us authority to issue permits on a facility-by-facility basis for industries that treat, store, or dispose of hazardous waste. Congress also indicated that until we issued or denied a permit, each facility in existence when the law was passed could continue to operate

under interim, self-operating standards.

We have stringent standards for hazardous waste management facilities as part of the permitting process. We make determinations jointly with the states as to whether facilities will be permitted and allowed to operate, or whether they must close under our guidance because they cannot meet the standards incorporated in those permits.

Under the National Permit Strategy, we looked at the problems we were facing in trying to get the permit process completed and we made some fairly significant modifications. We are accelerating the time frame for issuing permits on land disposal sites and incinerator facilities because we think they pose the greatest potential for environmental damage.

We're also making a number of management changes in the way we process the permits. A significant amount of additional technical assistance and resources will go to the states and our regional offices to process permits. Additionally, we are laying out a more extensive opportunity for public participation in the permit review process.

So the National Permit Strategy is really a management review of where we are with our permits and a major modification of both the time frame and the methods that we use to issue those permits. The aim is to strengthen and streamline our permit program and issue permits much more quickly, particularly for land disposal sites and incinerators.

Q Could you clarify the role the states play under the hazardous waste program?

A Congress intended that the states operate the RCRA program. But the states had to develop a capability to do so and, according to the law, had to have legal and regulatory authority equivalent to the federal authority before we could delegate to them the responsibility for operating a hazardous waste program.

To date, we have delegated final

authority to operate RCRA programs to four states. Six more are likely to receive final authorization by the end of fiscal 1984. There are a total of 32 states where we plan to delegate full authority by January. And we have already delegated portions of the program to more than 40 states.

So we're making a lot of progress in moving the majority of the management responsibilities to the states. At the same time, we are defining what we mean by a quality program so EPA, in its oversight role, can insure that hazardous waste control efforts are managed well and that the states carry out the responsibilities given to them.

Q You mentioned steps to encourage public participation in the permitting process. Do you think that people can ever again be persuaded to accept the siting of hazardous waste disposal facilities in their own communities?

A There are locations where I believe people can come to accept a scientific analysis and presentation of fact as to how a facility will operate, the potential danger it presents, and the safeguards that are in place, and can accept such a facility in their community. But it's not going to be easy to do that in many other locations.

Whether it is a hazardous waste management facility or some other controversial site that raises public safety as well as scientific concerns, it's very difficult for many people to accept that a facility is going to be located in their community. There is often a tendency for people to say they understand that these facilities are necessary and must be located somewhere, "but not in my backyard."

I think first that we've got to overcome the public's lack of confidence in the way we manage our program. That takes time. It also takes performance on the part of government and the regulated community. Second, we have to make a much more concerted effort to present to the public just exactly what the facts are on how these facilities will operate, what the dangers are, and what the dangers are not. Yes, I believe over time there will be communities that will come to accept facilities that manage hazardous waste.

Q Why is so much hazardous waste disposed of in landfills?

A The traditional practice of landfilling or land disposal is still pervasive in many parts of this country because it's cheaper in the short run than other waste management alternatives. But in the long run, when you take into account the potential cleanup costs associated with a poorly managed land disposal facility, the economics of landfilling are cast in an entirely different light.

What we're doing through our regulatory program is: first, ensuring that those land disposal facilities which do exist are managed and designed properly and, second, aggressively promoting alternative means of disposal. Land disposal for certain wastes is probably very appropriate. But wastes may also require treatment prior to land disposal. Additionally, other forms of disposal like incineration offer many advantages over land disposal. I would say that waste treatment today is certainly an evolving, changing industry.

Q Do you see an ultimate answer to the disposal of hazardous waste?

A I think that the direction that we are now taking in our regulatory program is the ultimate answer. We are reviewing wastes on an individual waste stream basis. With a scientific and technical review, we determine whether or not a waste should be disposed of on the land, or whether it needs to be treated prior to land disposal, taking into account its toxicity, its mobility, and its propensity to bioaccumulate. With such a review, we can also determine whether a waste should be incinerated or managed by some other means, such as neutralization.

Along with this, there needs to be a concentrated effort to make changes in manufacturing processes to reduce the generation of hazardous wastes requiring disposal. Industries should be considering how they can either minimize the volume of waste they generate or increase recycling and reuse of those wastes so fewer require disposal. What is necessary is an economic incentive to industry sufficient to foster a reduction in the quantity of wastes requiring disposal. As the economics of waste management change, we will see development of

more efficient production processes and more recycling, particularly in large operations.

Q What are the goals of the Superfund program?

A There are several goals for the Superfund program. First, we have the responsibility to identify and analyze all uncontrolled hazardous waste sites in this country. Practically speaking, the uncontrolled facilities are mostly abandoned sites, those that are not being dealt with by some responsible party. As a part of that effort, we have the ongoing responsibility to review every new spill of hazardous waste. We have made tremendous progress in achieving this goal. We have a good ongoing emergency response program and we have assessed over 9,000 uncontrolled hazardous waste sites to determine the extent of contamination problems.

The second big goal of the Superfund program is to respond, or assure that a response is made, to sites determined to pose an immediate threat to public health and the environment. Additionally, if that site doesn't present an immediate danger but presents a chronic or long-term threat, we have a responsibility to determine the priority and take action.

Finally, we are charged with ensuring that those who were responsible for the disposal of the waste — those who actually caused the contamination in the first place — are called upon to pay for the cleanup or to clean up the waste themselves. This is our enforcement goal.

Q Is it true that EPA has only cleaned up six sites in three and one-half years under Superfund?

A No, that's really a tremendous distortion of fact. Just consider where we are in this program, and think about the three goals we just discussed. As I indicated, we have already looked at more than 9,000 potentially hazardous sites and have determined that about one in four of them is a site requiring further action. At more than 3,000 sites, we've initiated full field investigations to determine whether they pose immediate or chronic threats.

We have taken emergency action at 392 sites. We have completed work at 328 sites. When I say we have completed this work, I mean we have cleaned up more than 150 sites and stabilized the others. In the latter case, we've dealt with the immediate threat, eliminated any imminent danger, brought the site under control, and begun further assessments to determine where additional work needs to be done. Meanwhile, at locations where there is a chronic threat, we have initiated detailed engineering studies at about 300; actual cleanup is underway at 120 sites.

The figure six refers to the number of major sites that we've actually removed from the National Priorities List. We've established a list of priority sites which present a chronic or long-term threat which we update every year. We've identified 538 sites on that list. Six sites have been deleted, which means that we're through cleaning them, monitoring is completed, and we've taken them off the list.

I would venture to say that the majority of sites on the list will not come off for five to ten years. There are many sites on the list that will never come off because we will monitor them in perpetuity to make sure that cleanup is permanently effective.

So using the figure six is a gross distortion of fact. I would say that the number of sites where we've actually begun cleanup work — when you consider both our emergency and remedial programs — is on the order of 500 to 600. The number where we've finished cleanup is in excess of 150. The number stabilized is also in excess of 150. We have a great deal of work underway at sites all over the country.

Q Does EPA (the Administration) favor reauthorization of Superfund?

A Absolutely. As you will remember, the President in his State of the Union message called for the reauthorization. At that time, he also asked Congress to appropriate additional money for the program in fiscal 1984 and significantly increased his request for fiscal 1985. The budget has tripled during the last two years; the staff has nearly doubled. The President has suggested that Congress continue reviewing reauthorization this year and conclude that process next year before the existing Superfund taxing

authority expires on September 30, 1985.

I think it is important in the reauthorization process that Congress have a chance to consider the information it asked us to collect in the original Superfund law. The statute specifies a series of studies to be completed by EPA. One assesses the effectiveness of the program, the experience we have had, and the changes that need to be made. Another major study deals with revenue, the taxing portion of the law, how effective it has been, taxing alternatives, and the effects the tax has had on our balance of trade.

Congress wanted us to complete these studies by December 1984. As it stands, we intend to have drafts ready in October and to deliver the studies on time.

There has been a great deal of confusion over the Administration's position on reauthorization. The President asked Bill Ruckelshaus to develop recommendations to be submitted to Congress next year, as we move into the calendar year when the program needs to be reauthorized. Some have characterized this as opposing reauthorization, which is the exact opposite of the Administration's position. We strongly favor reauthorization, and have said so on numerous occasions. We think it should be done thoughtfully, however, and with as many facts as possible. We think it should be done using the time frame originally mandated by Congress.

Q What will your office's main priorities be in the coming years?

A Our priorities for the RCRA program will fall into several categories. We will continue to place major emphasis on delegation of the program to the states. Under our schedule, most states will receive that authority during the next two years. Second, we will continue our regulatory effort, and will expand it to include generators of small quantities of waste. Third, we will complete our permitting process under the National Permit Strategy. And fourth, major emphasis will be put on enforcement to ensure that facilities comply with the law. We will work closely with the states to

bring prompt enforcement actions against facilities that fail to meet the requirements of RCRA.

For the next two or three years under Superfund, our priorities will be to complete identification and assessment of all uncontrolled sites around the country, build on the momentum we have established in cleaning up sites posing both immediate and long-term threats, and maintain our strong enforcement effort. Through Superfund's enforcement program, we have already secured more than \$300 million worth of cleanup from responsible parties at more than 100 sites. That money came directly from private sources, not from Superfund.

Q There have been reports recently about ground-water contamination at some of the disposal sites operating under RCRA. How is EPA addressing this problem?

A Ground-water contamination is a major issue and we are doing a number of things to deal with it. The National Permit Strategy directly affects our ability to address ground-water contamination by placing priority on those sites most likely to threaten these resources. Where ground water is polluted, we will employ our enforcement authority aggressively to ensure that offending facilities are either closed or required to clean up the contamination.

We are also targeting a substantial share of our enforcement resources to conduct detailed ground-water inspections at all land disposal facilities this coming year to guarantee that those lacking adequate monitoring programs will develop and implement them.

Finally, we are initiating a major training effort both for our own personnel and those of the states to ensure that they can effectively help operators of hazardous waste facilities to comply with our ground-water monitoring, site management, and cleanup requirements. □

"Not in My Backyard"

Facing the Siting Question

by Alvin L. Alm
EPA Deputy Administrator

(These comments are excerpted from a recent speech by Alvin Alm to the 13th Annual Airlie House Conference on the Environment in Warrenton, Va.)

"The overall hazardous waste problem is...almost incomprehensible to most Americans. In 1981, American industry generated some 70 billion gallons of regulated hazardous wastes, as defined under the Resource Conservation and Recovery Act (RCRA). We at EPA recognize hazardous waste management as one of the leading environmental issues of the 1980s. It ranks as the number one issue on our agency's list of priorities.

"Despite the high visibility these issues enjoy at EPA... we have never engaged in any concerted effort to regulate the siting of hazardous waste management facilities. That is not to say that EPA activities have no impact on the siting process. Our programs under both RCRA and Superfund include elements which affect every siting decision made at the state and local levels, and throughout the waste management industry.

"The comprehensive nature of the RCRA regulatory program, for example, has a major impact on the siting process. Sites must comply with stringent 'cradle-to-grave' regulations designed to protect air, ground-water, and surface-water resources. RCRA also imposes restrictions on the location of land disposal facilities in areas where the likelihood for environmental damage is significant. Hazardous waste facilities must also obtain permits spelling out in detail the engineering and performance controls to be employed to protect human health and the environment.

"Under the Superfund program, the impact on siting is less obvious but can be significant on a localized basis. Wastes removed from an emergency or a remedial action site must be taken to an approved facility for disposal. Major remedial sites contain tremendous quantities of hazardous wastes and contaminated soil. In some instances, remedial work at a Superfund site may tax the disposal capacity of nearby permitted facilities. As a result, these sites may reach capacity sooner than originally anticipated, forcing the siting of yet another new facility.

"EPA recently embarked on yet another environmental protection endeavor with significant implications for those involved in the siting of hazardous waste management facilities. We have developed a ground-water protection strategy, a truly multi-media effort. That strategy establishes guidelines for locating hazardous sites. As we believe that siting is a matter best addressed at the state and local level, so too does our strategy acknowledge the principle of state control of ground water.

"Given the restrictive nature of the RCRA regulatory, permitting, and enforcement programs, and the siting restrictions inherent in the ground-water strategy, it is inevitable that shrinkage will occur in the number of permitted hazardous waste management facilities in the years ahead. The cost of disposal will increase...and available disposal capacity will decline.

"New facilities will need to be sited. In light of the difficulties we all anticipate in the siting process, some suggest that we explore a national solution through the development of federal siting criteria. While some feel a sense of security whenever the federal government becomes a direct participant in any problem-solving exercise, let me assure you that a federal presence is by no means a guarantee of success.

"The complexities of addressing siting at the federal level have been demonstrated on numerous occasions. It has not worked in the highly regulated public power and nuclear industries; it would stand little chance in the competitive hazardous waste management industry. Success in actually devising an effective federal siting policy could also have a negative side to it if state and local governments used that federal presence to absolve themselves from coming to grips with the consequences of siting decisions. Where hazardous wastes are concerned, there is no magic answer. Siting is a public matter, and rightly so. As a practical matter, it has become a political decision — not a business or a technical decision.

"Siting...should incorporate three fundamental elements: protection of the environment, equity, and public acceptance.

"Protection of the environment is a technical problem. Whether a facility can adequately prevent environmental degradation is a matter of some uncertainty. Unfortunately, it seems, where hazardous wastes are concerned, the public trusts neither its governmental institutions nor the technical experts when it comes to siting.

"The second element is equity. Hazardous waste is not only a threat to health. It also carries a stigma that may affect property values. Obviously not every community will have a hazardous waste site. Thus, a fundamental question of equity arises every time a new facility is sited.

"The third element is public acceptance. We know that people in general are unwilling to accept a hazardous waste facility in their community. Faced with the problems of risk and equity, they see little advantage to having a site nearby.

"If citizens are convinced that a facility is needed, that all reasonable steps will be taken to make it compatible with the environment, and that its location near their homes and businesses represents an equitable solution to a larger problem, they will be more inclined to make their decisions on the merits of the proposal rather than on the emotion of the moment.

"I think we learned the extent to which the public is concerned about hazardous wastes last fall in Brownsville, Texas, when we were bombarded with angry comments during a public hearing over a proposal to permit the incineration of hazardous wastes at sea in the Gulf of Mexico. More than 6,000 citizens registered for the hearing. Nearly 150 testified; another 2,000 sent written comments.

"The Brownsville experience exemplifies the hurdles which must be confronted virtually every time a new waste management facility is sited. We call it the NIMBY Syndrome: Not in My Backyard. Taken to its simplest terms, no one wants a hazardous waste

management facility in his or her community. So, what is the answer?

"Several states have created statewide hazardous waste boards authorized to pre-empt or override local opposition to siting decisions. These panels, consisting of representatives of all concerned interests, constitute independent bodies assigned the chore of identifying appropriate facility sites, evaluating each, weighing risks and benefits, and making the final choice.

"The strength of an independent siting authority is its impartial decision-making capability. Yet impartiality alone is not always enough to overcome strident public opposition, particularly because it deals only partially with the issue of equity.

"One of the brightest examples of innovation and cooperation in the siting process is the Southern California Hazardous Waste Management Project. Founded in 1981, this locally-led activity serves an eight-county region including Los Angeles, with a population of 15 million people. During the coming year,

the project expects to site approximately 100 new hazardous waste management facilities. This progress is being made possible through a spirit of cooperation and a willingness to compromise. Each of the eight participating counties has agreed to site hazardous waste management facilities in its own jurisdiction. Each also accepts the notion of balance; that it must accept a set of facilities reflecting its share of the overall regional waste stream in terms of both volume and type. Through this process, less populated counties are protected against becoming the dumping ground for the entire region. The public has also been kept informed of all developments in building the project. They understand that alternatives to land disposal are at the heart of the project, and they support the concept.

"Beyond open communication and a substantive public role, other intriguing new concepts are emerging to deal with the siting process. The first is mediation, a process which is being applied to resolve a wide variety of environmental disputes. Another technique is compensation, which deals with equity problems associated with siting. There is also a 'stick' available to exact a price from those who are unwilling to accept new sites. Options include the withholding of state hazardous waste program grants, Superfund cleanup dollars, and other federal resources from states that are not willing to site needed new facilities.

"Beyond economic incentives, both positive and negative, there are other innovative approaches to siting new facilities. Model siting legislation can be developed, revised and improved over time to assist state and local leaders willing to make difficult decisions. Another innovation would be the use of interstate compacts to group producer and disposer states together in symbiotic relationships. These compacts could be interstate versions of what the eight Los Angeles-area counties have done in the Southern California Hazardous Waste Management Project.

"The paralyzing fear associated with hazardous wastes provokes opposition to siting new facilities and resistance to using existing ones to dispose of highly hazardous wastes. Until we can create processes that the public perceives are fair, open, and equitable and until the public is convinced that wastes can be disposed of safely...we can expect continued opposition. The role of the federal government in all of this is to facilitate the process by encouraging industry, in conjunction with state and local governments, to overcome concerns about health risks and equity. We at EPA stand ready to help in this endeavor." □



Demonstrators gathered at a public hearing in Brownsville, Texas, in November, 1983 to protest incineration of hazardous wastes on board the ship Vulcanus. A permit to allow the at-sea incineration was later denied.

Why We Have a Hazardous Waste Problem

by H. Lanier Hickman, Jr.

It seems relatively easy in 1984 to see where we are going with our efforts to protect public health and environmental quality from improper hazardous waste management. But it makes sense to look back and see how we got to the point that required the strength of RCRA and the power of Superfund in order for us to manage our waste streams. A backward glance should enable us to make better decisions about how to implement both programs.

Wastes that have now been identified as hazardous have been with us for a long time. Why is it that now we seem to be experiencing problems with these wastes when we did not have those difficulties in the past?

There are many reasons. Our urban centers are more concentrated now. The world of chemistry has expanded greatly. It takes time for the land to react to abuse. There are fewer places to leave our wastes around without causing problems. Above all we are simply more aware of the health and environmental dangers associated with hazardous wastes.

However, there are, in my opinion, several other basic reasons which got us to the point that required the dramatic steps demanded by the Resource Conservation and Recovery Act (RCRA). The reasons have to do with history and national policy.

First, our natural inclination in this country is to leave people alone and not over-regulate them. We made a rather large effort in the 18th century to assure that the individual could do what he wanted to, within a limited number of society-imposed constraints. This national attitude of freedom is clearly reflected in our reluctance to regulate and enforce, and is precisely why EPA is constantly buffeted by outside forces and

will always remain at the center of controversy on environmental issues. Regulators are not popular. No one in the U.S. likes to be told what to do or how to do it.

Our national "hands off" policy was clearly reflected in the way state (and federal) government addressed health and environmental issues. Prior to World War II, there were no environmental regulatory programs. Efforts by state government were centered around preventive medicine. (For an environmentalist, this can be loosely translated as sanitation.) The activities of both federal and state governments tended to be advisory and persuasive. No one understood that poor solid waste management practices would result in more than a fly and mosquito problem. No authority existed to assure that solid waste management for the good of society was practiced.

Rivers handled our liquid wastes, and the open burning dump took care of our solid wastes. But with the end of World War II and the economic prosperity that followed, the amounts and types of wastes present in our society expanded exponentially. At first, we continued to deal with those waste streams in the same manner that we dealt with the lesser amounts that were present before the war. The same technology was used, and the same institutional structures were in place to see to the management of these wastes. For the most part, these wastes went into the streams and skies of America. The balance went to the land, where it was browsed over by hogs and burnt as an offering to our lack of environmental consciousness.

Water pollution and air pollution control legislation were not even passed until the 1950s and 1960s! It may be hard for many of us to realize that until then, scant federal attention was focused on cleaning up the rivers and skies of America. These landmark efforts by the

federal government led to the development of federal and state regulatory programs to require adequate treatment of wastewater and waste air streams before they were discharged into the ambient environment. But as wastewater treatment plants and air pollution control systems were built, the wastes from such efforts were diverted to the land. No legislation was present to dictate how the land was to be protected because few people considered protection by the federal government necessary.

The land was protected for the most part by a myriad of controls emanating from local government. State government and federal government controls have been historically weak; they remain so today. Local government control, however, is directed at protecting the use of land — not its quality. Consequently, there were no controls to assure that diversions of concentrated waste streams from the air and water to the land did not result in pollution of the land.

The technology for managing wastes as they were diverted to the land was not adequate for the types of wastes received. The concept of sanitary landfilling did not really get established until after World War II, and even then its ability to deal with liquids, sludges, and the persistent chemicals in hazardous waste was not adequate. Pits, ponds and lagoons utilized for these wastes were inadequate, too. More sophisticated technologies such as incineration were not considered, since the cheap option of using the land remained.

Authority over land disposal was limited for state governments, and nonexistent for the federal government. Even now, many states are just getting the authority to regulate wastes which are disposed of on-site by a generator. Solid waste management programs rested in the lower echelon levels of health departments, agencies notorious for a non-regulatory posture. Therefore, while we were building state air and

(H. Lanier Hickman, Jr., is a former Director of Operations at EPA, with responsibility for the Office of Solid Waste. He is now executive director of the Governmental Refuse Collection and Disposal Association.)



water pollution control programs, we failed to recognize that the introduction of these waste streams to the land was creating more complex problems for the future.

The 1970 amendments to the Solid Waste Disposal Act began a reversal of this process by looking at what we were doing with these wastes. The emphasis shifted from waste disposal to waste management and resource recovery. Existing regulatory and institutional arrangements were inadequate to assure the proper management of hazardous wastes. Inaction would produce increased ground-water contamination, adverse public health and economic impact, and environmental quality degradation. RCRA was the response to that situation, and could just as aptly have been named the Land Pollution Act of 1976. It and Superfund are designed to assure that we don't continue to abuse the land.

The reasons we are where we are today are therefore fairly simple:

- As we generated more hazardous waste, our disposal technologies were limited to land disposal, a technology not adequate for many of these wastes.
- The efforts to clean up the air and the water greatly exacerbated the use of the land for many complex wastes.
- A regulatory and institutional framework to insure proper management of these wastes was not present.

No one individual or group can be blamed for our hazardous waste problems. But today we must better understand the interrelationships between our physical and societal world to assure that the quality of life for future generations of Americans is at least as good as the one we inherited. □

***Past practices, present problems:** In 1982, EPA and contractor crews working at Venture Farms horse arena in St. Charles County, Missouri, collected soil samples for dioxin testing. In the early 1970s, dioxin-contaminated waste oil had been sprayed in this and other horse arenas, and on parking lots and roads around St. Louis, to control dust.*

Household Hazardous Waste: Everyone's Concern

by Jack Lewis

In the frantic rush of modern life, the average American family hardly has time to apply advanced scientific reasoning to the disposal of everyday garbage. It is currently estimated that the average American generates about one ton of waste, hazardous and otherwise, every year. If only for rhetorical purposes, therefore, it makes sense to imagine each American house and apartment as a mini-factory devoted to a cottage industry of highly dubious social value: namely, the daily production of several pounds of trash. Mingled in with the eggshells, bones, cardboard, and tinfoil is a veritable pharmacy of chemicals, often dangerous to humans when ingested, touched, or breathed either separately or in combination with other substances.

Products containing toxic chemicals include: garden pesticides; weed killers; fungicides; paint, paint thinner, and paint remover; dry cleaning fluids and other organic solvents; wood preservatives and strippers; used motor oil; brake fluid and antifreeze; swimming pool chemicals and muriatic acid; furniture polishes; deodorizers and spot removers, frequently packaged in aerosol cans; disinfectants; bleach; et cetera, ad infinitum.

The first person to discover the hazards lurking within each bulging trashbag is the trash collector, and there have been scattered reports of alarming injury to trash collectors handling their noxious cargo. However, it is the social, not the individual, costs of foolish household waste disposal practices that have prompted industry, government, and private citizens to take arms against this particular problem. Beginning at the grassroots level in the Pacific Northwest, consciousness of the dangers in household waste has spread like wildfire throughout the United States in the matter of a few years.

Lest public ignorance and hysteria create the phantasmagoria of thatched cottage Love Canals, waste disposal



Trash pickup day in a suburban neighborhood. The average American generates one ton of waste a year, but has little information on how to dispose properly of the hazardous household chemicals that make up part of that waste.

experts both in the private and the public sector have launched innovative campaigns designed to educate the public, while at the same time slowly systematizing the disposal of hazardous wastes generated daily at the household level. At the present time, locally-based programs are underway in such states as Alaska, California, Washington, Massachusetts, and Florida.

By far the most thorough program undertaken to date is the "Amnesty Days" campaign launched by the State of Florida in cooperation with Triangle Resources Industries, a division of SCA Services, Inc. The term "amnesty" is used only in a figurative sense, for as SCA itself cautions participating households:

"Chemical waste generated by households [is] exempted from federal and state regulations governing proper management and disposal of chemical wastes. Residents participating in these programs do not have to worry about being arrested for storing chemical waste in an environmentally unsound manner. The regulations come into effect only when the wastes are brought to the collection site. At that time, SCA Services, Inc., becomes liable for the proper handling and treatment of that waste."

"Proper handling and treatment" equates, at the present time, to the careful transporting of all wastes out of Florida to RCRA-approved waste treatment and disposal sites in other, less densely populated southeastern states.

Launched in the spring of 1984, and thus far tested successfully in the Miami and Tampa metropolitan areas, Amnesty Days is the driving wedge in a massive effort to protect Florida's already imperiled underground sources of drinking and industrial water. Mobile collection sites, which are all that public fears and limited funds permit at the moment, will — it is hoped — alert the Florida public to the need for publicly funded collection sites, open year-round on a permanent basis.

Florida's aquifers, including the world-famous Biscayne Aquifer, have water tables unusually close to the surface, and this creates potential hazards in the most rapidly urbanizing and industrializing state in the nation (see story on page 24). To cite but one example, do-it-yourselfers who change their own oil and then dump the old oil in a nearby field or drain it down the nearest gutter run the risk of polluting thousands of gallons of precious ground water. Alarming evidence of ground-water (and surface-water) pollution in Florida and elsewhere

(Jack Lewis is Assistant Editor of EPA Journal.)

suggests that orderly waste disposal is essential if America's vital resources are to be preserved.

Studies commissioned recently by EPA indicate that industrial chemicals are already present in the underground drinking water supplies of nearly one-third of American cities with populations over 10,000, and the percentage grows larger with each passing day. The unanswerable question at this point is what proportion of that pollution emanates from factories and what proportion from the homes of American consumers stumped by the problem of how to get rid of the ultra-sophisticated packaged chemicals they have purchased and used for any number of sane, rational reasons. David Galvin, an official who works for Seattle Metro, has some tantalizing information to contribute to public discourse on this subject:

"While researching [wastewater treatment] systems, we figure[d] that even small amounts disposed by residents could represent a major problem. Industrial waste makes up 15 to 20 percent of our flow. We started sampling the residential flow. We discovered some fish kills caused by people disposing of pesticides down drains."

Galvin and his colleagues also found that even the most responsible citizens were confronting a bewildering maze of well-intentioned advice depending on which "expert" they consulted about the proper means of getting rid of hazardous waste: "If you called one agency, you were told to throw unneeded solvents in the toilet; if you called another - ours, for instance - you were told to do anything but that; and if you called another group, you might be told to just put it out with the trash," Galvin reports. "Of course, if you called a refuse hauler, you were told to do anything but that." When such confusion reigns among "experts," panic can replace an equally dangerous apathy among the general public.

EPA now hopes to take an active role in coordinating the energetic state and local forces emerging, both in the public and the private sector, to attack this problem. EPA encourages such state initiatives as Florida's Amnesty Days and California's oil recycling program because the agency sees the problem of household hazardous waste as falling properly within the purview of state and local authorities. However, EPA does envision a role for itself in spreading awareness of household hazardous waste disposal problems to states and localities as yet less attuned to this extremely challenging and important national problem. □

Some Tips About Hazardous Waste

Every reader of this magazine would do well to ponder how, in a very real sense, his or her waste basket or garbage pail is the tip of the national "wasteberg," the exact dimensions of which we are only just beginning to fathom. We all can and should take immediate action to minimize its as yet unforeseeable perils, both to ourselves and to our country. SCA Services, Inc., and the Florida Department of Environmental Regulation - the originators of Florida's successful Amnesty Days household hazardous waste disposal drive - have these specific suggestions to offer:

DO'S:

Keep wastes separated from each other.

Follow directions on the label, including recommended methods of disposal.

Avoid contact with skin and eyes.

Keep children and pets away from hazardous materials.

Store chemicals in a dry place. Many chemicals, particularly those packaged in cardboard containers, absorb moisture.

Take used motor oil to a local auto service center for recycling.

Purchase alternative household cleaning products which are not toxic.

Reduce your waste and save money by purchasing only materials you need and will use.

Businesses should consider waste exchanges.

Talk to local officials about temporary storage facilities.

DON'TS:

Do not mix hazardous materials together.

Do not flush waste down the toilet.

Do not pour waste down household drains.

Do not bury waste in the yard.

Do not pour waste down storm drains.

Do not throw away waste in garbage—it will end up in a landfill where it can enter the ground water and contaminate drinking water supplies.

(Reprinted with permission from SCA Services, Inc., and the Florida Department of Environmental Regulation)

The Municipality of Metropolitan Seattle Household Hazardous Waste Disposal Project suggests that consumers begin shopping differently in the first place so as to avoid awkward and time-consuming hazardous waste disposal problems:

ALTERNATIVES TO COMMERCIALY AVAILABLE PRODUCTS

IF YOU HAVE THIS	YOU MAY NOT NEED THIS . . .
Ammonia* and soap	Glass polish
Chlorine* bleach	Disinfectant cleaner Mildew-stain remover Mildew preventative Toilet bowl cleaner Tub and tile cleaner
Cooking oil	Nonstick cooking spray
Cornstarch	Laundry starch powder Carpet and rug shampoo Some stain removers
General purpose household cleaner (powder)	Floor polish remover Scouring powder Tub and tile cleaner Oven cleaner
Laundry detergent	Laundry presoak
Mineral oil	Some household oils Some rust preventative oils
Scouring powder	Stainless steel cleaner Aluminum cleaner
Soap and water	Some jewelry cleaner Plant insecticides Plastic cleaners Some stain removers Stainless steel cleaner
Vinegar	Coffeepot cleaner Some stain removers
Washing soda	Detergent boosters Drain cleaners Household detergents Water softeners

*Note: **Never** mix ammonia and bleach, or get them near each other. The result is a deadly poisonous chloramine gas.

(Reprinted with permission from the Municipality of Metropolitan Seattle (Metro) Household Hazardous Waste Disposal Project)

Chemical Detectives at Work:

EPA's Environmental Response Team

by Susan Tejada

With help from two contractors (backs to camera), team members Harry Allen, with earphones, and George Prince (right) check contamination at American Creosote Works in Pensacola, Florida. At the inactive wood treating facility, polluted wastewater was discharged into unlined percolation ponds. Here a contractor (left) takes core samples while Allen, using his headset, maintains radio contact with shore.

Medalists: In December 1983, the Environmental Response Team received an EPA Silver Medal. Present to accept the award were, l to r, team members Mike Urban, John Gilbert, Rod Turpin, Joe Laforanara, Andy Zownir, Bob Cibulskis, Steve Dorrier, and George Prince.



Harry Allen was about to leave on a much-needed vacation. The bags were packed; the family was ready. Allen was loading up the car.

The phone rang. Allen stopped to answer it. The vacation was off. Allen had just been activated.

Dr. Harry Allen III, Ph.D. in environmental science, is one of 12 members of the U.S. Environmental Protection Agency's Environmental Response Team, or ERT. With nine members working out of a home base in New Jersey and three out of Ohio, the team is part of EPA's Superfund office. Its mission: to provide around-the-clock assistance to EPA regional offices in all aspects of hazardous waste emergencies.

The 12 ERT members represent every discipline involved in dealing with hazardous substances, including biology, ecology, chemistry, engineering, environmental science, and industrial hygiene. Among them, team members have three doctorates, nine master's degrees, and more than 100 years of experience.

Dealing with non-routine life-threatening situations is daily routine

for the Environmental Response Team — situations like oil spills, pesticide fires, chemical explosions, highway accidents and train derailments involving hazardous shipments, abandoned mines with poison gases coming out of boreholes, abandoned dumps, and chemical facilities with toxic liquids seeping into soil. Since the team was established in 1978, members have assisted at close to 450 responses at Superfund sites.

In any incident in which EPA becomes involved, the first line of response is an agency regional office, 10 of which are located strategically throughout the country. Based in these offices are about 80 On-Scene Coordinators, the people in charge of any EPA-managed response. They are the ones who decide whether to summon the services of the ERT.

With thousands of hazardous materials incidents each year and only 12 team members, the On-Scene Coordinators call on the ERT for help only with the more complex incidents. "I would say that the guys in the regions handle about 90 to 95 percent of the problems without any assistance from ERT," says Dr. Joe

Laforanara, Chief of the team's Analytical Support Section.

"The regions are the ones in charge," confirms ERT leader Steve Dorrier. "They're the ones who have to live with the problem before we go in and after we leave. But if they're having trouble with a particular aspect of a problem, we can come in and help them with it."

The hundreds of incidents that team members have handled have made them familiar with just about any situation that can arise. In the case of a 1982 train derailment in Livingston, Louisiana, for example, where more than a dozen different hazardous chemicals were involved and fires and explosions raged for two weeks after the accident, four members of the ERT came in to assist with air monitoring, soil sampling, and other aspects of the response operation.

"It's not real likely that the people in Louisiana or in our regional office are going to see another thing like Livingston for quite a while," team member Bob Cibulskis explains. "But the ERT had assisted at six train wrecks just as bad as Livingston. So we can bring that kind of experience to each region when they request it."



Knowing what has worked and what hasn't in incidents all over the country is valuable information. "That's how we can help the On-Scene Coordinator — with guidance on what we've seen work well," says John Gilbert, Chief of ERT's Operational Support Section. "We try to eliminate problems before they occur."

With so many years of experience, have team members reached the point where one emergency seems pretty much like another? "Just the opposite," declares Rod Turpin. "Certain aspects are the same, but no two sites are alike, and that's what makes the job interesting."

Turpin cites the example of a pesticide facility in Mission, Texas, where the ERT helped the region investigate soil contamination. "Pesticide facilities are relatively routine. But in Mission, the people who lived around the facility happened to be of Native American origin, and studies have indicated that this group and other similar groups may have a greater tendency to retain the chemicals that go into pesticides. So there was a whole new 'people' aspect to that site that wouldn't necessarily have been noticed by someone else. You have

to have a lot of sites under your belt before you can start to see relationships like this."

Weather Extremes

Even the weather has an effect on responses. Heat stress is common, but all too commonly overlooked. No air passes through the protective rubber clothing that workers have to wear on many sites. The result is, to put it mildly, heavy sweating. Working in a hot and humid climate, surrounded perhaps by fire or smoke, a person in this gear may be forced to limit work to 10-minute stretches.

Freezing weather can be as bad as hot. Snow can conceal hazardous objects and obstruct removal operations. Cold can cause equipment to malfunction. Laforanara recalls the time when he was monitoring the air in a Poughkeepsie, New York, dye factory that had burned down. The temperature was 9 degrees below zero, and the wind was blowing. The On-Scene Coordinator who accompanied him inside the factory heard a hissing noise. It turned out to be the sound of air escaping from Laforanara's tank.

"Because of the cold," Laforanara explains, "one of the seals on my respirator had broken. I had just enough air to get back out."

Data interpretation doesn't sound like exciting work, but it is one of the more important jobs the ERT does. Many response personnel, including local fire fighters, state troopers, and technical crews, know how to operate various tracking instruments. They have been trained to monitor the air, take soil samples, and measure contamination levels in water. But figuring out the significance of the readings is another job altogether, one that may fall to the ERT.

According to team member George Prince, the ERT will determine the reservoir of pollutants at a site, ascertain what mechanisms of transport the pollutants are taking, predict what impact the pollutants will have, and recommend corrective action to the On-Scene Coordinator.

The data aren't always what they seem to be at first. When Laforanara was working on the dye factory fire, he was part of a team that had to monitor the air in every



Team members George Prince (left) and Royal Nadeau conduct test at Drake Chemical, a Superfund site in Lock Haven, Pennsylvania. Using a portable auger, they drilled through the ice on a frozen pond to collect samples of water and sediment. The team has to cope with weather-related problems ranging from heat stress and dehydration to equipment malfunctions.

apartment in an adjacent high rise building. The residents had been evacuated because of the fire, and city officials wanted to determine if the building was safe for re-entry.

Wearing their response gear, the team walked into one apartment. The reading on their photo-ionization meter jumped up dramatically, and continued to rise as they moved further inside. They got to the kitchen. There was a box. They picked it up. The reading jumped off the meter. A team member slowly lifted the cover.

Inside was a batch of homemade chocolate chip cookies, freshly baked right before the evacuation. The organic chemicals that form aroma in food had accumulated to a high but harmless level in the confined space of the closed apartment, and the team hadn't been able to detect the source because of the respirators they were wearing.

The ERT is responsible for several innovations in hazardous incident response procedures. One is the outdoor use of instruments that were formerly used only in factories to measure total vapor concentrations. Another is the development and use of new technology. One of EPA's research and development laboratories is located in the same New Jersey facility that houses the ERT and, according to Dr. Royal Nadeau, Chief of the team's Environmental Impact Section, "When we have ideas or problems, we have an open door to R&D. They develop new equipment and we use it."

This symbiotic relationship has produced, among other things, a mobile laboratory, a mobile carbon adsorption unit, and a mobile incinerator.

"Sniff a Little Waste"

Perhaps ERT's most significant innovation has been the development of standards and procedures for site safety and worker protection. According to Steve Dorrier, before the ERT began six years ago, there were no procedures at all in this area. Team members who worked in emergency programs at that time recall incidents when, completely unprotected, many responders clambered over leaking chemical tank cars or suctioned PCBs off harbor bottoms.

Laforanara calls this the "John Wayne attitude." "The approach was to go out there and sniff a little hazardous waste, and then come back and report about it," he says. "We would evaluate the hazards to the community, without considering the hazards to ourselves."

Now, though, EPA is leading the way in establishing and requiring adherence to certain safety procedures. The ERT has set up four levels of protection, from lowest — coveralls and a hard hat, to highest — self-contained breathing apparatus and fully encapsulating butyl rubber "moon suit."

ERT members turn in a safety sheet on each response, setting forth a site safety plan and following up with a report on plan compliance. In training courses that ERT member Tom Sell coordinates for response personnel from across the country, instructors stress when to use each level and how to implement other worker safety procedures like medical monitoring and decontamination.

Now, says Laforanara, "when we do go on site, we're protected to the degree that it's possible to protect somebody. If you can't protect the worker, there's no use doing the job. Protective equipment exists, and protective equipment should be used."

Another improvement that has taken place over the years is the elimination of turf battles. According to Dorrier, "so many agencies once claimed to be in charge that you almost had to fight your way into a train wreck. Nowadays, with state, local, regional, and national contingency plans, these roles are pre-identified."

Today, says John Gilbert, there's "an attitude of, 'Let's go out there and get the job done.' If you've got to stay up all night, you stay up. If your staying up can let three other exhausted people get some sleep, you do it, and the next night it rotates around. You don't pull rank. You don't play games. You're all out there working for the same goal."

This commitment and sense of urgency, so often critical to response operations, is what make the assistance of the ERT valuable, according to Tom Massey, an EPA official with years of experience as an On-Scene Coordinator. "In a situation," says Massey, "where real-time problems require real-time solutions, people on the ERT can equate scientific data to the urgency of the moment. They can scientifically evaluate conditions right on the scene, not back in the laboratory when it might be too late. They can give you information in minutes, not months."

Working in hazardous incident response is no cushy job. The work is physically stressful — workers may have to tote 40-pound air tanks on their backs for hours, slosh around in cumbersome and clammy protective suits, and regularly contend with heat stress. The work is also mentally stressful — that's dangerous stuff, not peanut butter, the workers handle all the time.

Responses often take place in an atmosphere of controversy, with people responsible for creating a hazardous situation complaining about EPA's overreaction, and residents complaining about not enough action.

In addition, ERT members spend at least 40 percent of their time away from home base, out on sites. That's 40 percent of the time that they're separated from their families — a 40 percent chance that they'll miss their kids' birthdays or have to cancel their vacations at the last minute.

Given the stresses of the job, one might expect the burnout rate to be high and the retention rate to be low. Not so. Since the ERT set up shop in 1978, there has been almost no turnover. Team members agree that, despite the stress, job satisfaction is high. Each worker's efforts are critical to the success of an operation; feedback is immediate; and there's something new almost every day.

The satisfactions of the job evidently outweigh the problems because team members, most of whom are in their thirties, have a hard time thinking of what they would want to do when they're too old to do what they're doing now. "It would be very difficult to go back to a job as a scientist in the lab once you've had something like this," concedes Laforanara.

The work that the Environmental Response Team and other hazardous incident response personnel do helps protect the nation, but it does not eliminate the problems of toxic wastes. In cases of abandoned hazardous waste sites, some damage may already be irreversible. In other cases, workers may be able to remove containerized chemicals fairly quickly, but the task of removing or cleaning contaminated soil and water is more difficult and costly. Sometimes the best that can be done is to fence off an area and keep it secured until a feasible cleanup plan can be formulated.

Still, it is reassuring to know that if the technology does exist to solve a problem, the ERT and EPA's regional emergency response teams will probably know about it and will be able to help state, local, and industry response personnel implement it. "We've been talking about the 12 people on the ERT," cautions John Gilbert, "but there are a whole lot more than 12 people doing all this work. It takes a lot of little pieces to put a response together. ERT is just one of those pieces." □

(The brochure, *Environmental Response Team*, contains more information on the work of the ERT. Copies are available from the EPA Public Information Center, 820 Quincy St., NW, Washington, DC 20011.)



Taking Emergency Action under Superfund

What happens when a truck overturns on a highway, spilling gallons of hazardous substances onto the road? What happens when a factory is abandoned, with containers of hazardous substances left to deteriorate on the premises? What happens when someone secretly dumps hazardous wastes in a secluded wooded area in the middle of the night, or when a factory fire discharges hazardous chemicals into the air and water?

In each of these cases EPA can act fast to remove any danger from hazardous substances. The front line for such an



In front of a pile of contaminated soil, workmen cover deteriorated drums of lead-based paints with plastic sheeting. The sheeting will prevent the lead from leaching into the soil during wet weather. A builder preparing the ground for house construction discovered the buried drums in Calverton, Maryland. Concerned about off-site migration of lead, EPA initiated a removal action to dispose of the drums and polluted soil.

EPA carries out removal actions on land and in non-tidal inland waters. The U.S. Coast Guard handles emergencies in coastal and inland tidal waters, the Great Lakes, and certain ports and harbors.

Ninety percent of all emergency cleanups and removals are handled by the parties responsible for creating the emergencies in the first place—usually the generators, transporters, or disposers of the waste. In the remaining 10 percent of cases, EPA or the Coast Guard either leads the cleanup or assists state and local agencies in doing so.

Variables

Dangers posed by hazardous substances vary greatly, and responses vary accordingly. One response may only require disposal of a few drums washed up on a beach. Another may be a complex technological job involving unknown substances at an abandoned site. Because of this, the cost and length of Superfund removals also vary. In most cases, a removal action must be terminated within a six-month and \$1 million limit. The average completion time for removals initiated in fiscal year 1984 is 33 days. The average cost of those initiated and completed in fiscal year 1984 is about \$162,000.

EPA has completed emergency responses in 46 states and U.S. territories. Of the states, Texas had the most responses—30, followed by Pennsylvania with 27, California and Michigan with 20 each, and Illinois with 17.

Top priority

Removal actions are EPA's number one priority. The injunction to "stabilize imminent threats at uncontrolled hazardous waste sites through Superfund removal actions" is at the top of the agency priority list for fiscal years 1985-1986.

To address this priority, EPA has been transferring certain operations from headquarters to regional offices so that regions can respond to emergencies more quickly. For example, regional

administrators now have authority to commit up to \$1 million to start removal actions without waiting for prior headquarters approval. Some regional administrators have delegated similar authority for up to \$50,000 to On-Scene Coordinators, who direct the on-site response. Also, regional offices now establish their own financial management procedures and prepare their own interagency agreements for removal actions.

In addition to removal action, Superfund specifies another kind of hazardous waste response: remedial action. The two types of responses differ in purpose and duration. A fast-track removal action is a first-aid effort to meet an emergency. A remedial action is a long-term effort to provide a permanent remedy to an environmental problem that is serious but not immediately life-threatening.

EPA has established a national priority list of hazardous waste sites, ranked by their potential threat to health and the environment (see item on page 31). Sites on the list are candidates for remedial action. Remedial cleanups are complex and can require several years of engineering analysis and design work. As one more way to accelerate hazardous waste cleanups, EPA will, when necessary, take emergency removal action at remedial sites, concurrent with developing long-term solutions for those sites. □

operation, called a *removal action*, is the Superfund emergency response program. To date, emergency removal actions have been taken under the Superfund program at 392 sites.

Typical emergencies for Superfund removal action include illegal dumping, transportation accidents, and release of contaminants at uncontrolled hazardous waste sites, abandoned facilities, or operating facilities where fires or explosions have occurred. Typical responses include sampling to determine type, location, and level of contamination; fencing; drum removal and disposal; lagoon and pond control; monitoring; and provision of alternative water supplies.

(A 28-minute videotape documentary looks at a removal operation at the abandoned hazardous waste site in Maryland pictured on the cover. The presentation shows the activities involved in investigating such a site, safety precautions required, and equipment used in cleanup. It features interviews with local residents, and with federal, state, and local officials. Copies of the documentary, "Toxic Wastes Discovered in Cecil Quarry," are available for loan from EPA's regional Offices of Public Affairs, or from EPA, Office of Public Affairs (A-107), Room W327C, 401 M St. SW, Washington, DC 20460.)

Choices in Disposal of Hazardous Waste

by Donald White
and Bob Burke

The discovery of thousands of hazardous waste dumps in recent years has made the public acutely aware of the casual and often illicit ways that many dangerous wastes have traditionally been disposed of. Government and the private sector face a complex challenge of immense proportions in finding new and cost effective ways to safely dispose of the tons of hazardous wastes that are generated each year in the United States.

This article describes the major problems associated with disposing of many forms of hazardous wastes in land facilities, and several alternative technologies for treating and recovering them that are being examined by EPA.

Continued disposal of many forms of hazardous wastes in land facilities can be both shortsighted and environmentally harmful. The fact that land disposal generally costs far less than most other treatment or recovery alternatives serves to obscure its serious long-term problems.

A recent survey by EPA of more than 900 waste disposal facilities, for example, produced disturbing findings about the environmental and health problems attributable to the disposal of certain hazardous wastes in land disposal facilities. The surveyed areas included both active and inactive facilities that ranged from landfills and lagoons to tanks and open dumps. Contaminated soils or polluted ground and surface

water were suspected or documented at about 90 percent of the sites where wastes apparently had leaked into the neighboring environment. About 25 percent of the sites showed direct and specific threats to human health and the environment, including contamination of drinking water supplies or property damage.

To prevent future problems such as these, EPA has issued a series of regulations for disposing of wastes on land under the Resource Conservation and Recovery Act (RCRA). These set forth the responsibilities for generators and transporters of hazardous wastes, as well as owners and operators of hazardous waste treatment, storage or disposal (TSD) facilities. Standards have been established to prevent hazardous wastes from getting into the environment during the time a land disposal facility is operating, and for minimizing damage once it ceases operation.

But even the toughest regulations can't assure the long-term containment of many kinds of hazardous wastes from a facility to the neighboring environment, and subsequently to wherever the forces of nature choose to carry them. Liners, for example, which are required to contain wastes in landfills, aren't foolproof. Clay liners can be an effective barrier for containing most kinds of wastes, but they can be degraded by some hazardous materials, and some leakage occurs. Synthetic liners also provide a strong measure of protection, but their service life is more limited, and they can be penetrated by pinhole size punctures, or by the transport of vapors and volatile compounds through the liner systems.

In view of limitations such as these, there is a growing consensus that wastes from land disposal facilities eventually find their way into the environment at some unknown rate and concentration, and that the nation should move as rapidly as possible toward treatment and recovery as the preferred methods for managing the nation's hazardous wastes. In the currently drafted (1984) RCRA reauthorization bills, Congress has proposed that the land disposal of particular wastes be prohibited unless a finding can be made that human health and the environment would be protected during the full life of their disposal. Even without this legislation, EPA would proceed with land disposal restrictions in a similar manner.

Alternative Treatment Technologies to Land Disposal

The major mission of EPA's Treatment, Recycling and Reduction Program is to search out, test and promote feasible technologies for treating and recovering



Operator mans the control room at SCA Chemical Services incineration facility in Chicago. Conditions inside the incinerator are monitored around the clock.

those kinds of hazardous waste that are ultimately banned from land disposal. Here are the major treatment technologies that this office is currently examining:

- **Biological treatment processes** that employ living microorganisms to feed on and decompose certain wastes.
- **Dechlorination** that detoxifies chlorinated substances by adding nontoxic products such as hydrogen.
- **Carbon adsorption** involving the use of specially treated carbon to pick up wastes, a technique which has proven particularly useful for removing organic compounds from wastewater.
- **High temperature incineration** leading to thermal destruction of wastes which is effective in removing many organic compounds.
- **Neutralization** of wastes that are either too acidic or overly alkaline. Neutralization is basically accomplished by combining proper concentrations of acid substances or wastes with alkaline substances or wastes.
- **Oxidation** of primarily organic materials such as cyanides, phenols and organic sulfur compounds, essentially involving a chemical reaction transforming these hazardous wastes into harmless carbon dioxide and water.
- **Precipitation technologies** which turn certain compounds in liquid wastes into solid materials that are suitable for

(Donald White is program manager of the Treatment, Recycling and Reduction Program in EPA's Office of Solid Waste. Bob Burke is on the staff of the agency's Office of Public Affairs.)



Main combustion chamber of the Chicago incinerator is in the foreground. On either side of it are the two scrubbing towers — a vertical pack scrubber and an ionizing wet scrubber. In the rear is the stack; and, next to that, the lime tower used in the acid neutralization process.

sedimentation. Precipitation is particularly useful for removing metals from water.

- *Recovery/reuse/recycle* processes which not only remove hazardous wastes from the environment but provide for their productive reuse. Solvents, acids and metals are among the products frequently recovered.

- *Solidification and stabilization* processes which ultimately turn wastes into a solid mass. The wastes cannot then be easily transported by water or by other liquids into the environment.

Our existing research suggests that many of these alternative technologies can be used or are already being used to treat and recover various kinds of

hazardous wastes. Many solvents, for example, are already being recycled or incinerated. But it is going to take an impressive amount of future research and field work as well as an ongoing partnership with the private sector to make sure that these alternatives are wholly feasible.

A major problem with most alternatives is that they currently cost more than land disposal. A limited study of 11 Superfund sites, for example, estimated that the average cost of incinerating wastes was approximately 8 to 10 times higher than that paid for landfilling, while the cost for solidifying wastes prior to landfilling averaged approximately 3 to 4 times higher. Clearly, we must find ways to narrow these cost differentials.

EPA's Treatment, Recycling and Reduction Program

EPA's Treatment, Recycling and Reduction Program has been created to study these various treatment technologies. The program is specifically directed toward gathering and disseminating technical information on currently available or emerging treatment and recovery technology and on existing treatment capacity. A regulatory framework will also be established to set treatment standards and compliance dates if needed to control certain chemicals.

Initial activities are focused on the technologies available to treat the specific wastes which will most likely be the first banned from land disposal. Among the present candidates are wastes containing solvents, dioxins, metals, halogenated organic compounds, corrosives, cyanides and other reactives. Reports on these wastes and on technologies available to treat them should be finished by the end of 1984. Additional studies addressing the costs, effectiveness, development time, and the current capacity of specific treatment technologies will begin shortly.

In addition to technical and regulatory efforts, a three-way information program will be undertaken with industry, hazardous waste regulating agencies, and the public to exchange information about EPA's alternative technology program, the results of our technical studies, and what others are finding. Field measurements and demonstration projects will also start in 1985 to evaluate the applicability of certain technologies to particular wastes. These studies are needed to fill data gaps in the existing technical literature and will be conducted primarily by EPA's Office of Research and Development.

While the Treatment, Recycling and Reduction Program is charged specifically with studying alternatives for disposing of wastes in land disposal facilities, the applications should benefit several EPA programs that are concerned with preventing waste products from threatening public health or contaminating the environment. In some instances, such as with RCRA and Superfund, the relationships between regulatory goals and alternative technologies are direct and obvious. But they are also vital for achieving the goals that have been established for several other mandates, from Clean Water Act and Safe Drinking Water Act programs to the agency's new ground-water protection strategy. A successful search for the right alternatives to land disposal will make the agency's regulatory burden somewhat easier and more manageable.

□

Cleaning Up Federal Facilities

by Josephine S. Cooper
EPA Assistant Administrator
for External Affairs

On September 13 at the Pentagon, Defense Secretary Caspar Weinberger and EPA Administrator William Ruckelshaus (seated, l to r) signed a joint resolution pledging cooperative measures to safeguard the quality of Chesapeake Bay. The resolution covers more than 50 Department of Defense installations in the Bay area. Looking on, l to r, are Maryland Reps. Roy Dyson and Marjorie Holt, and Virginia Sen. John Warner.



The executive branch of the federal government owns 387,396 buildings spread among 27,071 installations, on 729 million acres of land. Many are hospitals, laboratories, manufacturing plants, and other technical installations which generate toxic wastes. If uncontrolled or untreated, these emissions pose the same problems that privately-owned facilities do.

The Compliance Program

Under its operating statutes and Executive Order 12088, "Federal Compliance with Pollution Control Standards," EPA is not only charged with the enforcement of pollution standards for individuals and businesses, but also for federal facilities. The key to the effectiveness of the agency's Federal Facilities Compliance Program lies in obtaining the cooperation and interest of other federal agencies in meeting environmental standards. EPA's Office of External Affairs serves as the National Program Manager and the focal point of this effort. Within the Office of External Affairs, the day-to-day program management and coordination with other federal agencies is handled by the Office of Federal Activities, headed by Dr. Allan Hirsch.

The agency's federal facilities compliance role involves insuring that all federal agency officials understand that they must comply with national environmental laws, regulations, and standards. EPA is charged with providing

advice and assistance concerning compliance, and conducting reviews and inspection of federal facilities. The agency works cooperatively with specific agencies and facilities to bring them into compliance and to take necessary administrative actions under Executive Order 12088 to assure compliance.

The federal government facilities comprise, depending on the method of measurement, from two to five percent of all pollution control facilities in the United States.

Of the 544 major facilities failing to comply with the effluent limitations required by the Clean Water Act at the beginning of fiscal year 1984, 32 (or six percent) were federal facilities. Of the 328 significant violators of clean air standards, six (or two percent) were federal facilities. Of the 523 major hazardous waste handling facilities with significant violations, 30 (or six percent) were federal facilities.

EPA, through the Office of Federal Activities and the affected program and regional offices, has taken a number of steps to improve the federal compliance record.

Defense Department Compliance

Because the majority of federal installations needing pollution abatement facilities are owned or operated by the Department of Defense (DOD), effective federal facilities compliance demands a solid working arrangement between EPA and DOD, at both the national and regional levels. In the past year, EPA and

DOD have undertaken several initiatives to improve and clarify that relationship.

Among these initiatives were the negotiation and signing of a memorandum of understanding for cleanup of hazardous waste sites at DOD facilities and an agreement on PCB disposal timetables and EPA inspections of Defense-related PCB disposal shipments. Of particular note is a joint EPA/DOD initiative to give special attention to facilities on the Chesapeake Bay, as part of the accelerated state/federal effort to restore the Bay's ecological balance. In addition, the emphasis placed by both EPA and DOD on a good working relationship is indicated by the exchange of liaison officers between the two agencies.

Major problems at some DOD hazardous waste sites, such as the Alabama Army Ammunition Plant, McClellan Air Force Base, the former Olmstead Air Force Base, the former Lowry Bombing Range, and the Rocky Mountain Arsenal, brought national attention to DOD's management efforts. Less well known is the Defense Department's progress in implementing its overall Installation Restoration Program, a four-stage program to clean up and bring into environmental compliance all DOD facilities. Approximately \$23 million was expended in 1983, \$150 million is budgeted for the current fiscal year, and more than \$300 million is planned for this program in fiscal year 1985.

EPA and DOD are also coordinating on other Defense environmental efforts. For example, EPA's National Enforcement Investigations Center in Colorado assists in the routine review of DOD contracts for hazardous waste disposal, and EPA program offices provide technical assistance for some of DOD's regulations, policies, and procedures for pollution control. In particular, EPA and DOD have undertaken joint research projects on open-burning/open detonation and on in-situ impoundment closings.

Other Federal Agencies

Next to DOD in numbers of facilities requiring pollution controls or possible cleanup are the Department of Energy, the Department of Interior, and the Department of Agriculture.

Because a number of federal agencies have not fully developed their environmental programs, especially under the relatively newer provisions of the hazardous waste control and cleanup laws, EPA published, in 1983, a basic guide: "Resolution of Compliance at Federal Facilities." Then, in February of 1984, EPA sponsored a government-wide conference to promote environmental auditing among all federal agencies.

In addition, EPA's Office of Solid Waste and Emergency Response (OSWER) and the Office of External Affairs are jointly undertaking a notification and follow-up program to insure that all possible federal hazardous waste sites are properly identified and included in the agency's inventory and data base. EPA is also providing advice to other federal agencies on effective hazardous waste management techniques and cleanup strategies where appropriate.

The importance of these tasks was underscored by a recent General Accounting Office report indicating some discrepancies and gaps in EPA's information on federal sites.

Insuring federal facilities' compliance with environmental laws is an on-going process. While one-time actions often gain attention, much of the real work is accomplished through the day-to-day routine, such as EPA's review of federal agency environmental projects and assistance to federal agencies in development of their environmental budgets. A great deal of time and effort is required, not just in headquarters, but in the regional offices where federal coordinators work with regional program people and with their counterparts in other agencies to build the cooperation and trust necessary for better environmental results.



Personnel from the Environmental Management Office at the Aberdeen Proving Ground collect samples from Mosquito Creek, which feeds into Chesapeake Bay. Aberdeen, a U.S. Army installation in Maryland, is covered by the EPA's Defense resolution on pollution abatement in the Chesapeake.

Conclusion

Federal facilities' compliance stresses that environmental statutes apply to everyone: to individuals and businesses, to corporations and departments, to companies and federal agencies. We in the federal sector should serve as role models for compliance with environmental laws; our efforts should set the example for effective, expeditious pollution control in all sectors of society. For us to live up to the letter and spirit of our environmental laws will require not only the best efforts of those of us within EPA, but continued communication and cooperation between EPA and other federal agencies.

In this day of computerization, biotechnology, sophisticated analyses, and cost-benefit studies, it becomes too easy to overlook the obvious: our environment is the only one we have. As individuals and as government employees, our responsibility is to insure that we apply the nation's environmental statutes with equal fairness to both the public and the private sector. □

Protecting against Hazardous Waste: The Front Line in Region 4

by Gordon Kenna

This is the second article in an EPA Journal series on major environmental problems which EPA's regional offices are helping to address. This article reports on public involvement in Region 4's effort to protect the Biscayne Aquifer in Florida from hazardous waste. It is by Gordon Kenna, a former community relations specialist in the Region 4 Office of Public Affairs.

Three million people live within 5 feet of the Biscayne Aquifer.

This unusual situation has made southeastern Florida's drinking water exceptionally vulnerable to contamination and created some of EPA's most complex and far-reaching public education challenges.

Throughout Broward, Palm Beach, and Dade counties the surface soil lies only 2 to 5 feet thick above the water-laden rock that provides the area's only potable water. Omnipresent canals and frequent flooding quickly spread any contaminants that penetrate the porous soil, thereby involving all southeastern Florida residents equally in every water-threatening situation.

EPA is about to complete the final phase of a 3-year study of ways to reduce existing and future pollution in the Biscayne Aquifer. When the study was initiated, the agency realized that not only would vast numbers of consumers be directly involved, but the state, county, and municipal governments would be concerned with the impact the study's results and recommendations might have on zoning, land use, and waste disposal decisions. The need for the cooperation and participation of so many people—as opposed to the relatively few living near most water-polluting sites—dictated a community involvement program of major proportions.

The Aquifer

The Biscayne Aquifer extends south from Palm Beach County to the Atlantic Ocean, underlying parts of four counties and much of Everglades National Park. It is very shallow and highly permeable—extremely susceptible to contamination from many and various sources.

Localized ground-water pollution has been documented in a number of areas, leading to serious concern about the possible magnitude and extent of aquifer contamination. Eight major sites that may be contributing to aquifer contamination have been placed on EPA's National Priorities List (NPL) of

sites eligible for Superfund monies.

Three of the NPL sites which are near each other have been treated by the agency as a single management unit referred to as the Biscayne Aquifer Site. These are the Northwest 58th Street Landfill (located near Hialeah), Miami Drum Services (a former drum recycling facility in the City of Miami), and Varso! Spill (designating several spills and leaks at the Miami International Airport).

The Site Study

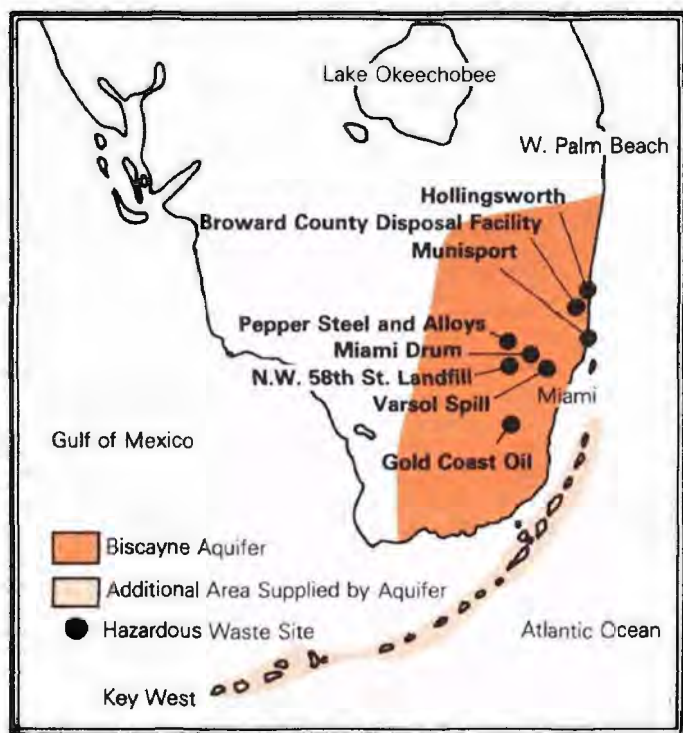
Phase I of the Biscayne Aquifer site study, conducted in 1982, evaluated existing data and identified information gaps. The data indicated the presence of dispersed, low-level concentrations of several toxic contaminants in the ground water.

Phase II investigations were begun in late 1982 to locate any highly contaminated zones that might exist in the area and to provide data essential to remedial action decisions. Extensive ground-water sampling revealed widespread low to moderate levels of several toxic contaminants, mostly volatile organics. Four of 135 community water supplies sampled had contamination exceeding state limits.

Phase III opened with an initial screening of 22 alternatives proposed to either control the pollution sources or to remedy existing contamination. From these, specific recommendations are being developed that, when implemented, will provide protection against increased contamination and guide officials in cleaning up the Superfund sites.

An Unusual Approach

Take three million sophisticated consumers whose health and livelihood depend upon a single, vast, and fragile ecosystem, add lots of media coverage of threats to that ecosystem and stir in hundreds of technicians sampling wells and drilling new ones all over the place, and the likely result will be a stew of fears, rumors, and reactions thick enough



Jim Orban, EPA project manager for the Biscayne Aquifer protection effort, takes questions from the audience at a public meeting last July in Miami Springs, Florida. At the meeting, EPA officials explained the results of a cleanup feasibility study.

to bog down the most determined public servant.

From the beginning of the Biscayne Aquifer project, it was obvious that typical community relations programs would be insufficient to clarify the situation.

Public meetings were, of course, held frequently, and were designed to truly educate and communicate information, not just to satisfy legal requirements. But a decision was made to supplement the normal meetings and announcements with an innovative newspaper written just for concerned residents of southeastern Florida.

The paper, *Remedies*, provided updates on the three-phase Biscayne Aquifer site study; information on major contamination sites; explanations of the extent, degree, and complexity of risk assessment problems; and other useful information such as dates and agenda for public meetings.

Remedies proved to be an effective innovation. The newspaper contributed significantly to opening up lines of communication between EPA and the public. Receiving copies of *Remedies* in advance gave the community an opportunity to become informed participants during public meetings.

The public meetings themselves gave the best proof of the effectiveness of the Biscayne community-involvement program in general and of *Remedies* in particular. The success of the entire project is due, in no small measure, to the especially high level of trust and confidence between the public and EPA that was the hallmark of the meetings.

Data on the presence of toxic chemicals in drinking water is never as complete as would be preferred, and very little is known of the effects on humans of long-term, low-dose exposures to such chemicals. No one knows all the right answers to the problems of the Biscayne Aquifer. Nevertheless, everyone involved in the project, both citizen and public servant, can be proud of the way in which a matter of such extreme complexity and sensitivity has been efficiently handled.

The Idea Behind Clean Sites, Inc.

by Dr. Charles W. Powers

Clean Sites, Inc., is a new nonprofit corporation formed on May 31, 1984, "specifically to encourage, contribute to, and bring about the cleanup of hazardous waste sites in the United States." Its Board of Directors includes two former EPA Administrators (one of whom now heads a major environmental organization), two presidents of major universities, three chief executive officers of major U.S. firms, a leading state official, the head of a major conservation research foundation, and the head of an environmental health research organization.

Why do we need such an institution, particularly one with this level of leadership? Don't we have a law (Superfund) which gives EPA broad authority to achieve this same purpose and which defines private parties who are liable under it? Hundreds of private firms are offering services in various aspects of waste site analysis and cleanup. Why do we need another? What is the "value added" brought by Clean Sites?

Our answer must begin with a clarification: Clean Sites is not an alternative to a strong EPA program, but an additional resource. Its purpose is to help speed cleanup activity by providing resources and skills at the points where existing institutions are limited in what they can do and where complex agreements often get stuck.

But real understanding of why we need Clean Sites comes when we remember how complex and diverse this waste site cleanup task is and why progress has been slow despite the fact that it is in the basic interest of all affected parties (government, industry and local citizens) for the cleanup process to move very rapidly.

Each inactive waste site is a separate local environmental problem that can best be addressed by its own separate environmental program. Each is a distinctive mix of materials set on a



Dr. Charles W. Powers, President of Clean Sites, Inc., at the press conference May 31 in Washington, D.C., to launch the new organization. Seated next to Powers is Dr. Jay D. Hair, Executive Vice President of the National Wildlife Federation and a member of the steering committee that developed Clean Sites.

distinctive land mass. For each site there is a separate story—usually convoluted and often only partially recorded—about how the hazardous substances got there.

At many sites, time may make the wastes an even more serious risk than they are now. Wastes at other sites may remain stable over many years. At some sites, local citizens live in active fear for their health and that of their children. Other sites primarily threaten non-human ecology. At many sites, the remedial steps are relatively obvious and the technology—at least for the initial phases—is simple and readily available. Other sites strain not only the technology to achieve an adequate cleanup, but even

our ability to decide on a cleanup plan. But for all sites, delay only drives up both public risk and the ultimate price tag.

The Superfund law specifies that where there is release or threatened release of certain categories of hazardous substances, the government will take the remedial action unless the government can determine that the cleanup "will be done properly by the owner or operator...or by any other responsible party."

The major choice at the level of cleanup analysis and implementation is who will do it:

- Will government set the rules and reach an agreement with or order the responsible party or parties to do the job? That is how we have addressed almost every other environmental problem in our history.
- Or will government itself conduct or have conducted the whole cleanup and then submit the bill to the responsible party or parties?

Which approach is better? Which approach will get a specific site cleaned up first and in a way that is environmentally adequate and publicly acceptable? When this criterion drives the choice of implementation methods, law and policy will permit that preferred method to work.

Clean Sites believes that in very many cases the best resource is the private sector. When it comes to developing solutions to the problems at sites—even multi-party sites—the generators probably know most about the substances and how to treat them without increased risk to cleanup personnel and local citizens. Generators, along with transporters and owners, probably know most about what is at the site and how it got there. The researchers and engineers who work for the generators probably have the most technical expertise. And finally, the responsible parties provide an important set of resources, particularly management resources, to augment those available in EPA and other



governmental organizations. In the battle against hazardous sites, these capabilities are crucial.

Private sector cleanup, however, poses tough issues about how to coordinate with government oversight and how to determine financial responsibility. Clean Sites was created for the sole purpose of addressing these issues and fostering the process of agreement at those sites where effective and rapid cleanup can best be achieved by private parties.

Clean Sites hopes to do this by providing resources at a number of steps in the process, particularly at the transition points where:

- the effort to reach agreements between responsible parties themselves and with the government and other publics traditionally breaks down;
- there is a need for third-party, independent help in apportioning responsibility in difficult cases;
- government needs to be assured that proposed settlements are worthy of commitment of its scarce human resources;
- a mechanism is needed to allow public and private funds to be mixed to secure a better and more rapid cleanup.

The ten-month Conservation Foundation effort which led to Clean Sites' creation pinpointed the need for a third-party institution. The Clean Sites Board of Directors has been painstakingly chosen to engage a group of Americans who can ensure commitment to environmental protection; foster innovative ways to keep affected publics informed and to seek their views and their acceptance; provide resources for technical competence; and spur creativity and effectiveness in the development and acceptance of site remedies. It is a group of persons chosen to develop the confidence and respect of all affected segments of our society.

And it will not be a board in name only. It has met four times in the initial two and a half months of Clean Sites' existence and is intimately involved in the search for a qualified staff, in reviewing the set of institutional procedures that will govern Clean Sites' work, and in developing criteria for choosing among the many sites that government, responsible parties or site community organizations have asked us to address.

Bringing the hazardous waste site problem under control involves drawing upon the resources of the responsible parties whenever the federal government can ascertain that the remedial activity "will be done properly." Clean Sites exists to help responsible parties and government carry out that mandate more effectively and in a way that earns the respect of affected citizens. This is a complex task, especially for an organization that must build its independent institutional resources while it also begins to act. Clean Sites will not work miracles. But we believe that within two years, its solid record of achievement will sustain the judgment that a new initiative can make a substantial difference in resolving this important national issue. □

How Clean is "Clean" at a Hazardous Waste Site?

Key Observers Answer

EPA Journal asked six respected observers from different vantage points their views on this issue. Their answers follow:

Lois Marie Gibbs

*Executive Director
Citizens Clearinghouse
for Hazardous Wastes
Former resident of Love Canal*



Citizens across the country living near hazardous waste sites have been asked their opinions on how much of the contamination should be removed as part of the site cleanup. Their answer has been consistent: clean up the site until the area is the same as it was before the chemical wastes were deposited there. From the perspective of the local communities, there can be no less than total cleanup. After all, they didn't make the waste or reap the profits, nor did they make the conscious decision to bury it there. All the community residents received from such a site is physical, emotional, and financial damages. They have been victimized! Furthermore, it is the citizens who will ultimately pay the highest costs of cleanup — through consumer product prices increased by industry to pay the upfront cleanup costs, through public taxes used by government agencies at such sites, and through personal, physical, and financial losses. Since people are paying the bill, they should be the ones to decide the extent of cleanup actions.

Therefore, the answer to how clean is clean is: put it back the way it was. There are already too many involuntary risks in our daily lives, and it is unfair to ask waste site communities to take on additional risks, for which they receive no benefits.

R.G. Kissell, Jr.

*Senior Consultant
E.I. du Pont & Co.*



All participants in our nation's waste site cleanup program agree that remedial actions at sites must provide adequate protection of human health and the environment. Difficulties arise when we attempt to define what constitutes adequate protection. Every waste site is unique and requires an equally unique solution. This situation precludes adoption of any uniformly applied set of standards, but instead requires that sites be addressed on a case-by-case basis.

Consensus on appropriate remedial actions can be reached, and has in fact been achieved successfully, at many sites. Often, measures are easily identified and require little study to support their adoption. Every effort should be made to implement such measures expeditiously, even if they represent only partial solutions. Great progress can be made by proceeding in this incremental fashion.

More difficult decisions involve the allowable level of wastes that remain at sites and the points at which these levels are to be achieved. Even here, ample opportunity exists to arrive at a consensus.

Determination of, and agreement on, the acceptable concentrations of residual wastes can be made in several ways. At many sites, cost-effective remedial actions, such as preventing migration of contaminants or removing the material from points where exposure could reasonably occur, will eliminate all exposure to the waste. Where residual

wastes remain, acceptable levels may be derived using relevant standards promulgated under other environmental statutes, but only when such standards reflect comparable types of exposure. Risk assessment represents potentially a valuable tool for defining appropriate exposure levels, even though procedures are only now being developed for waste site applications.

Agreement on the locations where acceptable exposure levels will be met is equally important in the selection of the appropriate remedy at a site. These locations can be defined for ground water, soil, or releases emanating from remedial operations. They should reflect existing activities of human and biological populations or those that could be reasonably expected to occur. The appropriate remedy will then be the most cost-effective set of actions that assures acceptable exposure levels where exposure is possible and precludes exposure to any higher concentrations of wastes. Overall, opportunities appear to be good for reaching agreements on appropriate remedial actions at most waste sites. Prospects will continue to improve as experience is gained in the program.

Ridgway M. Hall, Jr.

*Attorney
Crowell & Moring
Former Associate General Counsel for
Water, EPA*



While Superfund calls for cleanup and remedial action to abate "imminent and substantial danger," and speaks of a "cost-effective response," it nowhere defines the desired level of cleanup. EPA

has provided such a performance standard in the National Contingency Plan, which is the blueprint for Superfund response action. It requires consideration of relevant factors, including the toxicity of the substances, how they behave in the environment, the extent to which they pose a danger to public health or the environment, and the relative costs and effects of alternative response actions. The remedy to be selected is that which is "the lowest cost alternative that is technologically feasible . . . and which effectively mitigates and minimizes damage to and provides protection of public health, welfare, or the environment." This is good as far as it goes, but implementation is the key.

A properly implemented performance standard under Superfund should embody the following elements:

1. *Reasonable protection.* Protection of human health and the environment is inherent in the statute. In defining the protection level, Congress, EPA, and the vast majority of scientists and policy-makers have recognized that we do not live in a harm-free or risk-free society, nor can we expect to. Therefore, the level of cleanup should protect against *substantial* or *significant* harm, or *unreasonable* risk of such harm. It cannot protect against *all* risks.
2. *Consideration of costs in relationship to benefits.* We do not have unlimited cleanup dollars, and we must do what makes sense with them.
3. *Clarity* means simply that the cleanup standard must be understandable, workable, and reasonably easy to apply.
4. *Flexibility* requires that the standard not be so rigid as to be incapable of taking into account the fact that no two hazardous waste sites are identical. Substances behave differently in different environments. Population exposures and uses differ. What is cost-effective at one site may not be at another. Therefore, I am skeptical of recent proposals to set mandatory cleanup standards by reference to pollutant standards adopted under other laws without regard for their appropriateness in the context of a specific site.
5. *Consistency* is required to ensure that the program is being applied evenhandedly and with a measure of predictability from case to case.
6. *Fairness.* Finally, the standard must produce results which are fair. It must be fair to those who are to be protected, and fair to those who must pay the costs. Furthermore, once a remedy is selected, it is reasonable to consider in apportioning the costs the extent to which a non-negligent present site owner should pay for the cleanup of substances

deposited long ago by others in a manner which was lawful and thought to be sound at the time, or whether part of these costs should be borne by the fund.

Ultimately, the application of any cleanup standard depends on the informed and reasoned judgment of those applying it. At a time when election-year politics are in full swing, it is worth remembering the admonition of Harvard Law Professor Paul Freund, that "there are, I am afraid, no absolutes in law or art except intelligence."

Jane L. Bloom

Senior Project Attorney
Toxic Substances Project
Natural Resources Defense Council



With an estimated 2,000 priority dumpsites likely to be added to the National Priorities List before the end of the decade, the credibility and effectiveness of EPA's Superfund program will depend heavily on the agency's answer to the critical question, "how clean is clean?" To date, EPA has not established any uniform or objective goal for cleanup. Instead, the agency has opted to establish the level of site cleanup on an ad hoc, site-by-site basis, using quantitative risk assessment and monetary cost as guideposts.

The effectiveness of site cleanup under the present program cannot accurately be assessed until EPA undertakes more than its current total of six "completed" sites. However, we are concerned about recent reports that some wastes are being removed from Superfund sites only to be disposed of at another land disposal facility that may not be able to insure adequate protection.

In NRDC's view, to instill public confidence in the program and provide the protection envisioned by Congress, EPA must set uniform and stringent cleanup standards to be applied at all Superfund sites. Although defining the appropriate standards is a difficult task, it is an essential one. Without an objective cleanup goal, there is no assurance that cleanups performed under EPA auspices

will accomplish the results that the public has a right to expect: a cleaner environment, protection of public health, assurance of a permanent solution to waste site contamination, and a consistent level of protection throughout the country. Health-based federal standards under other environmental laws (e.g., Clean Water Act, Clean Air Act, Safe Drinking Water Act), where applicable, should be used in defining the goal of cleanup.

To achieve the cost-effective solution mandated by Superfund, emphasis should be placed on achieving a permanent cleanup solution and utilizing alternative technologies, rather than on mere redispersion. Land disposal methods may cost less in the short run, but they cannot be relied upon to provide a permanent remedy. Treatment and destruction technologies that remove or significantly reduce the health threat now and for the future should be given preference whenever possible. With public health at stake and limited resources available for cleanup, we cannot afford to "solve" our present problem by delaying effective measures, or worse, creating a new generation of Superfund sites.

Edmund B. Frost

Attorney
Kirkland & Ellis
Former General Counsel, Chemical
Manufacturers Assn.



"Degree-of-cleanup" has been and remains the most difficult and fundamental issue for waste site cleanup confronting the Superfund program. The development of appropriate and sensible criteria for waste site cleanup is critical for at least three reasons. One, such cleanup criteria will determine whether the public health and safety is adequately protected under Superfund. Two, the cleanup criteria will ultimately define the scope and cost of both individual cleanups and the overall Superfund program. Finally, adequate, sensible cleanup criteria are necessary to assure

public confidence and support for the program.

Waste site cleanup criteria must ultimately be based on careful determinations of the adequacy of the level of protection provided by the cleanup. The first step in making a "degree-of-cleanup" remedial determination is therefore to understand the risks presented by a particular site and to decide the degree to which these risks must be abated to adequately protect public health, welfare or the environment. Only *after* determining an adequate level of risk abatement and protection should cost and cost-effectiveness considerations come into play, requiring the selection and design of the least-cost remedy which affords adequate protection.

The first step — a remedial investigation designed to determine the specific risks presented by the site — is complex but essential. The nature of materials at the site, the extent of any releases or potential releases, the pathways of exposure, and the level of exposure to people and the environment must all be assessed. Then the risks of this exposure must be evaluated on the basis of scientific knowledge of the toxicity of any materials reaching people or exposed environmental receptors. Finally, an acceptable level of risk or exposure must be determined for each affected receptor.

Selection of the acceptable level of risk or exposure at a site is perhaps the most difficult part of the process. Regulatory standards, such as drinking water regulations, may be useful when they are appropriately applicable to the situation, but often there will be no appropriately applicable standard. Design and specification standards, such as Resource Conservation and Recovery Act regulations, are not helpful in determining the degree-of-cleanup. Such standards do not address the specific risks under consideration. Indeed, they are not risk-based, but rather technology-based. In the end, there may often be no mechanical way of determining acceptable risk levels and the determination will have to be based on sound judgment and community acceptability.

Once a cleanup objective is determined on the basis of acceptable risk levels, the appropriate remedial option should be selected, first by determining which options meet the cleanup criteria, and second by evaluating cost-effectiveness. Issues of technical reliability must be considered in determining whether options meet the cleanup criteria. Under this evaluation scheme, removal options will often be undesirable because of

excessive cost and the creation of additional risk. Containment-in-place options may be appropriate, if adequately reliable. Treatment options, although desirable, may be impractical and too expensive.

The foregoing model will assure that Superfund cleanups fully protect public health, welfare and the environment in the most efficient manner. Some suggest that remedial determinations should be further simplified by the imposition of mandatory design standards. This approach, however, would often be unnecessarily expensive, and would surely delay the program by ending most voluntary cleanup. Instead, cleanup decisions should be improved by perfecting the administrative process under the National Contingency Plan and by adopting risk-based cleanup criteria which assure the public that the effort to save costs will not be allowed to interfere with the objective of protecting health.

Victoria J. Tschinkel
Secretary
Florida Department of
Environmental Regulation



Those of us involved in toxic waste cleanup are developing split personalities. I enjoy reading articles and philosophizing over the apparently endless subject of "how clean is clean" as much as the next regulator. This is intellectually stimulating, helps take me above the day-to-day problems and makes me feel very "cap-and-gown" and self-confident. The other half of me is a sort of glorified refuse shoveler with very grimy hands. Let's face it—the stuff is out there, threatening us. We have to contain and remove it, or contain and treat it, or, in some cases, be satisfied to contain it.

A few years ago, we environmental agency directors lived in Eden and did the right thing. More recently, scientists offered us an apple labeled "dose-response curves and risk assessment," which turned us into indecisive nail-biters.

How can we regain our self-confidence?

First, we need to estimate the risk from exposure at each hazardous waste site. In Florida, where 90 percent of us rely on ground water for our drinking water, in many cases from shallow wells, we have adopted standards for a number of toxic, carcinogenic or mutagenic substances in ground water and drinking water. And, although we recognize that certain assumptions of risk must be made, many times based on inadequate information, it should also be a top priority to adopt standards nationally. Assessing risk when soils are contaminated is more difficult, but there are ways of doing it. Where there are no standards, a miniature standard-setting process should be used to establish target levels at each site. Sometimes we are left with nothing more than detectable limits as a goal—but at least it's a good place to start.

Then, as in any enforcement case, once the scientific data are in hand, social, technical, policy, and economic considerations enter into the equation. The following, for example, need to be considered:

- Risks from contamination to public health and safety.
- Impacts on the designated use of surface and ground water.
- Existing and future land use potentially affected by migration of the pollutants.
- Available cleanup technology.
- Available financial resources.
- Other policy, social, and economic considerations.

Florida is following these guidelines in its enforcement cases and in implementing the state's \$8.5 million a year hazardous waste site cleanup program. We are currently involved in state-funded cleanup at 17 sites. Federal funding has been used at 13 of 29 Superfund sites in the state for either evaluation or cleanups and the EPA has assisted the state with a number of emergency responses.

I am sure, as we work through these tough issues, that we'll make mistakes. But I'm proud of the work we're doing. As in any new field, patterns of decision-making, good and not so good, will emerge. Then, using our successes as models, we'll be able to write the definitive work on "how clean is clean." In the meantime, we'll just keep working—alternating between cap-and-gown and grimy hands. □

AIR

Tampering and Fuel Switching Survey

EPA released its 1983 Motor Vehicle Tampering Survey which shows that fuel switching and tampering with emission control devices is continuing at disturbingly high rates.

Twenty-six percent of the 1975 to 1983 model automobiles sampled in the survey had at least one emission control device tampered with. The survey also found that 14 percent of the vehicles were subject to fuel switching (using leaded gas in vehicles requiring unleaded fuel).

In July EPA proposed to reduce lead content in gasoline by 91 percent by 1986 and possibly institute a total ban by 1995.

EPA's 1983 survey is based on observations of over 1,800 cars in six areas around the country: Arizona, California, Colorado, Illinois, Kansas, and Texas. Inspection teams visually examined emission control devices and measured amounts of carbon monoxide and hydrocarbon exhaust emissions. To provide information on fuel switching, inspectors took samples of gasoline from the vehicles for later laboratory analysis for lead, tested for lead deposits in tailpipes using chemically-treated test paper, and checked for the condition of the fuel filler inlet restrictors.

The survey found significant rates of tampering with certain critical components. For example, the rate of catalytic converter tampering was 7 percent. The exhaust gas recirculation system tampering rate was 13 percent. Other forms of tampering found included altered filler neck inlets to permit leaded gas use in cars requiring unleaded gas, disabled air pumps and evaporative systems, and positive crankcase ventilation (PCV) tamperings.

State Petitions Denied

EPA proposed to deny petitions filed by Pennsylvania, New York, and Maine claiming damage from interstate air emissions emanating from sources in the Midwest.

The petitioning states claim that the emissions interfere with their ability to meet federal air quality standards, interfere with visibility, and cause acid rain.

The petitions, filed in 1980 and 1981 under Section 126 of the Clean Air Act, generally ask EPA to impose more stringent emission limits on numerous sources of sulfur dioxide in the States of Ohio, West Virginia,

Illinois, Indiana, Kentucky, Michigan, and Tennessee.

EPA's proposed denial of the petitions is based on both legal and technical grounds. While the agency recognizes the existence of interstate air pollution, Section 126 of the Clean Air Act addresses interstate pollution only when it causes a state to violate national ambient air quality standards for one or more of the criteria pollutants, the prevention of significant deterioration (PSD) increments, or visibility requirements. Neither acid rain nor the long-range visibility effects cited in the petitions are addressed under Section 126.

The agency's proposed denials find that the petitioning states have not made a persuasive technical case that the existing requirements of the Clean Air Act are being violated by interstate transport of air pollutants.

Polycyclic Organic Matter

EPA has decided not to regulate polycyclic organic matter (POM) as a class of compounds under the Clean Air Act until it has enough information to determine if regulation is appropriate.

POM is a large class of chemicals released into the air as a result of incomplete combustion from sources ranging from wood stoves and fireplaces to vehicles and incinerators.

Although EPA has not regulated POM compounds as a class, POM emissions are being reduced as the agency regulates air pollutants, such as particulate matter and hydrocarbons, which include POM compounds.

EPA, concerned about the cancer-causing potential of POM, for several years has been collecting data on POM emissions and considering ways to regulate those sources that produce most of the POM compounds. Although not every POM compound causes cancer, all combustion produces some cancer-causing POM compounds.

Under the Clean Air Act, EPA must review all the relevant information to determine whether POM emissions into the ambient air endanger the public. A U.S. District Court ruled last fall that EPA had to make its determination by August 2, 1984. Since the agency had not yet collected enough information to support regulation, it decided against regulating POM for the time being. A decision to regulate POM under the court order would have committed EPA to writing regulations within a few months.

HAZARDOUS WASTE

National Priorities List

EPA has officially added 128 sites to the National Priorities List. Most of the sites had been proposed for inclusion on the list last September. The addition brings the NPL total to 538 sites. Later this year as many as 250 sites will be proposed for further addition to the NPL.

Sites on the list become eligible for long-term, large-scale cleanup under Superfund to restore their environmental integrity. Any perceived imminent threats to the health of the population have already been addressed through emergency response actions. Being listed on the NPL is not a prerequisite for emergency action.

EPA, state governments, and private parties are now at work on almost all sites on the NPL. Such work involves various engineering studies and administrative negotiations that pave the way to cleanup action.

It is projected that the National Priorities List could eventually grow to between 1,400 and 2,200 sites.

PESTICIDES

EDB Tolerance Levels for Imported Mangoes

EPA has proposed setting temporary tolerance levels for the pesticide ethylene dibromide (EDB) on imported mangoes.

All use of EDB on any food product in the U.S. was cancelled effective September 1, 1984.

The residue levels of the pesticide on imported mangoes would be limited to 30 parts per billion (ppb) until September 1, 1985. After that date, any detectable residues of EDB on mangoes would render them adulterated and subject to federal enforcement action under the Federal Food, Drug and Cosmetic Act. The temporary tolerance will protect public health and allow for the development of alternative quarantine treatments for mangoes to prevent the spread of destructive species of fruit flies. There are currently no available alternative quarantine treatments.

The agency previously imposed a ban on all domestic use of EDB on mangoes, including use at U.S. fumigation centers which treat imported mangoes, effective September 1, 1984. These fumigation centers include ports of entry in the U.S. and its protectorates, including Puerto Rico.

Based on consultations with the U.S. Department of Agriculture, the agency believes that the current use of EDB on domestically grown mangoes is virtually nonexistent. According to the information available to the agency, mangoes grown in the U.S. (with the possible exception of Puerto Rico) have not generally been fumigated with EDB in the past. Thus, the proposal to limit EDB residues applies only to imported fruit.

TOXICS

Revised Acute Toxicity Testing

EPA has completed revisions to its acute toxicity testing guidelines to emphasize scientifically sound ways of reducing the number of animals used in the tests.

These guidelines, which have been forwarded to the National Technical Information Service (NTIS) for publication, recognize the need for animal data to predict potential human health effects as well as the continuing need to protect the welfare of laboratory animals.

Although the revised guidelines contain few technical changes, they reflect the agency's policy which:

- discourages the use of animals solely for the calculation of an LD50 (dose lethal to 50 percent of the tested animals);
- encourages the use of data from structurally related chemicals, when possible, to make preliminary judgments about chemical safety without going through independent tests using additional animals;
- suggests utilizing a "limit" test which employs ten or fewer test animals to determine a lethal dose. If additional data are needed, a three-dose study with approximately 40 animals is recommended as opposed to the "classic" LD50 test which may employ up to 200 animals;
- recommends the study of acute responses during toxicity testing to gain the maximum amount of data from a limited number of animals.

EPA is aware of a variety of research efforts that are underway to develop and validate test methods that may replace animal testing. As soon as the alternative methods are accepted as valid by the scientific community, the agency will aggressively encourage their use.

WATER

Agreement with General Motors

EPA and the Department of Justice announced the filing of civil complaints and simultaneous consent judgments requiring the General Motors Corp. to comply with standards limiting the amount of metals and toxic substances discharged into public sewage systems by electroplating operations at eight automobile assembly plants.

Attorney General William French Smith said the suits were the first filed by the federal government to enforce the electroplating pretreatment standards of the Clean Water Act that became effective last June 30.

The case was developed jointly by the Environmental Protection Agency and the Justice Department, Attorney General Smith said.

The judgments cover General Motors assembly plants in Arlington, Tex.; Van Nuys, Calif.; Doraville, Ga.; Atlanta, Ga.; Kansas City, Mo.; Kansas City, Kan.; Newark, N.J.; and Cincinnati, Ohio.

AGENCYWIDE

EPA Recruiting in Puerto Rico

EPA recently completed an intensive recruiting program in Puerto Rico which resulted in the hiring of 31 university students for jobs at EPA regional offices in New York City, Philadelphia, and San Francisco, as well as in Washington, D.C., headquarters.

The recruitment program was managed by a team of EPA officials from headquarters and regional offices. Team members travelled to Puerto Rico during April to interview almost 200 job applicants at two campuses of the University of Puerto Rico. The 31 individuals selected by the agency are all engineering graduates. Most have already begun employment in positions dealing with EPA's hazardous and solid waste and water pollution management programs.

The recruitment program in Puerto Rico was originally developed in EPA's Region 2 (New York City) office which has jurisdiction over the Commonwealth of Puerto Rico. The program was initially devised and planned by Herbert Barrack, Region 2 Assistant Administrator for Administration. His leadership in this effort was recently recognized when he received the National President's Award from IMAGE, a national organization concerned with employment opportunities for Hispanics. []

Appointments at EPA



Christopher J. Daggett



Alan B. Sielen

Christopher J. Daggett has been named Regional Administrator of EPA's Region 2 office in New York City. Daggett comes to EPA from the State of New Jersey, where he has served as Cabinet Secretary to Governor Thomas H. Kean since 1983. Prior to holding that position, he was Deputy Chief of Staff to Governor Kean. Daggett's previous experience includes service as Vice President of Public Affairs Consultants, a Springfield, N.J., firm.

Daggett holds the degree of Doctor of Education from the University of Massachusetts as well as a B.A. from the University of North Carolina, Chapel Hill. Immediately after graduating from the University of Massachusetts in 1977, he directed an in-service training program for professors at McGill University in Montreal. Later he consulted on similar programs at several other U.S. and Canadian colleges and universities.

David P. Ryan has been appointed Director of the Budget Division of EPA. Since November 1983, Ryan has been Acting Director of the Budget Division, Office of the Comptroller. From December 1981 to November 1983, he was Supervisory Program Analyst in the Comptroller's office.

Ryan came to EPA's Budget Division in 1978 from the government of New York State. He began his EPA career as a program analyst in the Comptroller's office. For his work in the design and execution of the Superfund multi-year resource analysis, Ryan received the Office of Planning and Management's John Muir Analytical Award in 1980.

Ryan worked as a budget examiner with the New York State Division of the Budget from 1973 to 1978. He served in the Air Force between 1968 and 1973.

In 1967 Ryan received his B.A. in public administration from St. Johns University. He completed an M.A. in economics and public administration at the State University of New York in 1975.

Alan B. Sielen, who is currently Director of Multilateral Affairs for EPA, has recently been appointed U.S. Coordinator for the NATO Committee on the Challenges of Modern Society (CCMS). He will carry out his new duties in addition to his present responsibilities in the Office of International Activities.

The CCMS program adds a social dimension to NATO's security and political activities by promoting cooperation among the Allies in such areas as public health, transportation, and historical and environmental preservation.

Sielen has been at EPA since 1975; his previous positions in EPA's Office of International Activities include Director of the Oceans and Regulatory Division and Special Representative for Marine Negotiations.

Sielen received an M.A. in 1974 from the Johns Hopkins University School of Advanced International Studies. He received a B.A. in political science in 1971 from the University of California at Berkeley, where he graduated with honors in international relations and was elected to Phi Beta Kappa. []



Member of a cleanup crew puts on protective clothing at the Chem-Dyne site in Hamilton, Ohio. The now-defunct chemical waste storage facility once handled a wide variety of hazardous wastes. Legally responsible parties paid \$2.4 million towards the cost of surface cleanup. The site is on the Superfund priority list.

Back cover: Aerial view of Everglades National Park. The Biscayne Aquifer, threatened by hazardous waste contamination, underlies large parts of the Everglades and major urban areas in southern Florida. See story on page 24.



United States
Environmental Protection
Agency
Washington DC 20460

Official Business
Penalty for Private Use
\$300

Third-Class Bulk
Postage and Fees Paid
EPA
Permit No. G-35