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Your Guide to the United States Environmental Protection Agency

Contents

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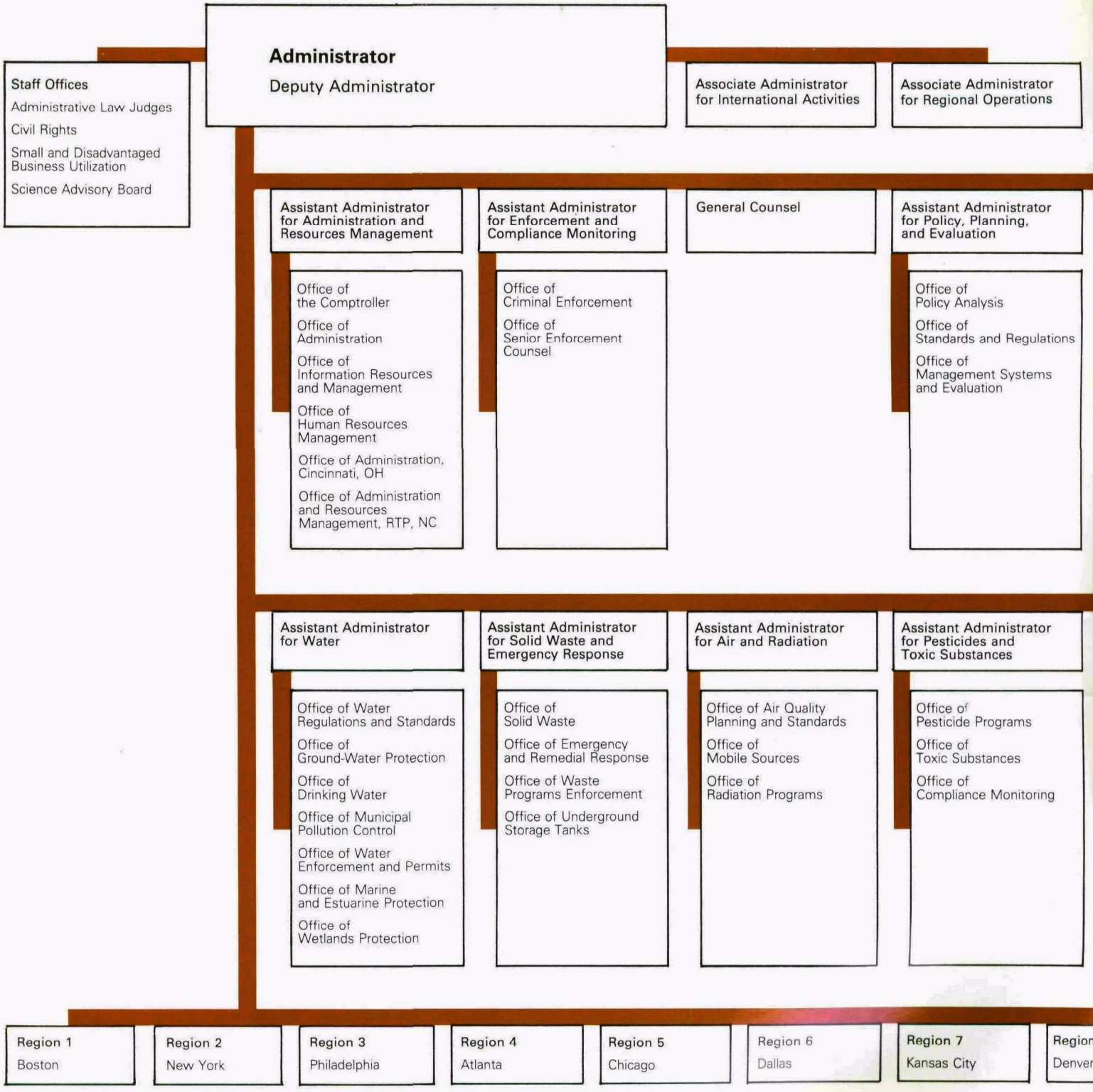
Preface

Our environment has been threatened for many decades by human activities undertaken without regard for their effects on the life-sustaining, economic, and recreational value of the air, land, and water. To protect and restore the quality of these essential and irreplaceable resources, Congress enacted a series of laws which have brought about significant environmental improvements, though many challenging problems remain.

The U.S. Environmental Protection Agency (EPA) is responsible for implementing the federal laws designed to protect the environment. Questions and decisions concerning air, water, and land affect nearly every aspect of our lives. As our understanding of environmental issues has grown, so have EPA's responsibilities. This booklet describes how EPA is addressing the major environmental problems that confront our nation.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Civil Rights
Small and Disadvantaged Business Utilization
Science Advisory Board
Administrator
Deputy Administrator
Associate Administrator for International Activities
Associate Administrator for Regional Operations
Assistant Administrator for Administration and Resources Management
Office of the Comptroller
Office of Administration
Office of Information Resources and Management
Office of Human Resources Management
Office of Administration, Cincinnati, OH
Office of Administration and Resources Management, RTP, NC
Assistant Administrator for Enforcement and Compliance Monitoring
Office of Criminal Enforcement
Office of Senior Enforcement Counsel
General Counsel
Assistant Administrator for Policy, Planning, and Evaluation
Office of Policy Analysis
Office of Standards and Regulations
Office of Management Systems and Evaluation
Assistant Administrator for Water
Office of Water Regulations and Standards
Office of Ground-Water Protection
Office of Drinking Water
Office of Municipal Pollution Control
Office of Water Enforcement and Permits
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Office of Wetlands Protection
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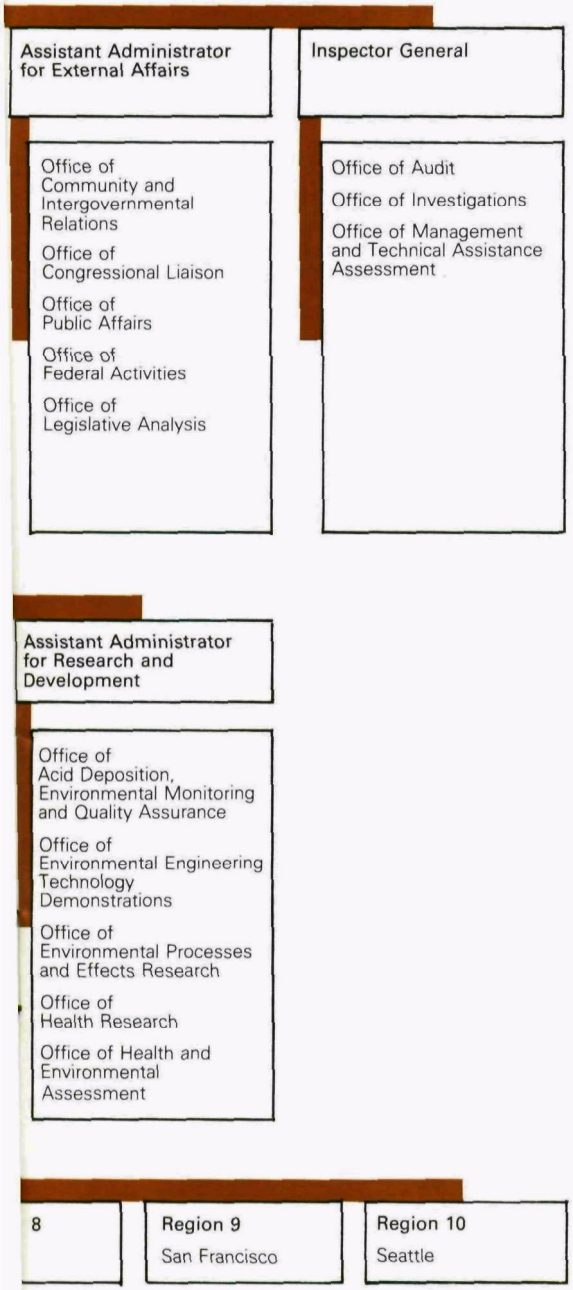
Office of Solid Waste
Office of Emergency and Remedial Response
Office of Waste Programs Enforcement
Office of Underground Storage Tanks
Assistant Administrator for Air and Radiation
Office of Air Quality Planning and Standards
Office of Mobile Sources
Office of Radiation Programs
Assistant Administrator for Pesticides and Toxic Substances
Office of Pesticide Programs
Office of Toxic Substances
Office of Compliance Monitoring
Region 1
Boston
Region 2
New York
Region 3
Philadelphia
Region 4
Atlanta
Region 5
Chicago
Region 6
Dallas
Region 7
Kansas City
Region
Denver

History and Organization of EPA



The U.S. Environmental Protection Agency was created through an Executive reorganization plan designed to consolidate a number of federal environmental activities into a single agency. The plan (Reorganization Plan #3 of 1970) was sent to Congress by President Nixon on July 9, 1970, and EPA was formally established as an independent agency in the Executive Branch on December 2, 1970.

EPA was formed by bringing together 15 components from five Executive departments and independent agencies. Air pollution control, solid waste management, radiation control, and the drinking water program were transferred from the Department of Health, Education, and Welfare (now the Department of Health and Human Services). The federal water pollution control program was taken from the Department of the Interior, as was part of a pesticide research program. From the Department of Agriculture, EPA acquired authority to register pesticides and to regulate their use, and from the Food and Drug Administration inherited the responsibility to set tolerance levels for pesticides in food. EPA was assigned some responsibility for setting environmental radiation protection standards from the old Atomic Energy Commission, and absorbed the duties of the Federal Radiation Council.

The enactment of major new environmental laws and important amendments to older laws in the 1970s greatly expanded EPA's responsibilities. The Agency now administers nine comprehensive environmental protection laws: the Clean Air Act (CAA); the Clean Water Act (CWA); the Safe Drinking Water Act (SDWA); the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, or "Superfund"); the Resource Conservation and Recovery Act (RCRA); the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA); the Toxic Substances Control Act (TSCA); the Marine Protection, Research, and Sanctuaries Act (MPRSA); and the Uranium Mill Tailings Radiation Control Act (UMTRCA).

The Agency is directed by an Administrator and a Deputy Administrator, who are appointed by the President with the advice and consent of the Senate. Nine Assistant Administrators, who manage specific environmental programs or direct other Agency functions, the Agency's General Counsel, and its Inspector General also are named by the President and subject to Senate confirmation. Ten Regional Administrators across the country cooperate closely with state and local governments to make sure that regional needs are considered and that federal environmental laws are properly implemented. (Appendix I lists these regional offices.) The Agency's executive staff includes Associate Administrators for International Activities and Regional Operations. The chart shows how EPA is organized.

Clean Water

Oceans, rivers, streams, lakes, estuaries underground aquifers, and wetlands are essential, in one way or another, to all forms of life, and play a central role in much of our economic activity and recreation.

These functions have been seriously threatened by the long-standing use of natural bodies of water as dumping places for human and industrial wastes, by the destruction of major parts of water systems such as wetlands, and by poor land management practices that choke waters with sediment and poison them with toxic pollutants.

Water pollution has two major origins: *point* sources and *nonpoint* sources. Point sources are specific points of discharge, such as outfall pipes from industrial facilities or sewage treatment plants. Nonpoint sources, on the other hand, cannot be located so precisely. Unchannelized runoff from city streets, from construction sites, and from farms and mines are examples of nonpoint sources. Both sources contribute heavily to the pollution of our nation's waters.

Water has been polluted by many kinds of substances. Some pollutants, such as sewage from households, are discharged in very large amounts. Unless treated, sewage can overload the natural capacity of water bodies to cleanse themselves. Other pollutants, *toxic substances*, can cause damage to our waters, even in very small amounts.

The first federal legislation to protect our waters from pollution was the Rivers and Harbors Act of 1899. Congress enacted stronger legislation in 1948, 1956, 1965, 1966, and 1970. However, EPA's current program of water pollution control is based upon the Federal Water Pollution Control Act Amendments of 1972, also known as the Clean Water Act. Amendments passed in 1977, 1981, and 1987 made some important changes, but the basic objectives and procedures of the Clean Water Act remained.

The major objective of the Clean Water Act is to restore and maintain the "chemical, physical, and biological integrity of the Nation's waters." The Act seeks to secure "water quality which provides for the protection and propagation of fish, shellfish, and wildlife, and provides for recreation in and on the water." Progress toward this objective has required spending billions of dollars and the control of hundreds of thousands of water pollution sources.

The Act requires each state to set *water quality standards* for every significant body of surface water within its borders. Water quality standards represent the goals which pollution controls are meant to secure. To set these standards, states specify the uses of each body of water (such as drinking water, recreation, commercial fishing) and restrict pollution to levels that permit those uses.

To curb pollution from household and commercial sewage, the Act requires that all publicly-owned municipal sewage systems provide *secondary treatment* of wastewater (a bio-chemical process) before it is discharged.

Since few communities could afford the facilities needed to provide such treatment, Congress established a financial assistance program of *construction grants* as part of the 1972 law. Under this program, EPA provides funds to the states, which allocate the money to local communities to help finance new or improved treatment facilities. During the first 15 years of the program, construction grants to the states amounted to approximately $45 billion. However, in 1977 and 1981 Congress enacted amendments to the Clean Water Act which required fundamental changes in the construction grants program. The 1977 amendments required delegation of many program responsibilities to the states. The 1981 amendments reduced the federal share in funding facilities and continued the transition from federal to state and local responsibility for providing municipal wastewater treatment services. In 1987, amendments addressed the phasing out of the construction grants program by providing for states to develop alternative funding mechanisms. EPA will develop and implement a program to help capitalize state-operated revolving loan funds for furthering wastewater treatment programs. EPA's technical assistance to state and local governments is expected to increase and continue indefinitely.

The 1987 amendments also give EPA and the states new responsibilities in the regulation of toxics and sewage sludge. The Congress also authorized $400 million over four years for grants to states for non-point source pollution control activities.

To ensure that communities meet treatment requirements, sewage facilities must secure permits under the *National Pollutant Discharge Elimination System (NPDES)*. The permits specify the types and amounts of pollutants that may be discharged.

Industries discharging pollutants into waterways or publicly-owned sewage systems also are subject to control requirements, with an ultimate goal of completely eliminating the discharge of

pollutants into the nation's waters. Nationwide standards are established by EPA for certain categories of industries, with requirements tailored to the availability and economic feasibility of control technology. These *effluent limitations* will become increasingly stringent through the 1980s, particularly for discharges of toxic pollutants.

Like municipal dischargers, industrial point source dischargers must secure permits under the NPDES program. Industries using public sewage systems must meet *pretreatment standards* designed to prevent the discharge of pollutants, particularly toxics, that adversely affect or simply pass through secondary treatment facilities.

Sometimes, however, even stringent control of industrial and municipal point sources is not enough to attain stipulated water quality standards. There are two major reasons for this. First, many bodies of water are heavily polluted by nonpoint sources. Second, even with stringent controls, the amount of pollution discharged from point sources may be too much for the receiving water to accept. This may be the case in urban regions particularly.

To bridge this gap, state and local governments must devise plans laying out the steps they will take to bring water quality up to acceptable levels. In general, these plans will involve a mixture of controls on nonpoint sources and more stringent controls on point sources, including a general prohibition against the discharge of toxic materials in hazardous amounts. To determine if they are discharging hazardous amounts, sources may be required to conduct biological tests of fish and shellfish in receiving waters. Such tests are often more useful than standard chemical tests for showing the effects of complex pollutant mixtures. Funding to the states for planning their control strategies is provided through EPA's *water quality management program.*

Two other programs that are important to the protection of water resources are the *dredge and fill* permit system and the regulation of ocean dumping.

Under section 404 of the Clean Water Act, EPA and the U.S. Army Corps of Engineers are jointly responsible for protecting waters against degradation and destruction caused by disposal of dredged spoils or fill. This protection extends to the nation's wetlands—its marshes, swamps, bogs, and similar areas. Wetlands are vital elements of natural water systems, providing flood control benefits, habitats for fish and wildlife, and natural pollution filters. Permits to carry out dredge and fill activities in wetlands areas are granted by the Corps of Engineers subject to EPA approval. Because of the importance of wetlands as a natural resource, EPA has established an Office of Wetlands Protection to provide increased leadership and assistance in protecting this ecological asset.

Under the Marine Protection, Research, and Sanctuaries Act of 1972, EPA is required to protect the oceans from indiscriminate dumping of wastes. The Agency is authorized to designate safe sites for dumping, issue permits for dumping, and assess penalties for improper dumping.

Water quality is protected by nearly all of the laws EPA administers. Air pollution controls, for example, keep harmful pollutants from entering the water from the atmosphere. Laws governing radiation, toxic substances, and pesticides also deal with special pollution problems which may affect water quality. In addition, a major Agency objective is regulating solid wastes to prevent the contamination of ground water and surface waters by the seepage of harmful substances from disposal sites.

Safe Drinking Water

Less than 100 years ago, epidemics of waterborne diseases were a major public health menace in the U.S. Today, we hardly give them a thought. Twentieth century methods of water purification—particularly chlorination—have been remarkably effective in reducing instances of cholera, typhoid, dysentery, and infectious hepatitis. Waterborne diseases still occur all too frequently, but major epidemics have been virtually eliminated in this century.

In recent years, however, public health professionals have become increasingly concerned about other contaminants in our water supplies. These include inorganic chemicals such as nitrate, arsenic, and lead, as well as toxic organic chemicals which have been produced in ever growing volumes. Certain pesticides also have been added to the list of contaminants that have found their way into drinking water in some places. Some of these pollutants are harmful even in small amounts, and can be extremely difficult to remove once they have contaminated a water supply.

To deal with these problems, Congress passed the Safe Drinking Water Act of 1974, and amended that act in 1977 and 1986. Under the Act, EPA establishes national standards for drinking water from both surface and ground-water sources. These standards provide *maximum contaminant levels (MCLs)* for pollutants in drinking water. States are primarily responsible for enforcing the standards, with financial assistance from EPA.

The Safe Drinking Water Act also authorized EPA to protect aquifers against contamination from the disposal of wastes by injection into deep wells. Some states have assumed responsibility for managing these *underground injection control* programs as they develop their own regulatory systems.

Ground water in many areas is vulnerable to serious contamination from a number of sources, such as leachate from hazardous waste landfills, leaking underground storage tanks, and pesticide use. Protection of essential aquifers is one of the major environmental challenges of the 1980s. EPA has developed a ground-water protection strategy to safeguard ground water and has established a separate office within its Office of Water to oversee this effort.

In addition, the 1986 amendments to the Safe Drinking Water Act contain two new ground-water provisions that require innovative approaches to resource assessment and protection: the *Wellhead Protection Program* and the *Sole Source Aquifer Demonstration Program.*

The Wellhead Protection Program is designed to protect wells that supply public water systems. It is state-developed and administered. EPA is required, however, to issue technical guidance and assist in funding state efforts. The purpose of the Sole Source Aquifer Demonstration Program is to promote the adoption of special protective measures for critical areas within an aquifer that has been designated as a sole source for a community's or region's water supply, and to identify and evaluate exemplary programs and techniques for minimizing ground-water contamination.

Both of these programs are designed to protect ground water while allowing states the flexibility to tailor efforts to specific local conditions and geologic settings. At the same time, EPA is making every effort to implement the programs within the overall context of federal and state ground-water protection strategies.

Clean Air

People have known for centuries that air can carry poisons. That's why miners used to take canaries with them into the coal pits. A dead bird meant the presence of lethal gases. But before the smokestack boom of the industrial revolution, "bad air" was an isolated phenomenon. By the beginning of the twentieth century, however, it was a common urban characteristic, and by mid-century, it had become a serious, sometimes fatal, health hazard. In 1952, for example, a "killer fog" in London was responsible for some 4,000 deaths over a five-day period.

Air pollution is not limited to industrial cities. Automobile exhaust is a major contributor to air pollution; heavy traffic can cause air quality problems even in cities with little or no industry. Neither is air pollution a respecter of boundaries. Its effects frequently appear far away from its sources.

Federal legislation to control air pollution was first enacted in 1955, and strengthened in 1963, 1965, and 1967. However, it was the Clean Air Act of 1970 that shaped the control program we have today. Congress reviewed and amended the law in 1975 and 1977, but retained the basic principles of the 1970 Act.

The fundamental objective of the Clean Air Act is the protection of the public health and welfare from harmful effects of air pollution. To define this goal, EPA sets two kinds of *National Ambient Air Quality Standards (NAAQS)* specifying maximum acceptable levels for pollutants in outdoor air. *Primary standards* set limits which protect human health, including "sensitive populations" such as children, asthmatics, or the elderly. *Secondary standards* protect plants, animals, and material from harmful effects of air pollution.

EPA has set primary and secondary standards for six *Criteria pollutants:* carbon monoxide, nitrogen oxides, lead, sulfur dioxides, ozone, and particulates. These standards are based on medical and scientific evidence of a pollutant's health and environmental effects. EPA is required to review this evidence every five years and analyze any new data available. If the review indicates changes are needed, the standard is revised.

Some regions of the nation, such as national parks and wilderness areas, have exceptionally good air quality—better, in fact, than the quality that could be assured by the primary and secondary standards. To retain this quality, such areas must meet *prevention of significant deterioration (PSD)* standards established to preserve the pristine air and clear vistas that contribute to the natural beauty of these national lands.

The Clean Air Act also requires that EPA establish *National Emissions Standards for Hazardous Pollutants (NESHAPS)* to control the emission of substances so toxic that even small amounts may adversely affect health. EPA has established NESHAPS for asbestos, berylium, mercury, vinyl chloride, benzene, and arsenic.

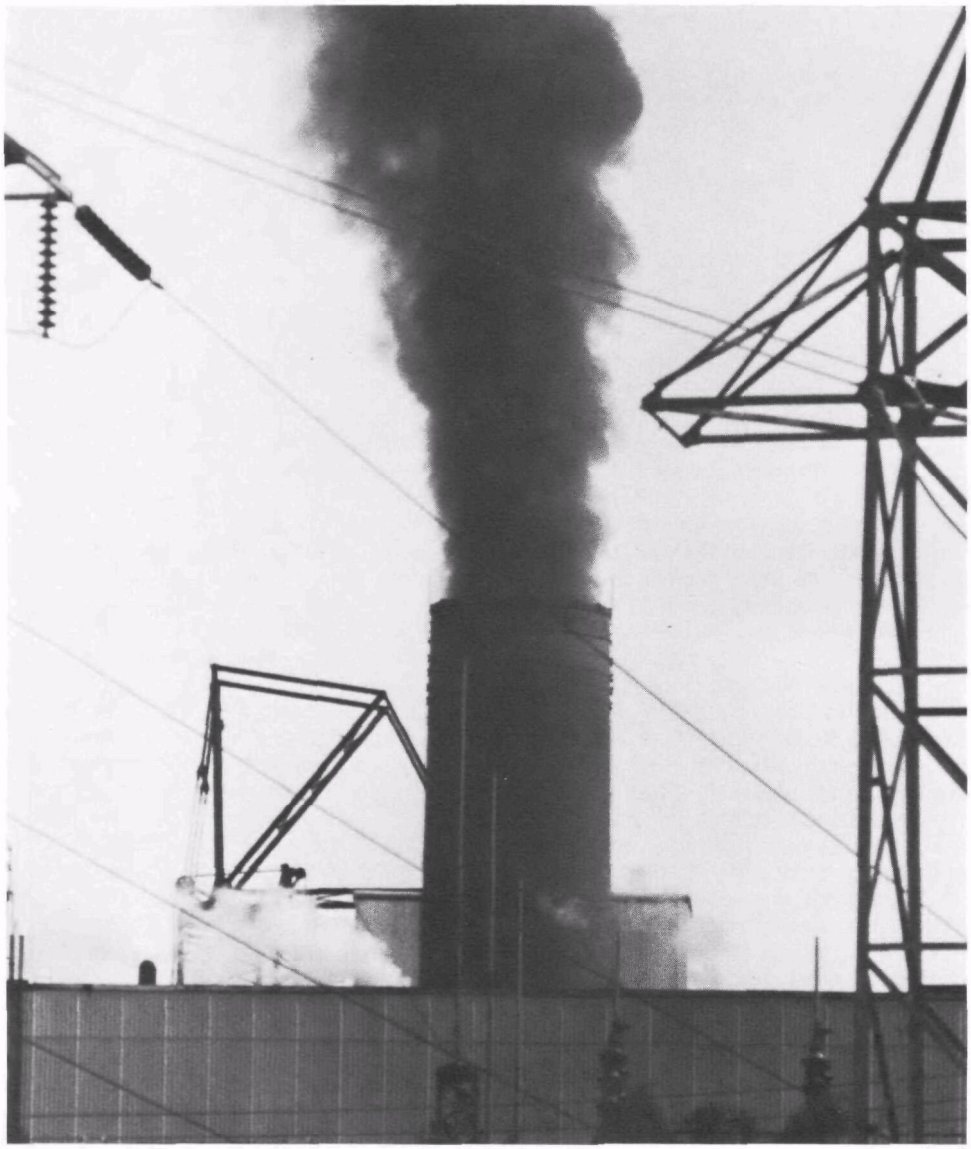
Most air pollution comes from *stationary sources*, such as factories, power plants, and smelters, or from *mobile sources*: automobiles, buses, trucks, locomotives, and airplanes.

To control pollution from mobile sources, the Clean Air Act and supporting regulations provide for automobile emission controls that have become more stringent as increasingly effective technology has developed. The use of catalytic converters and unleaded gasoline in newer model cars has been particularly important in achieving better air quality despite a continuing rise in the number of motor vehicles on the road.

To help ensure compliance with air quality standards by stationary sources, EPA sets *New Source Performance Standards* that limit emissions allowed from new industrial plants and existing plants that are substantially modified. By requiring uniform emission limits on new sources regardless of location, Congress has prevented air pollution controls from becoming a source of regional rivalry. Standards are now in effect for most major industries.

Since national performance standards apply only to new or modified plants, these controls generally are not adequate in themselves to assure acceptable air quality. State governments must therefore draw up and enforce *State Implementation Plans (SIPS)*, which spell out additional measures that will be undertaken to achieve acceptable air quality. Typically, these include controls on older industrial plants and other stationary sources of pollution, along with measures to cut back traffic volumes or in other ways reduce emissions related to motor vehicles. SIPS are subject to EPA approval. If a state plan is not acceptable, EPA is required to provide an implementation plan which the state must then enforce.

In recent years, the nation has seen a steady improvement in air quality. Since 1975 the ambient levels of all six criteria pollutants have decreased, in some cases dramatically. Ambient lead, for example, has dropped by 70 percent, largely due to the increasing use of unleaded gasoline. Particulate levels have decreased by 20



percent, ozone levels by 17 percent, and carbon monoxide levels by 36 percent. The interpretation of the decrease in the ozone levels between 1975 and 1984 is complicated by a calibration change for ozone measurements that occurred in the 1978-79 time period. In the post-ozone calibration period (1978 to 1984), ozone levels decreased 7 percent. Although nitrogen dioxide levels increased between 1975 and 1979, they began dropping in 1979. By 1984, ambient levels were 10 percent lower than in 1975 and well below the standard. The number of times that the standards were exceeded also dropped significantly during this time.

Protecting the Land

The numbers alone are overwhelming. We Americans discard billions of tons of solid waste every year, and we all want it to go somewhere else.

In the past, it usually did go away. The philosophy was "out of sight, out of mind." Through ignorance or carelessness, we literally dumped it anywhere, regardless of the consequences. Now we know that irresponsible disposal methods not only put off real solutions, but can cause severe health and environmental effects. Improper disposal, particularly of hazardous wastes, can contaminate surface and ground water and contribute to air pollution.

Congress recognized the serious problems associated with waste disposal as early as 1965, when the Solid Waste Disposal Act was passed. By the mid-1970s, however, it was clear that a more vigorous national effort was needed. In 1976, Congress enacted the *Resource Conservation and Recovery Act (RCRA)*, which authorized EPA to regulate current and future waste management and disposal practices. Congress was particularly concerned about the management of hazardous wastes, whose careless disposal we now have learned may lead to the contamination of entire neighborhoods and communities. At Love Canal in New York, for example, hazardous waste buried over a 25-year period contaminated ground and water and finally forced the evacuation of an entire neighborhood. In Times Beach, Missouri, oil contaminated with highly toxic dioxin was sprayed on roads, eventually leading to a federal "buyout" of all homes and businesses in the community.

RCRA can help prevent future Love Canals and similar tragedies, but it does not address a legacy of abandoned waste sites or emergencies created by spills or other releases of hazardous substances. To deal with these situations, Congress in 1980 passed the *Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, or "Superfund")*. CERCLA set up a trust fund of $1.6 billion dollars financed for the most part by a tax on chemical manufacturers over five years and gave EPA the authority to respond to hazardous substance releases which threaten human health and the environment. In 1986, the *Superfund Amendments and Reauthorization Act (SARA)* amended CERCLA and gave the Superfund program new responsibilities and authorities. In addition, Congress increased the size of the trust fund to $8.5 billion.

RCRA

Although RCRA has important provisions encouraging sound municipal disposal practices and resource recovery, EPA's major priority under the Act has been the development of "cradle-to-grave" regulations governing the generation, storage, transport, treatment, and disposal of hazardous wastes. These wastes include toxic substances, caustics, pesticides, and other flammable, corrosive, or explosive materials. EPA recently estimated that about 264 million tons of such wastes are produced every year. That amounts to more than one ton of waste for every man, woman, and child in the country.

To carry out RCRA's provisions, EPA is responsible for:

- Identifying the characteristics of hazardous wastes in general and identifying specific hazardous wastes.
- Enforcing compliance by the RCRA-regulated community and *requiring action to correct problems* found at operating facilities.
- Developing standards applicable to generators and transporters of hazardous wastes, and to operators of hazardous waste treatment, storage, and disposal facilities. Under these standards,

  - *generators* must identify the wastes they produce and report the means of treatment, storage, or disposal.

  - *transport* of such wastes is monitored through a *uniform manifest* system which ensures a verifiable record of the origin, route, and destination of each shipment.

  - *treatment, storage, and disposal* facilities must have permits to operate, and their design must be adequate to prevent dangerous waste from leaching through the soil and contaminating water sources. Active land disposal sites must be monitored constantly to prevent ground-water contamination; closed sites must be capped properly, as well as monitored. In addition, owners or operators of such facilities must demonstrate financial responsibility for damage occurring during active operations, and set aside funds for monitoring and maintenance after the site is closed.

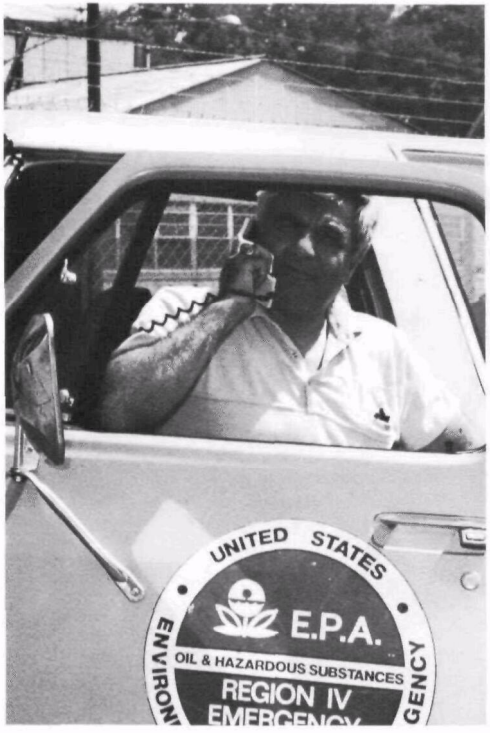
Another major goal under RCRA is to encourage states to develop comprehensive programs for managing non-hazardous solid waste, and every state now has a solid waste management agency. EPA has supported research and demonstration projects to stimulate promising new methods of waste disposal, resource/energy recovery, innovative technology, and waste minimization techniques. The Agency also has laid out guidelines for developing waste management plans, established criteria for classifying land disposal facilities according to their environmental acceptability, and published a national inventory of unacceptable facilities.

Underground Storage Tanks

Polluted ground water, contaminated soil, explosions, and fire all can be attributed to what has been described as "little time bombs ticking"—underground storage tanks. In the 1950s, fire departments began to require that tanks storing volatile liquids be buried to reduce the risk of explosion and fire. But what we didn't know was that another risk was being created that would cause far-reaching damage to human health and the environment. Leaking underground storage tanks have been identified as a major source of ground-water contamination. EPA estimates there are three to five million tanks in the United States containing petroleum products or other hazardous substances. Thousands are thought to be leaking now and many more will begin to leak in the next five to 10 years. Because half our population depends on ground water as a source of drinking water, the underground storage tank problem has been recognized as one of national significance requiring federal legislation.

In 1984, Congress amended RCRA. The revised law required EPA to develop and implement a comprehensive regulatory program for underground storage tanks. The Agency will issue regulations in 1988 addressing leak detection, corrective action requirements, standards for new tanks, and other proper tank management practices. The new regulations will also include requirements for tank owners or operators who will have to show they have insurance or other financial resources to pay for damage done by leaking underground tanks.

Further RCRA amendments in 1986 provided federal funds to clean up petroleum leaks from underground tanks in certain circumstances. The Trust Fund is financed by a tax on motor fuels which will raise $500 million over the next five years. EPA is authorized to use Trust Fund money for emergency cleanups when federal action is necessary. However, the Agency intends to develop cooperative agreements whereby the states carry out the cleanups under the Trust Fund.



Superfund

Superfund authorizes EPA to respond immediately to situations or sites that pose a danger to human health or the environment. While some emergencies occur because of accidents in the handling, transporting, or storing of hazardous wastes, the vast majority of hazardous waste emergencies are the result of improper or uncontrolled disposal practices in the past. EPA currently has an inventory of 25,000 sites which have been identified for potential Superfund actions and estimates that the inventory will continue to expand.

The Agency has the authority to take immediate actions, commonly known as *removal* actions, where a situation or site poses an imminent threat. Common types of removal situations may include, but are not limited to:

- Spills of hazardous materials when a truck or train is involved in an accident.
- Discharges of hazardous materials into the air or water during a fire.
- Improper handling or disposal of hazardous materials at landfills or industrial areas.

A removal action is a short-term response intended to stabilize or clean up after an incident or at a site which poses a threat to human health or the environment. Removal actions can include removing or disposing of materials, fencing an area to restrict access, or temporarily relocating residents. The primary objective of removal actions is to bring the situation under control by stabilizing or stopping the release of hazardous substances. The law ordinarily limits removal actions to twelve months and a total cost of $2 million.

The Agency also has the authority under the Superfund program to take long-term cleanup actions at a site. This is known as a *remedial action*. Remedial actions are permitted only at sites identified on EPA's National Priorities List (NPL). This is the Agency's list of hazardous waste sites chosen for possible long-term remedial actions. More than 700 sites in 48 states and five territories have been made eligible for remedial actions by being listed on the NPL. EPA often conducts both removal and remedial actions at the same NPL sites. Immediate removal actions may be required during a remedial action if an immediate threat is discovered during the course of the cleanup work.

Under the Superfund remedial program, EPA initiates long-term cleanup actions to stop or substantially reduce hazardous material releases, or threats of such releases, that are serious but not immediately threatening. Potential NPL sites are discovered through such sources as routine reporting, routine site inspections, and by citizen reports. Once a potential site is identified, EPA or state officials conduct a *preliminary assessment* by reviewing available documents about the site. A *site inspection* will be conducted to gather additional information if a potential problem does exist. Based on information obtained from the site inspection, EPA uses its to compare the potential risk posed by the site to risks posed by other sites throughout the nation. Those sites with high enough scores are placed on the National Priorities List.

Once a facility has been placed on the NPL, EPA can conduct a more comprehensive site investigation. A *remedial investigation and feasibility study (RI/FS)* is conducted to determine the nature of the problem and to evaluate alternative methods for cleaning up the site. During such an investigation, EPA or the state collects and analyzes information needed to determine the extent and nature of the contamination. The feasibility study follows, to identify specific alternative remedies which will be evaluated by EPA, responsible parties, and the general public. EPA, with state concurrence, selects a remedy for the site which meets the statutory requirements of CERCLA and the *National Contingency Plan (NCP)*, the federal regulation that guides the Superfund program. Design of the remedy and construction activities are conducted under the supervision of EPA and the Army Corps of Engineers, or a state can manage all site activities on its own.

EPA encourages private parties who are responsible for hazardous waste sites to clean up those sites voluntarily, with government oversight of the cleanup activities. If the responsible parties are unwilling to do this, EPA will issue an administrative order or take them to court to require them to clean up the site. If the responsible parties ignore an EPA cleanup order, and EPA must conduct the cleanup, they may be liable for punitive damages up to triple the costs of federal remedial work. If those responsible are unknown, EPA and the states will do the work.

States play a number of important roles in toxic waste management. When EPA and the states perform cleanup work, the state contributes 10 percent of the costs for work at privately-owned facilities, or 50 percent if the facilities are operated by the state or by a political subdivision within the state. In addition to cost-sharing, states are involved in site selection, establishing cleanup priorities, and selecting the cleanup methods to be used in remedial actions. Remedies must also meet state-promulgated requirements when such requirements are stricter than federal standards. States must also provide adequate capacity for the management of hazardous wastes generated within their boundaries. By 1989, each state must be able to assure EPA that it has the capacity to dispose of all hazardous wastes for the next 20 years or face the loss of federal funds for future remedial actions.

Both RCRA and Superfund activities tend to generate intense public interest and involvement. Congress has been careful to protect the interests of affected citizens by including specific *public participation* requirements in the enabling statutes. Public participation means that the public is given an opportunity to understand clearly the programs and actions proposed, that ample opportunity is provided for citizens to air their views, and that officials respond substantively and in a timely fashion to public concerns. RCRA legislation, for example, requires EPA and the states to assist and encourage public participation in the development, revision, implementation, and enforcement of actions taken under its authority. A key aspect of any Superfund response is ensuring that local citizens' and officials' concerns are taken into account and that information about the site is widely distributed.

Part of EPA's Air Toxics Strategy deals with accidental releases of toxics into the atmosphere. The Agency's Chemical Emergency Preparedness Program (CEPP) provides guidance, training, and technical assistance to states and local communities to help them identify chemical hazards and meet their responsibilities in preparing for and responding to chemical emergencies. When Superfund was reauthorized Congress enacted the *Emergency Planning and Community Right-to-Know Act of 1986* along with the Superfund Amendments and Reauthorization Act. Title III of the Act contains requirements for federal, state, and local governments and industry related to emergency planning, emergency notification and "community right-to-know" reporting on hazardous chemicals. These requirements include right-to-know provisions allowing the public to obtain information about the presence of hazardous chemicals in the community and releases of such into the environment.

Pesticides

Pesticides are chemical or biological substances used to control unwanted plants, insects, fungi, rodents, or bacteria. They include insecticides, herbicides, fungicides, rodenticides, fumigants, disinfectants, and plant growth regulators. While pesticide use has contributed to increased agricultural production and improved public health through control of disease-carrying pests, acute and chronic human health and environmental risks also can be associated with the use of many of these chemicals. In determining whether to permit the marketing of a pesticide and how to regulate its use, EPA balances such potential risks against the benefits that may be derived from use of the chemical.

Over 45,000 pesticide products are registered by EPA for use in the United States. Yearly production is approximately 1.1 billion pounds, costing $6.6 billion. About 77 percent of all pesticides used in this country are applied in agricultural production, 7 percent in home and garden settings, and the remaining 16 percent in forestry, industry, and government programs.

EPA's regulation of pesticides is mandated by Congress. Through its Office of Pesticide Programs (OPP), the Agency administers two statutes:

- The *Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)*, last amended in 1980, governs the licensing or "registration" of pesticide products.
- The *Federal Food, Drug, and Cosmetic Act (FFDCA)*, among other things, governs pesticide residue levels in food or feed crops.

FIFRA

FIFRA was originally enacted in 1947, when it replaced the *Federal Insecticide Act of 1910*. Congress has amended FIFRA several times since then, most importantly in 1972 when the emphasis in pesticide regulation was shifted from ensuring the efficacy of pesticide products to protecting public health and the environment. EPA has administered FIFRA since 1970 when it took over the responsibility from the U.S. Department of Agriculture.

EPA is responsible under FIFRA for *registering* new pesticides to ensure that, when used according to label directions, they will not present *unreasonable* risks to human health or the environment. The law requires the Agency to take into account economic, social, and environmental costs and benefits when making such decisions. This balancing of risks and benefits underlies all basic regulatory decisions under the Act.

Pesticide registration is a pre-market review and licensing program for all pesticides marketed in the United States, whether of domestic or foreign origin. Registration decisions for new pesticides are based on evaluation of test data (provided by registrants) which show whether a pesticide has the potential to cause adverse effects in humans or the environment. Potential human risks include poisoning, skin and eye irritation, cancer, birth defects, or reproductive system disorders. Data on "environmental fate," or how a pesticide behaves in the environment, are also required so EPA can determine, among other things, whether a pesticide poses a threat to non-target species (species other than those it is meant to control) or ground water.

Through its "reregistration" process, EPA also examines pesticides registered prior to current regulatory requirements to assure that these chemicals meet the same "no unreasonable adverse effects" criteria that apply to new pesticides. Whenever new data on an old pesticide indicate that it may be presenting unreasonable risks, EPA initiates a public "special review" to determine whether regulatory action is warranted. At the conclusion of a special review, EPA may decide to continue, restrict, or cancel the uses under consideration.

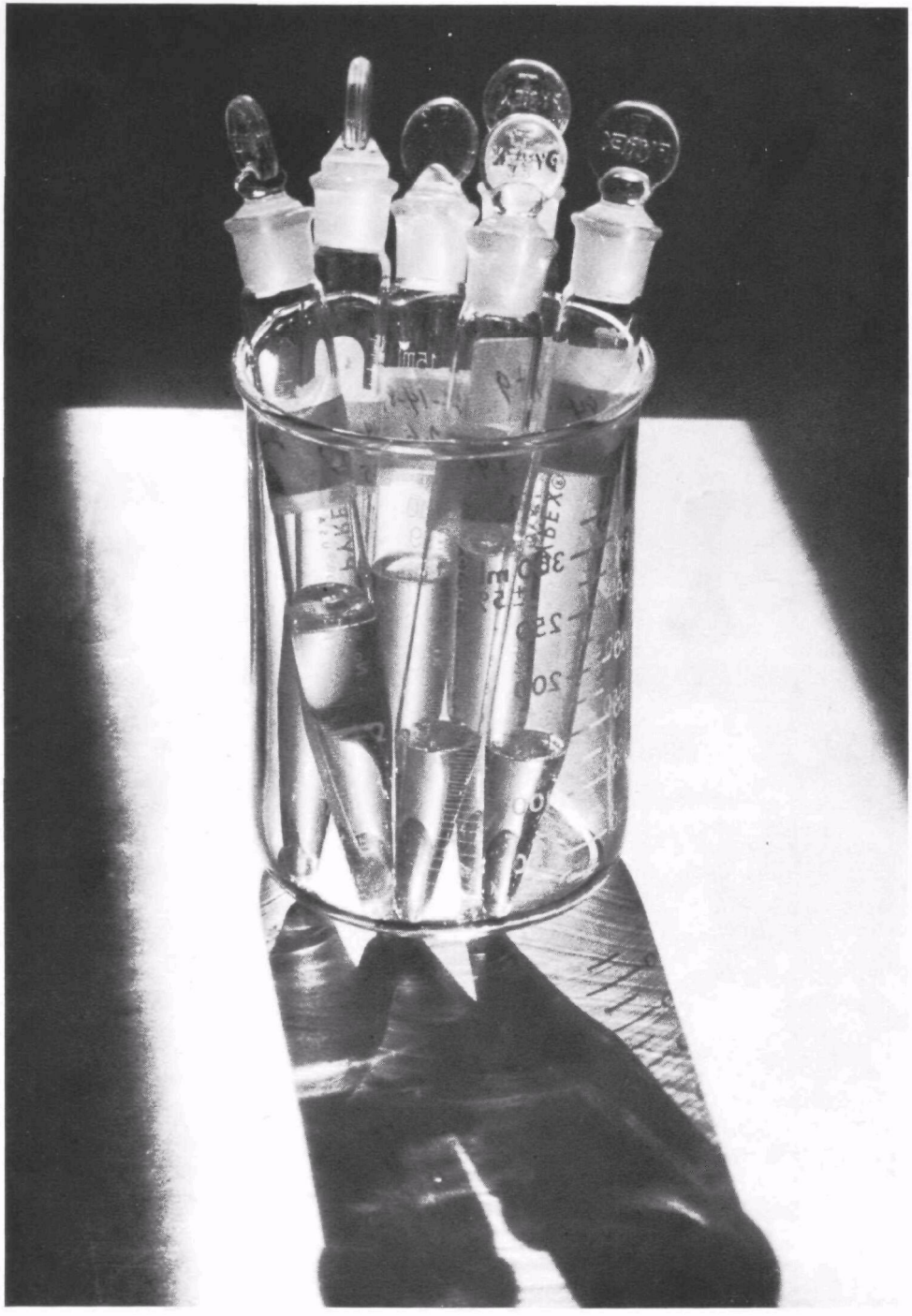
Additionally, EPA has the authority to classify certain pesticide products for *restricted use*. While most pesticide products can be used safely by anyone, provided label directions, restrictions, and precautions are carefully observed, restricted use pesticides pose potentially serious hazards to applicators or the environment, so they may be used only by persons who are trained, *certified applicators*.

FIFRA includes provisions for: monitoring the distribution and use of pesticides; issuing civil as well as criminal penalties for violations; "cooperative enforcement agreements" between EPA and the states; and a certification and training program for applicators that qualifies them to use chemicals classified for restricted use. Primary enforcement for pesticide violations is now carried out by the states, subject to oversight by EPA.

FFDCA

Under the FFDCA, EPA sets tolerances, or maximum legal limits, for pesticide residues on food commodities and feed grains marketed in the United States. The purpose of the tolerance program is to ensure that U.S. consumers are not exposed to unsafe pesticide levels on or in their food.

The Agency establishes a tolerance only if residue chemistry and toxicological data indicate that no unreasonable risk to consumers will result. Tolerances are set at levels no higher than necessary to permit marketing of treated commodities. The Food and Drug Administration and the U.S. Department of Agriculture are responsible for enforcing tolerances for food and feed commodities in interstate commerce. Any domestic or imported commodities with residues in excess of U.S. tolerance levels are subject to seizure and destruction.



Toxic Substances

Chemicals are a vital part of our lives, and most of them are not dangerous to our health or the environment if used properly. But some are toxic substances that even in minute amounts can cause death, disease, genetic damage, or severe environmental harm. Toxic substances include a number of manufactured chemicals, as well as naturally-occurring heavy metals and other materials. The damage already caused by uncontrolled releases of these substances has been enormous. Polychlorinated biphenyls (PCBs), dioxin, and asbestos are now among the toxic materials whose common use in earlier years has left a legacy of contamination that plagues wide areas of the country today.

To provide a safeguard against the introduction of additional contaminants to our environment and to address the risks posed by existing chemicals, Congress, in 1976, passed the *Toxic Substances Control Act (TSCA)*. TSCA is intended to identify and control chemicals that pose an unreasonable risk to human health or the environment through their manufacture, processing, commercial distribution, use, or disposal. (Eight categories of chemical products are exempt from TSCA because they are regulated under other laws. These include pesticides, tobacco, nuclear materials, firearms and ammunition, food, food additives, drugs, and cosmetics.)

One of EPA's major regulatory tools under TSCA is its authority to screen new chemicals through the *premanufacture notification* process. Manufacturers are required to notify EPA at least 90 days before producing or importing a new chemical substance. This enables the Agency to assess the potential risks of a

new chemical before manufacture begins. If a chemical substance is suspected of posing an unreasonable risk, but key data are missing, EPA may require manufacturers to test the substance for toxicity, cancer-causing potential, reproductive effects, or other characteristics. In addition, an Interagency Testing Committee of government experts advises EPA if certain chemicals should be tested. Chemicals deemed to be harmful may be regulated in a number of ways, ranging from labeling requirements to outright bans on the manufacture or use of especially hazardous substances. If appropriate, EPA may also refer chemicals to other federal agencies with regulatory responsibility over toxic chemicals. These agencies include the Occupational Safety and Health Administration; the Food and Drug Administration; the Consumer Product Safety Commission; and the Food Safety and Quality Service of the Department of Agriculture.

TSCA also requires EPA to develop and keep current a comprehensive *chemical inventory*. This inventory, which is based on information submitted by chemical manufacturers, processors, and importers, presents an overall picture of the chemicals used for commercial purposes in the U.S. (Although there are well over four million known chemical compounds, most of these are used only in research and development. TSCA is applicable only to those chemicals in commercial use.) Chemicals not on the inventory must be reviewed by EPA before they can be manufactured in or imported into the U.S.

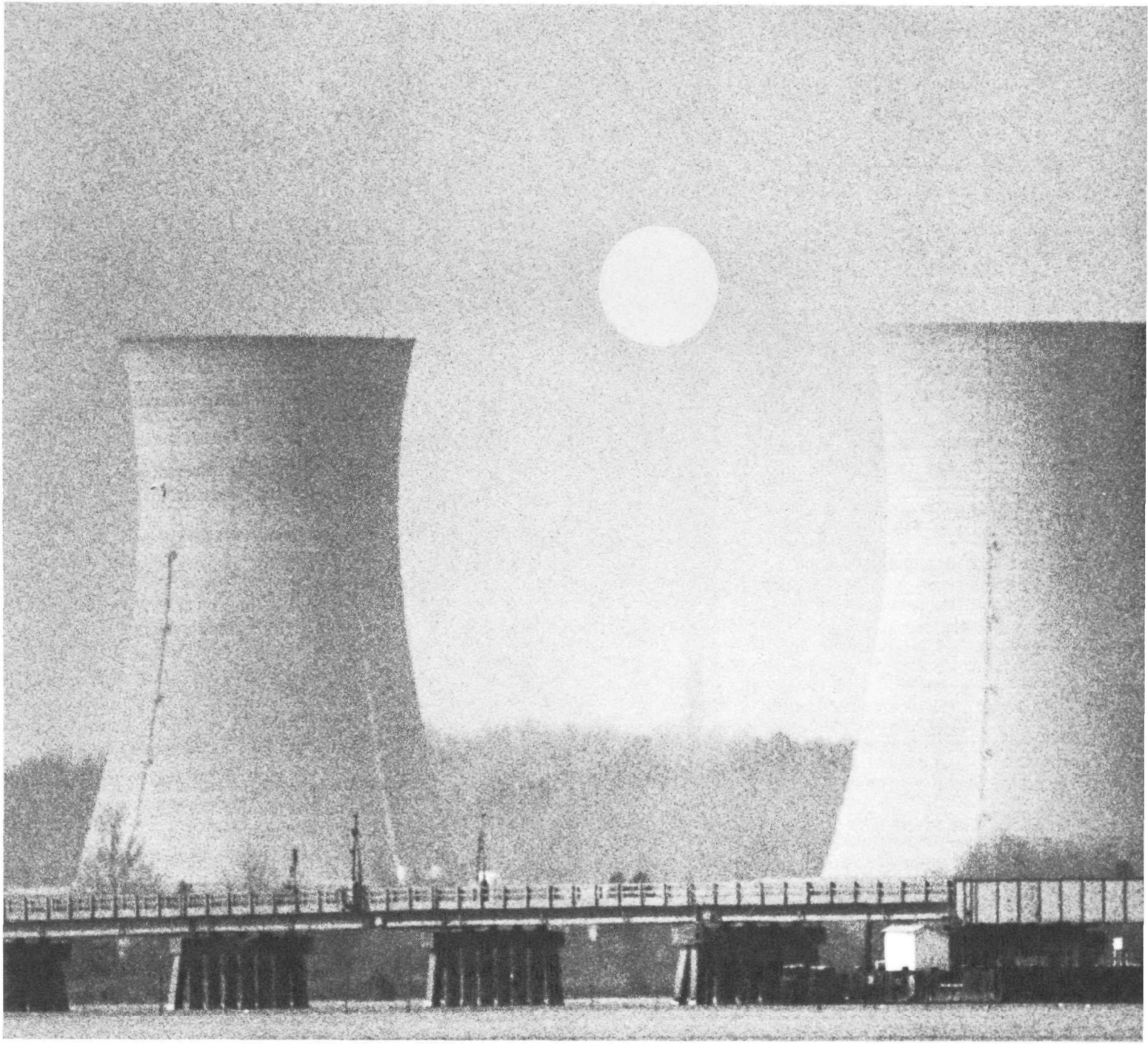
In addition to keeping its own chemical inventory, EPA also requires the chemical industry to report and keep records on the manufacture, processing, use, and disposal of chemical substances, the by-products generated by manufacture, the number of people exposed in the workplace, and other relevant information, including all *significant adverse reactions* to health and the environment alleged to have been caused by a chemical. Industry also must report to EPA any information that indicates that a chemical substance or mixture presents a risk to health or the environment. These reporting requirements enable EPA to monitor the actual environmental and health effects of a substance, and to take further action if necessary.

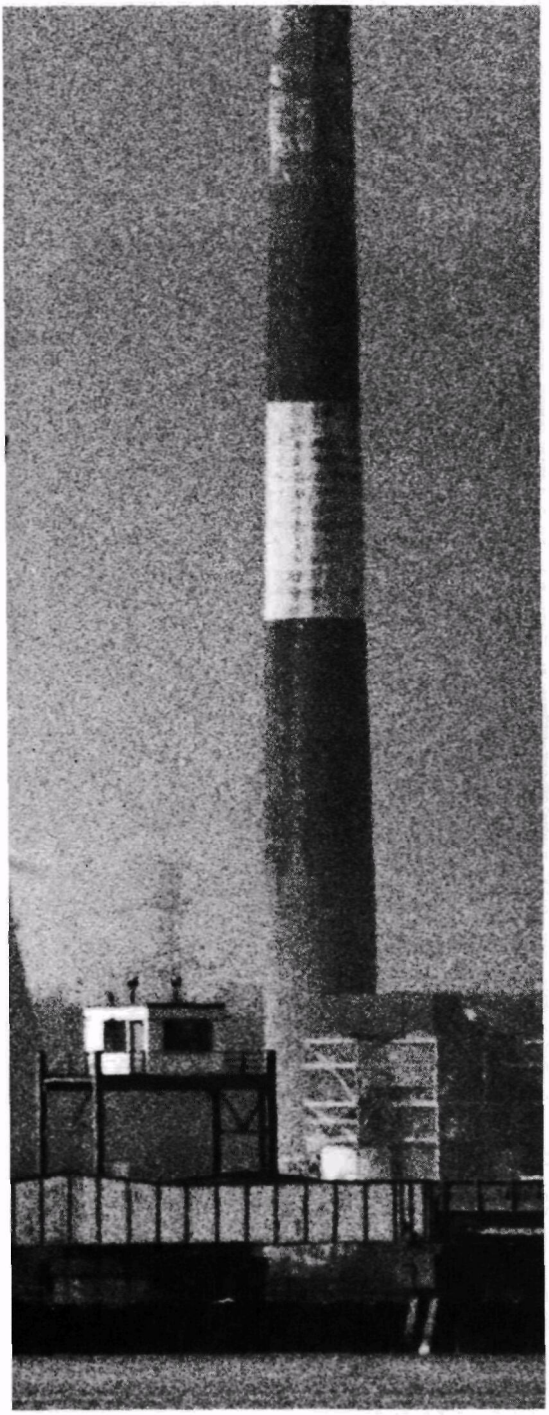
Another of EPA's concerns is to ensure consistency in evaluating chemical hazards, both within and outside the Agency. The *Good Laboratory Practices* standards assure that test data submitted to EPA conform with requirements for administration of testing labs, the control and management of laboratory test animals, the documentation of tests, and the handling of test data. In addition, EPA works closely with the 24-nation Organization for Economic Cooperation and Development to develop uniform chemical testing guidelines.

Some toxic substances require special attention because they are so widespread in the environment or because they pose serious health threats even at extremely low levels of contamination. Particularly troublesome substances include polychlorinated biphenyls (PCBs), asbestos, and dioxin. PCBs, for example, were widely used for about 50 years because of their heat resistant properties. So persistent is this group of chemicals that everyone in this country likely has trace levels of it in their bodies now. Further production of PCBs was banned specifically by TSCA because these substances were found to cause adverse reproductive effects, skin lesions, developmental effects, and tumors.

Another substance of concern is asbestos, which when inhaled by human beings causes lung cancer and mesothelioma, a cancer of the membranes lining the chest and abdomen. These effects may take many years to show up, depending on the degree and length of exposure. Asbestos frequently was used in buildings as a fire retardant, and in many cases has started to crumble and be released into the air. Because many school buildings used asbestos, hazards to children are a particular concern. EPA's school asbestos rule, issued in May of 1982, requires all elementary and secondary school administrators to have their buildings inspected for *friable* asbestos, notify parents and employees of any asbestos detected, and maintain records certifying compliance with the rule. (Friable materials are those that, when dry, may be crumbled, pulverized, or reduced to powder by hand pressure.)

EPA also is using its authorities under both TSCA and FIFRA to keep a close watch on developments in biotechnology. Biotechnology is the use of biological processes to produce chemicals or living organisms for commercial use. The agency is focusing particularly on plans to use naturally occurring organisms in new ways or in non-indigenous habitats, and on attempts to manufacture and use genetically altered microorganisms.





Radiation

Ionizing radiation can be a serious environmental contaminant. Sources of this form of radiation include uranium mining and milling, nuclear power wastes, and radioactive materials used in medicine. The health effects of non-ionizing, electromagnetic radiation —such as radio-frequency waves and radiation from high voltage power lines—are not as well understood, but they, too, may be hazardous.

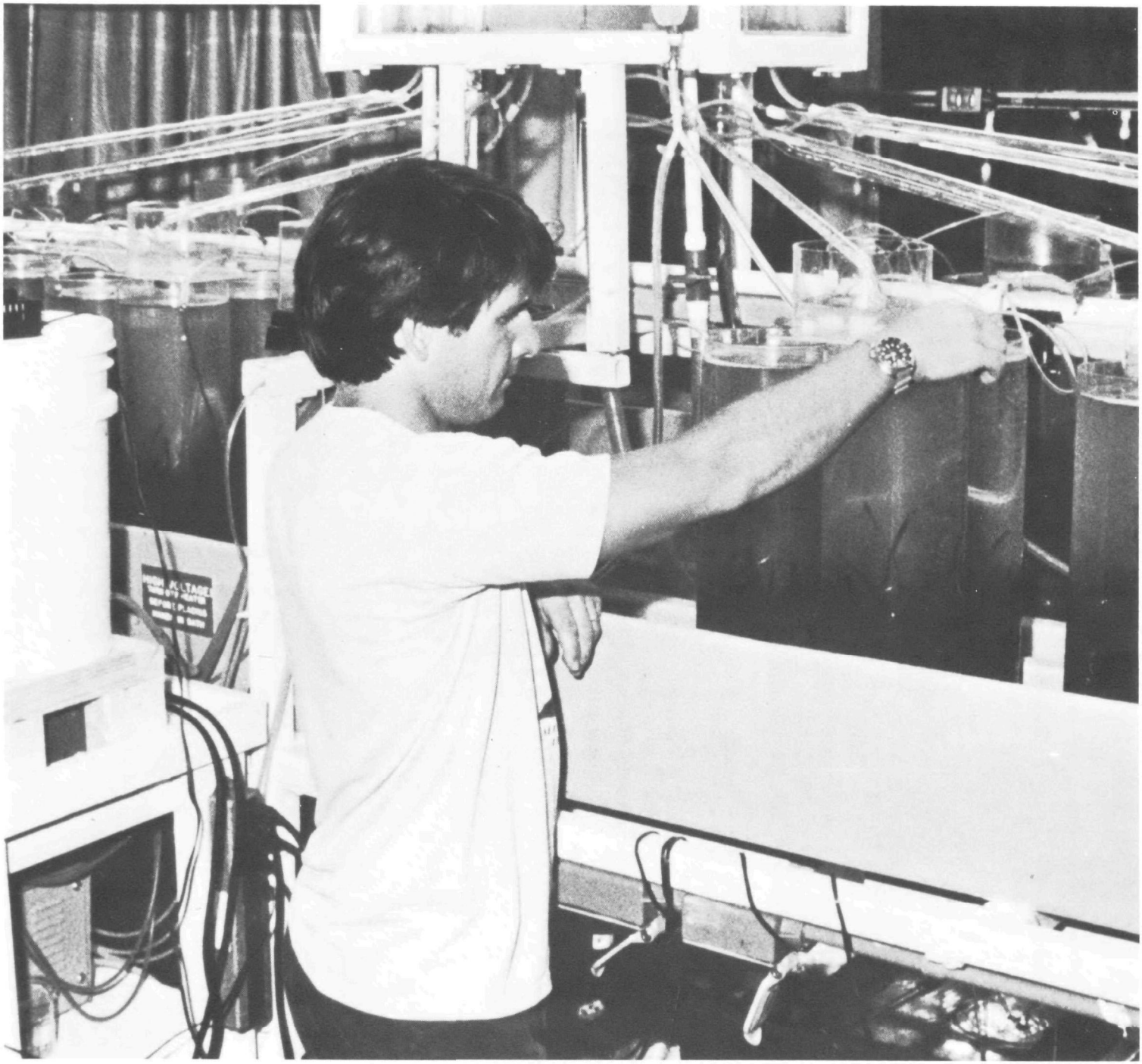
A number of federal agencies, including EPA, are responsible for protecting the public from unnecessary exposure. EPA received its authority in this area under the Atomic Energy Act of 1954, the Public Health Service Act of 1962, the Safe Drinking Water Act of 1974, the Clean Air Act Amendments of 1977, the Uranium Mill Tailings Radiation Control Act of 1978, the Marine Protection, Research, and Sanctuaries Act, the Clean Water Act, the Nuclear Waste Policy of 1982, and the Comprehensive Environmental Response Compensation, and Liability Act. The Agency's major responsibilities are to set radiation guidelines, to assess new technology, and to monitor radiation in the environment.

To protect the public from environmental exposure to excessive radiation, EPA has set standards limiting releases from nuclear power plants, from mill tailings at active and inactive uranium processing sites, from licensed uranium mills, from underground uranium mines, and from radionuclides in drinking water. EPA has also limited releases of airborne radionuclides from some other major sources. The Agency has set standards for the disposal of high-level radioactive waste and is developing standards for low-level waste. EPA has developed federal guidance on the medical use of X-rays. It has also proposed guidance for exposure to radiofrequency radiation and completed work on guidance for occupational exposure to ionizing radiation. The Agency is studying approaches to cleaning up residual radiation at decommissioned nuclear facilities and is developing guidance for protective action in nuclear accidents.

Additionally, the Agency has implemented a national program to deal with the emerging problem of indoor radon. The program will develop methods to more accurately characterize the problem, and will develop and disseminate information on methods of reducing radon exposure in existing and future structures.

EPA also participates in planning responses to radiological emergencies. The Agency is prepared to provide field-monitoring help to other federal agencies, as well as state and local governments, in the event of an emergency at a nuclear facility.

Finally, EPA monitors radiation in the environment through a network of 268 stations that sample surface and drinking water, air, precipitation, and milk. The monitoring data are used to identify trends in environmental radiation levels, to establish ambient levels of radioactivity, and to assess actions needed to protect the public.



Research and Development

Protecting people from environmental hazard is a complex task, made all the harder because many actions must be taken on the basis of incomplete scientific information. To maintain public trust in EPA's decisions, it is essential that the Agency's decision makers objectively interpret and work with the best available scientific data.

EPA's research office provides these data—for the most part—in six major research areas: engineering and technology; environmental processes and effects; monitoring systems and quality assurance; health effects; health and environmental assessment; and exploratory research.

Research in *environmental engineering and technology* assesses pollution from industrial and municipal sources, and analyzes alternative control technologies. Examples of research include exploring innovative techniques for removing and disposing of pollutants, and developing cost-effective methods of providing safe drinking water.

Environmental processes and effects research seeks to develop the data necessary for predicting and managing the movement of pollutants through the environment and for determining their effects on ecosystems and nonhuman organisms. Research within this area also develops mathematical models relating pollution emissions to air quality.

Through its research in *monitoring systems and quality assurance*, EPA develops methods to measure and monitor pollutants, as well as ensure that these measurements are accurate and follow standardized procedures.

Health effects research provides the data needed to accurately estimate human mortality and illness caused by pollutants. Research facilities include one of the nation's few facilities capable of testing human exposure, and research areas include developing data on dose-responses and methods of using such data to estimate human health effects.

A major factor in EPA's regulatory decisions is the Agency's determination of the hazard posed by various pollutants. EPA's *health and environmental assessment* research includes an effort to provide an integrated, scientific foundation for evaluating the health and environmental effects stemming from exposure to a substance and for determining the risks of such exposure.

EPA also needs to anticipate environmental problems and issues. The *exploratory research* program assesses potential environmental trends and funds research to meet needs for basic scientific knowledge. EPA has 14 research laboratories and several field stations to carry out its in-house research, and this capability is extended through grants, cooperative agreements, and research contracts with universities and other private institutions. The Agency's largest research centers are in Research Triangle Park, NC, and Cincinnati, OH. Appendix II lists EPA research laboratories.

EPA also relies on its Science Advisory Board for technical advice and review. This Board is a panel of eminent non-EPA scientists established by Congress to advise the Agency on scientific issues and review the quality of EPA scientific research.

Enforcement of Environmental Laws

EPA's mission is to protect human health and the environment. That's the goal of its hundreds of complicated regulations. In most cases, the regulated community complies with these requirements. But when regulated entities fail to comply voluntarily, EPA, in partnership with cooperating state agencies, can take a number of actions. Enforcement activities may take the form of compliance promotion, administrative money penalties, negotiated compliance schedules, and ultimately, judicial enforcement involving criminal proceedings in federal court.

Judicial enforcement is only one of the tools that EPA and the states use for inducing compliance, but it is a very important one. Not the least of its virtues is its deterrence value. By seeking and winning large financial and criminal penalties against significant violators, the Agency seeks to remove any incentives for non-compliance. EPA will seek penalties at least as large as the gain a company may have realized by violating the law. A major objective is to ensure that violators are not inclined to consider fines simply as a cost of doing business. More and more, the courts have shown they are willing to punish willful polluters with stiff civil penalities or with criminal convictions, substantial fines, and prison sentences.

To support these enforcement efforts, EPA maintains a National Enforcement Investigations Center in Denver, CO. The Center's combination of laboratory, investigative, and engineering skills is often instrumental in developing the solid evidence that enables EPA to win its cases in court.

Another key component in the Agency's enforcement effort is the work of its criminal investigation unit. Because of their specialized training in criminal law enforcement techniques, these investigators have been successful in cracking down on illegal discharges into waterways, "midnight dumping" of toxic substances, and the deliberate destruction or falsification of vital test results or environmental reports.

Enforcing environmental laws and regulations often calls for close cooperation among EPA, its regional offices, the U.S. Justice Department, and myriad state and local agencies. All have an important role in achieving significant improvements in environmental quality.

Appendix I: EPA Regional Offices

EPA Region 1
JFK Federal Building
Boston, MA 02203
(617) 565-3715

Connecticut, Massachusetts, Maine, New Hampshire, Rhode Island, Vermont

EPA Region 2
26 Federal Plaza
New York, NY 10278
(212) 264-2515

New Jersey, New York, Puerto Rico, Virgin Islands

Field Component
Caribbean Field Office
P.O. Box 792
San Juan, PR 00909
(809) 725-7825

EPA Region 3
841 Chestnut Street
Philadelphia, PA 19107
(215) 597-9800

Delaware, Maryland, Pennsylvania, Virginia, West Virginia, District of Columbia

EPA Region 4
345 Courtland Street NE
Atlanta, GA 30365
(404) 347-4727

Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee

EPA Region 5
230 South Dearborn Street
Chicago, IL 60604
(312) 353-2000

Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin

Field Component
Eastern District Office
25089 Center Ridge Road
West Lake, OH 44145
(216) 835-5200

EPA Region 6
1445 Ross Avenue
Dallas, TX 75202
(214) 655-2200

Arkansas, Louisiana, New Mexico, Oklahoma, Texas

EPA Region 7
726 Minnesota Avenue
Kansas City, KS 66101
(913) 236-2800

Iowa, Kansas, Missouri, Nebraska

EPA Region 8
One Denver Place
999 18th Street
Denver, CO, 80202-2413
(303) 293-1603

Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming

EPA Region 9
215 Fremont Street
San Francisco, CA 94105
(415) 974-8071

Arizona, California, Hawaii, Nevada, American Samoa, Guam, Trust Territories of the Pacific

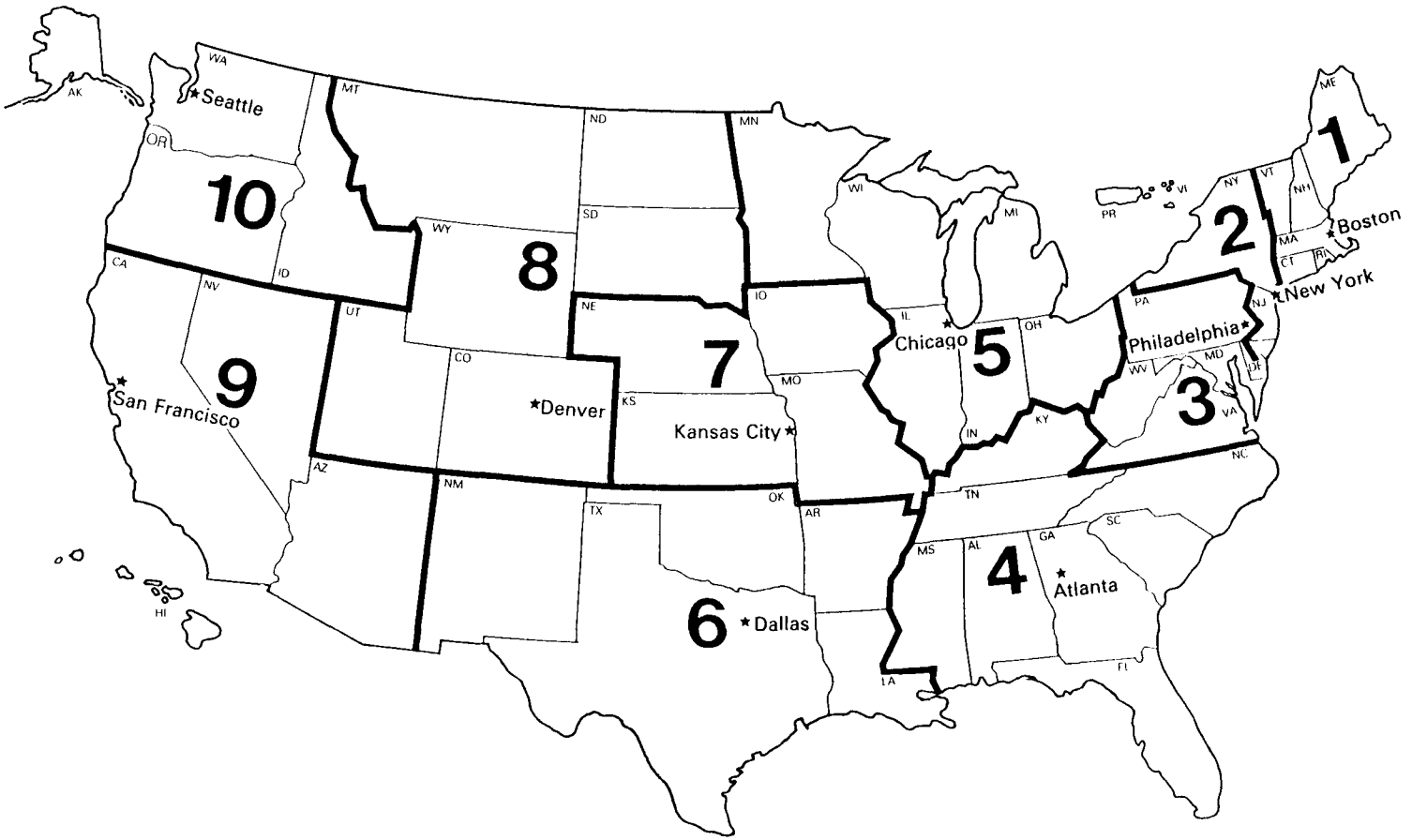
Field Component
Pacific Islands Office
P.O. Box 50003
300 Ala Moana Boulevard
Room 1302
Honolulu, HI 96850
(800) 546-8910

EPA Region 10
1200 Sixth Avenue
Seattle, WA 98101
(206) 442-5810
Alaska, Idaho, Oregon, Washington

Field Components
Alaska Operations Office
Room E556, Federal Building
701 C Street
Anchorage, AK 99513
(907) 271-5083

Alaska Operations Office
3200 Hospital Drive
Juneau, AK 99801
(907) 586-7619
(907) 586-7619

Idaho Operations Office
422 West Washington Street,
Boise, ID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VA
MD
DE
NJ
PA
NY
CT
RI
MA
VT
NH
ME
PR
VI

Appendix II: EPA Research Facilities

Research Facilities Operated by ORD

Environmental Research Laboratory
South Ferry Road
Narragansett, RI, 02882
(401) 789-1071

Pacific Division
Hatfield Marine Science Center
Newport, OR, 97365
(503) 867-4041

Environmental Monitoring Systems Laboratory
Research Triangle Park, NC 27711
(919) 541-2106

Atmospheric Sciences Research Laboratory
Research Triangle Park, NC 27711
(919) 541-2191

Air and Energy Engineering Research Laboratory
Research Triangle Park, NC 27711
(919) 541-2821

Health Effects Research Laboratory
Research Triangle Park, NC 27711
(919) 541-2281

Toxicology and Microbiology Division
Cincinanati, OH
(513) 569-7401

Environmental Research Laboratory
College Station Road
Athens, Georgia
(404) 546-3134

Environmental Research Laboratory
Sabine Island
Gulf Breeze, FL 32561
(904) 932-5311

Environmental Monitoring and Support Laboratory
Cincinnati, OH 45268
(513) 569-7301

Hazardous Waste Engineering Research Laboratory
Cincinnati, OH 45268
(513) 569-7418

Releases Control Branch
Woodbridge Avenue
Edison, NJ 08837
(201) 321-6635

Water Engineering Research Laboratory
Cincinnati, OH 45268
(513) 569-7951

Robert S. Kerr Environmental Research Laboratory
PO Box 1198
Ada, OK 74820
(405) 332-8800

Environmental Research Laboratory
6201 Congdon Boulevard
Duluth, MN 55804
(218) 720-5550

Large Lakes Research Station
9311 Groh Road
Grosse Ile, MI 48138
(313) 675-5000

Monticello Environmental Research Station
P.O. Box 500
Monticello, MN 55362
(612) 295-5145

Environmental Monitoring Systems Laboratory
P.O. Box 15027
Las Vegas, NV 89114
(702) 798-2100

Environmental Photographic Interpretation Center
Vint Hill Farms Station
P.O. Box 1587, Building 166
Warrenton, VA 22186
(703) 347-6224

Environmental Research Laboratory
200 SW 35th Street
Corvallis, OR 97333
(503) 757-4601

Other EPA Research Facilities:

Analytical Chemistry Laboratory
Building 402, ARC East
Beltsville, MD 20705
(301) 344-2187

Eastern Environmental Radiation Facilities
1908 Federal Drive
PO Box 3009
Montgomery, AL 36193
(205) 272-3402

Environmental Chemistry Laboratory
Building 1105
NSTL, MS 39529
(601) 688-3212

Center for Environmental Research Information
Cincinnati, OH 45268
(513) 569-7391

National Enforcement Investigations Center
Building 53, Box 25227
Denver, CO 80225
(303) 236-5100

Manchester Laboratory
PO Box 549
Manchester, WA 98353
(206) 442-0370