



Waste Policy Challenges Growth Policy

by Wallace Kaufman

“Hazardous wastes.” In the last five years, the headline has jumped across the front pages of newspapers around the nation. In Virginia, the chemical kepone caused sterility among men who worked with it, and when discharged into the James River it killed the fish. In the Niagara Falls neighborhood called Love Canal, women gave birth to children with deformities, leading to the discovery of a chemical waste dump nearby. At Three Mile Island in Pennsylvania, residents were exposed to low levels of radioactivity when a leak developed at a nuclear power plant. In California, men who worked with the chemical DBCP became sterile. And in North Carolina, a trucking firm illegally dumped polychlorinated biphenyls (PCBs) onto 210 miles of rural roads from Halifax County to Randolph County, endangering crops, livestock, and drinking wells.

Because names like polychlorinated biphenyls

Signs like this one dot N.C. Highway 210 in Johnston County, only a few yards from some front porches.

Photo by Paul Cooper

have recently received wide publicity, the control and disposal of hazardous wastes seems like an alarming new environmental problem. The standard government definition of a hazardous waste, however, applies to many chemicals that have been part of technology in the home, on the farm, and in industry for centuries. In the Roman Empire, for example, lead pipes and glazes poisoned people. In Mesopotamia, excessive nitrates from cattle and goat manure are thought to have contaminated urban drinking wells, weakening city

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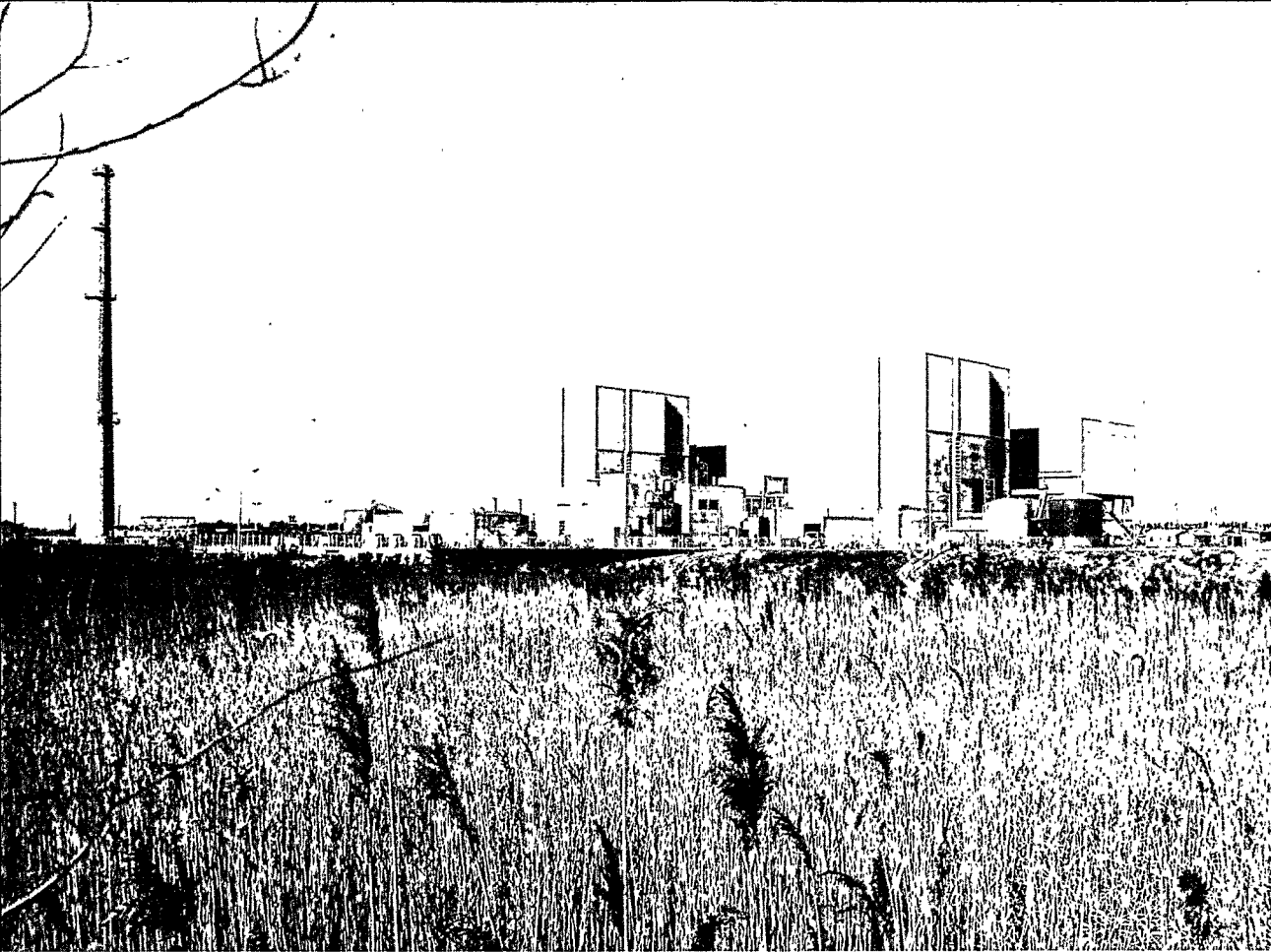


Photo courtesy of Carolina Power & Light Co.

dwellers. Arsenic was introduced as a pesticide in this country more than 100 years ago.

But the development of radioactive substances and synthetic chemicals marked the beginning of a new crisis caused by dangerous wastes, a time when the use of hazardous substances became commonplace and the safe disposal of technological by-products proved to be difficult, if not impossible. The production of synthetic chemicals

Carolina Power & Light Company's Brunswick nuclear power plant in Southport, N.C.

had begun to unleash substances to which the human body could not adapt.

Before World War II, the United States produced fewer than one billion pounds of synthetic organic compounds a year. By 1976, the figure, according to the Manufacturing Chemists Associa-

The Resource Conservation and Recovery Act of 1976 requires that a hazardous waste have a least one of four characteristics:

Ignitable Wastes. These wastes catch fire so easily they must be segregated from other wastes. They sometimes burn with a poisonous smoke. Examples include organic solvents like toluene and benzene, oils, some pesticides, paint and varnish removers.

Corrosive Wastes. These alkalis and acids can eat through their own containers at times and they cause burns on skin or plant tissue. The group includes alkaline cleaners, acids,

caustic soda, and battery wastes.

Reactive Wastes. These wastes may at any time react spontaneously and violently with air or water. Explosions or the release of toxic gas may result from shock or heat. The group includes obsolete munitions and wastes from manufacturing explosives.

Toxic Wastes. These wastes are particularly dangerous when they contaminate ground water. They are poisonous to humans and/or animals. Not all hazardous wastes are toxic, but all toxic wastes are hazardous. They include arsenic, cadmium, pesticides, mercury compounds and formaldehyde.

tion, had soared to 162.9 billion pounds a year. During the 1960s alone, production of PCBs more than doubled, from 40 to 86 million pounds. Modern industry commonly uses some 70,000 chemicals according to the Environmental Protection Agency's (EPA) 1978 Annual Report to Congress. The same report estimates that 2,000 new chemicals enter the environment to "a significant degree" every year.

The terms "hazardous waste," "toxic waste," and "low-level waste" are often used interchangeably to describe this ever growing array of chemicals. In government and professional language these phrases refer to distinct groups of dangerous wastes and by-products. In 1976, in the Resource Conservation and Recovery Act, Congress defined a hazardous waste as one which because of its quantity, its concentration, or its physical, chemical, or infectious characteristics may:

- cause or significantly contribute to an increase in mortality or an increase in serious irreversible or incapacitating reversible illness.
- pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.

How Radioactive Is Low Level?

Radiation occurs naturally in many substances. The human body seems to have adapted to the natural level of radioactivity from the earth and from cosmic rays. How much additional exposure can be dangerous is hotly debated. It may even vary from person to person. Scientists do agree, however, that low-level waste is dangerous and must be handled with special care.

Radiation is energy emitted as waves or particles as the atoms of a chemical disintegrate. The quantity of radioactivity is the amount of atoms that disintegrate in a given unit of time. The standard unit, the curie (Ci), represents 37 billion nuclear transitions per second, the amount generally emitted by one gram of radium. The human body contains two ten-millionths of a curie of natural radioactive carbon and potassium.

Radiation doses to humans are measured in *rems* or *millirems* (one-thousandth of a rem). Based on studies of people exposed to radiation at Nagasaki and Hiroshima, the National Com-

A hazardous waste generally refers to an industrial chemical and is classified as toxic, corrosive, ignitable, or reactive. Hence "toxic waste" in government classification systems is one type of "hazardous waste" (see box on page 3).

The government has separate categories for radioactive wastes — high- and low-level. Radioactive wastes include everything from a glove contaminated by radioactive medical materials to a fuel rod salvaged from a nuclear plant. They are proven health hazards, but to very differing degrees. Measuring the danger from radioactive waste is very complex and subject to great debate, especially at the lower levels of radioactivity. Everyone agrees that certain wastes, mainly the fuel and water used inside nuclear power plants and the waste from nuclear weapons, are extremely dangerous. These are called "high-level" radioactive wastes. Almost all the radioactive waste generated by industry, research labs, hospitals, and educational institutions are considered low-level (see box on pages 4-5).

mittee on Radiation Protection has set exposure levels they believe acceptable. Government regulations allow people working with radioactive material an average of 5,000 millirems per year with no more than 3,000 in one quarter. A person living in a brick home receives 40 millirems per year from the brick. Nuclear power plant workers receive 600 to 800 millirems a year.

Not all radiation is the same. Alpha particles are not very penetrating and can be stopped by a thin sheet of aluminum. Gamma rays readily penetrate matter and can only be stopped by shields of earth, lead or concrete. How much radiation a person absorbs can be changed by type of radiation, distance from source and shielding.

Radioactivity which enters the body through food, air, or water is much more dangerous than that which strikes from outside losing much of its energy in air and clothing and skin. How much radioactivity internal sources impart depends on the half-life, or durability of the radioactivity, the kind of radiation, and how fast the body eliminates the substance. Some radioactive atoms are eliminated rapidly with body waste water. Others are absorbed by kidneys, liver, lungs, muscle and bones. The National Committee for Radiation Protection has set

How Hazardous Is North Carolina?

The extent of the hazardous waste problem in North Carolina emerged clearly last November, the deadline for complying with the federal Resource Conservation and Recovery Act's registration provisions. All companies, schools, hospitals and other institutions producing at least 2,200 pounds of hazardous wastes during a month period had to register with the EPA. North Carolina ranked 11th among the 50 states in the total volume of hazardous wastes. Located throughout the state, in all but ten counties, 1,442 companies and other institutions reported at least the minimum amount. Among the companies listed, 872 employed a total of 361,962 people and paid more than \$5 billion in annual wages. The producers included some of the most prominent companies in the state: Crown Zellerbach, ITT, Corning Glass, Sherwin Williams, Rockwell International, Coca Cola Bottling, Liggett and Myers, and IBM.

The EPA list, it should be noted, included only major producers. The N.C. Department of Human Resources estimates that more than 6,000 other organizations produce hazardous wastes in the state. A 1976 state survey of seven industries and

825 manufacturers projected a total production of hazardous wastes in the state of 102 million gallons a year.

The extent of the low-level radioactive waste problem in North Carolina had already become known when the data on hazardous wastes first became generally available. In 1979, for example, 1,782,940 gallons, measuring 12,158 curies of low-level radioactive waste, were produced in the state, the fourth highest total in the country. (A curie is the amount of radiation contained in one gram of radium.) Carolina Power & Light Company's Brunswick County nuclear plant and General Electric's fuel fabrication factory outside of Wilmington produced about 90 percent of the total volume (1,605,111 gallons) and over 98 percent of the radioactivity (12,011 curies). Sixty-six research labs, hospitals, colleges, and universities produced the remaining ten percent of the volume (177,829 gallons), and less than two percent of the radioactivity (147 curies).

Just as the extent of the waste problem has suddenly come into focus, so too has the use and misuse of various disposal systems. Recently, low-level radioactive wastes have been discovered in several unauthorized locations. In March 1978,

different concentration levels for different materials.

How Much Does What?

Although there is considerable debate about how radiation produces cancer, the link at high levels of radioactivity is clear.

Radiation sickness: rapid doses of 100,000 millirems to organs and intestinal tract.

Cataract development: doses over 200,000 millirems.

Sterility: doses over 300,000 millirems to the gonads.

Death: whole body doses of around 500,000 millirems when not counteracted medically can kill 50% of the people exposed in a few days or weeks.

The doses above are unlikely to occur from most low-level wastes presently being generated, but radiation in smaller doses can cause damage to unborn babies, chromosome breakage, and mutations. No one has proven a direct link between a specific low-level exposure and these problems. Animal data indicates 1,000 millirems of prenatal exposure to a large group of citizens would produce 5 to 75 serious disorders in every million births.

Who Produces What Kind of Waste?

Medical and research facilities produce very little waste, most of which is composed of short-lived chemicals emitting easily stopped beta rays. Nuclear power plants produce far more hazardous wastes and of a greater variety. Some of this waste requires special shielding in steel and lead casks. These wastes often stay active for several generations and they emit dangerous gamma rays.

What's To Fear?

No one knows exactly how low-level radioactivity affects the body. The debate rages on. At higher doses radioactivity produces such frightening and often irreversible effects that any exposure scares many people. Most low-level waste can be safely buried and easily shielded while it decays into harmlessness. The danger in burying these wastes is that radioactivity will be picked up by ground water or by plants and animals.

The real problem appears to be the more dangerous and more plentiful waste produced by the nuclear power industry. As power plants proliferate the problem will grow in proportion to other sources of low-level waste.

Summary of the Waste Management Act of 1981

On April 9, 1981, Gov. Hunt submitted the Waste Management Act of 1981 to the General Assembly. The most important provisions of the Governor's proposal are below.

1. The Act creates the Governor's Waste Management Board with authority to:

- facilitate coordination and communication among state regulatory agencies, industry, citizens, and local government in this area;
- promote the development of necessary waste management facilities in North Carolina;
- encourage research for developing new methods for reducing and treating waste;
- evaluate the governmental and regulatory process and recommend to the Governor and General Assembly ways to improve the existing system;
- promote public education and involvement in the area of waste management;
- serve as an appeal for the issuance of local privilege license taxes on waste management facilities;
- recommend to the Governor on a case-by-case basis whether to exercise the state's limited preemption authority over local ordinances issued to block construction or operation of a proposed facility.

The Board, to be located within the Department of Human Resources, would be composed of 15 persons: the Secretary or Commissioner of Human Resources, Natural Resources and Community Development, Crime Control and Public Safety, Commerce, and Agriculture; eight members, appointed by the Governor, representing county government, municipal government, higher education, research or technology, private industry, and the public at large; and two members of the General Assembly. The Governor would select the Chairperson of the Board.

2. The Act amends the North Carolina Solid Waste Law to provide that:

- The owner of a hazardous waste landfill facility convey title to the property to the state and enter into a lease back agreement for a nominal sum. This allows the state unlimited access for the purpose of monitoring.

- The Governor is given a mechanism to make the final decision on the location of a facility site. Upon petition by a facility developer who had been blocked by a local ordinance, the Board would recommend to the Governor whether to exercise the state's preemption authority after making four specific statutory findings of fact.

- The state can consider an applicant's past compliance with environmental regulations and its financial condition as a criteria for issuing or denying a permit application.

- The administrative penalty for violations of the hazardous waste law is increased from \$5,000 a day to \$10,000 a day. Violations of the Act are made a criminal misdemeanor.

- The Department of Human Resources can collect a fee from landfill operators for long-term costs associated with the facility.

3. The Act amends the state Radiation Protection Act to provide the same powers that are listed under the previous number for hazardous wastes.

4. The Act gives counties and municipalities the authority to levy a privilege license tax on facilities located in their jurisdiction. The tax is to be levied in an amount designed to compensate the locality for the costs incurred from having a facility located in it.

5. The Act amends the tax statutes to allow accelerated depreciation over a 60-month period for the purchase of waste reduction and recycling equipment.

6. The Act extends the authority of the Transportation Division of the Utilities Commission to private carriers that transport hazardous and low-level radioactive waste in order to make the coverage and enforcement of transportation regulations more comprehensive.

7. The Act makes financing tools under the Industrial Revenue Bond Act available to waste reduction, recovery, and recycling facilities but not to storage and burial facilities.

8. The Act authorizes the Department of Administration to condemn land for use as a hazardous or low-level radioactive waste facility.

news reporters revealed that Duke University had dumped low-level radioactive wastes inside a fenced-in compound in the Duke Forest. In 1980, journalists disclosed that radioactive waste from the University of North Carolina had been buried by accident in the Chapel Hill landfill. And in 1980, radioactive trash from CP&L's Brunswick nuclear plant turned up in a nearby public dump.

These incidents and others, coupled with the growth of the nuclear power industry, emphasize the importance of finding proper disposal sites to service a state which relies more heavily than most on nuclear power and which is promoting plentiful power in order to attract industry. The nuclear power plants of Duke Power and CP&L already generate one cubic foot of low-level waste

Federal Hazardous Waste Laws

1899. Congress passed the Refuse Act forbidding the dumping of trash in navigable waterways or tributaries. Law seldom used until 1971, when U.S. District Attorney for eastern North Carolina filed seven suits against waste dumpers.

1965. Congress passed Solid Waste Disposal Act at the urging of people concerned about air pollution from open dumps. Created small program of research and technical assistance for state and local government to improve waste disposal at landfills.

1970. Congress passed Resource Conservation and Recovery Act with a three year life. Purpose was to develop information on which Congress could base permanent legislation. Called for investigation of hazardous waste management.

1973. Hazardous waste report made to Congress. Congress passed one year extension of the Act.

1976. A new Resource Conservation and Recovery Act passed. Required firms producing over 2,200 pounds of hazardous waste each month to register with the Environmental Protection Agency (EPA). Established government control of disposal from point of generation to point of disposal. Declared conservation and recovery as the preferred solutions to the problem.

1976. Congress passed Toxic Substance Control Act. Required any person with knowledge that a chemical presents substantial risk to health to report it to EPA. Chemicals became subject to screening before marketing.

Nov., 1980. Fulfilling first requirement of Resource Conservation and Recovery Act of 1976, 1,442 North Carolina firms registered with EPA. By spring of 1981, they must report nature of waste and precise quantities.

for every ten homes served in a year. In addition, General Electric's fuel fabrication factory in 1979 produced 106,000 cubic feet of low-level waste.

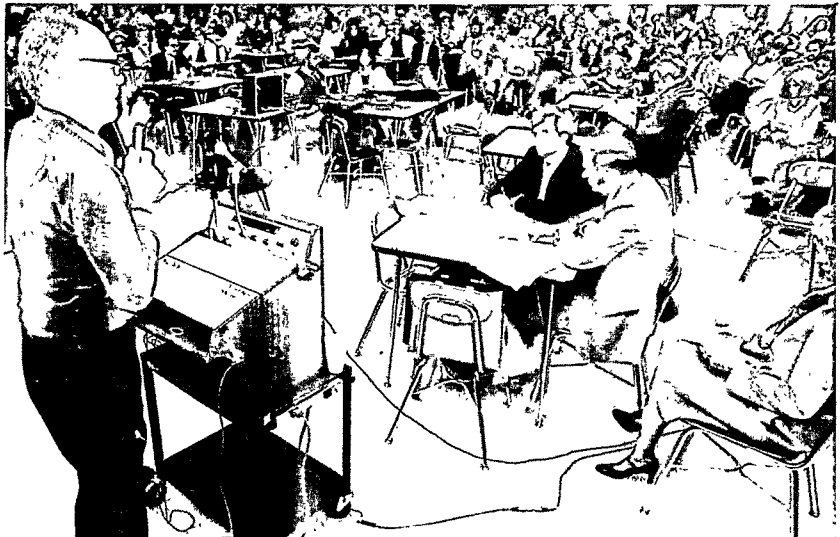
Finding approved burial sites for wastes is becoming an urgent problem in this state as well as others. Through 1980, all government-approved burial sites for low-level radioactive waste had been located outside North Carolina. But other states have warned North Carolina officials that their dump sites are going to be closed to out-of-state wastes. Is North Carolina prepared to deal with its own wastes in its own backyard? The answer seems to be "no."

As the public becomes more knowledgeable

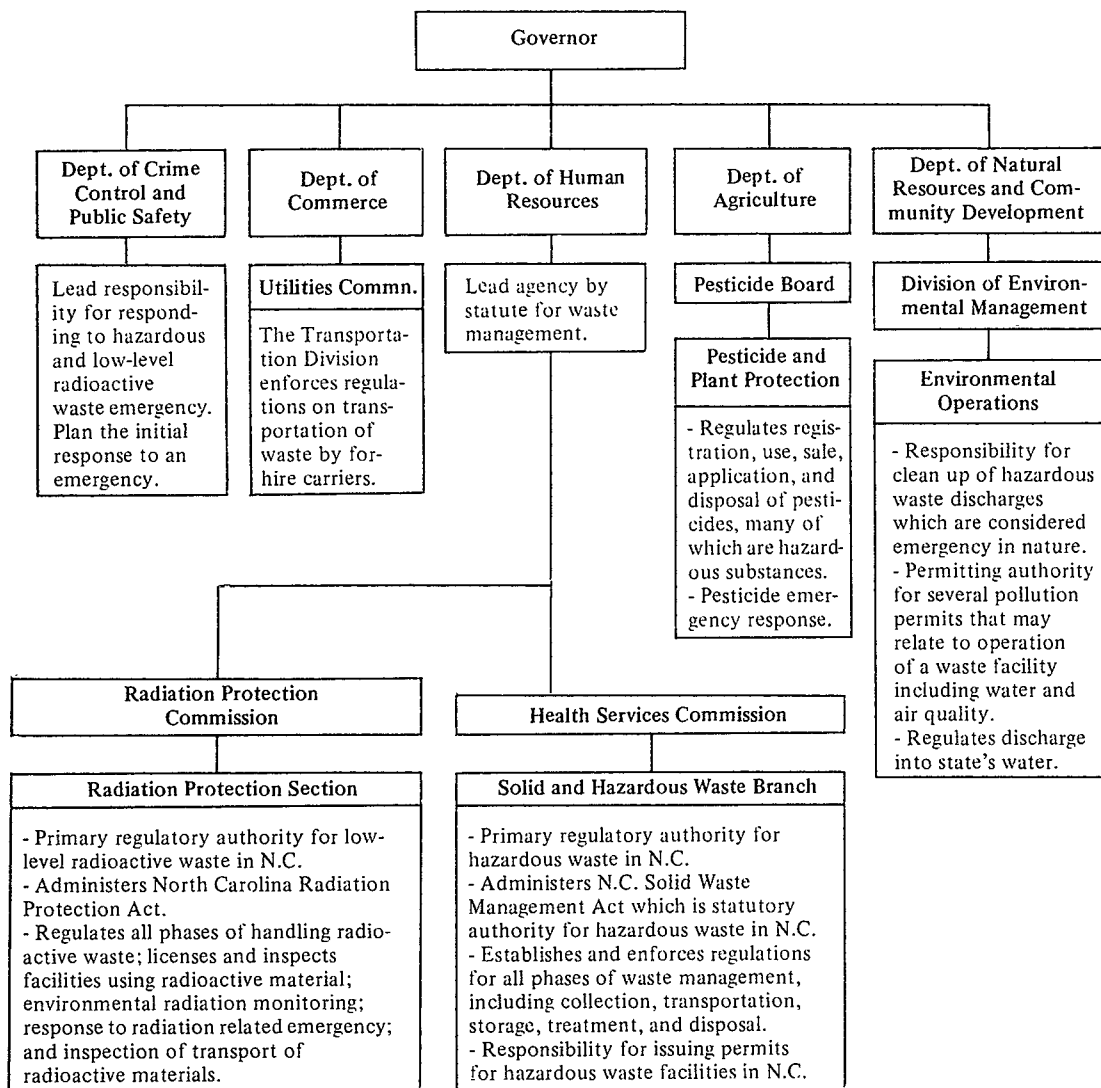
about the extent of the chemical waste problem and the burial difficulties, waste disposal problems are becoming political problems. When Governor Hunt proposed scraping up the PCBs and burying them, public officials in Warren and Chatham counties at first volunteered cooperation but later reversed themselves under public pressure. The outcry of Charlotte residents caused a waste processing firm to reconsider plans for locating in Mecklenburg County. State officials and Triangle J Council of Governments suggested that low-level radioactive wastes could be buried in the Research Triangle because of a geological formation called the Triassic Basin, but area residents protested.

Wake County residents crowd into the Athens High School to express their views on chemical wastes. This was one of a series of meetings sponsored across the state by the Governor's Task Force on Waste Management.

Photo courtesy of the
Raleigh News and Observer



Departments and Boards Which Currently Regulate Hazardous and Low-level Radioactive Wastes in N.C.



The control of chemical wastes has caused a public controversy and become an economic issue at a time when the Hunt administration is trying to increase the pace of industrial development. Both environmentalists and industry hunters talk about attracting clean industry to North Carolina, but they seldom specify what "clean" means. Usually the example given is "an electronics industry." The Governor has proposed a microelectronics center costing over \$24 million to help lure a portion of that industry from California and other states. Journalists and environmentalists have already pointed out that the chemicals used to process silicon and other materials in the industry can be quite hazardous. The fact is that modern industry uses modern chemicals. Almost no eco-

nomic development opportunity can enter North Carolina without bringing along its inevitable shadow — dangerous chemical waste.

North Carolina's Response

The state seems to have recognized quickly that if it is to control its own economic development, it must develop its own program for managing hazardous and radioactive wastes. The federal Resource Conservation and Recovery Act established government control over hazardous wastes from the point of generation to final disposal. The Act authorized the Environmental Protection Agency to track the movement of wastes and regulate their management or to certify state plans

to assume this authority. North Carolina has received interim authority from EPA to run its own regulatory program, the first such certification in the Southeast.

The Department of Human Resources has the primary statutory authority for regulation. The Solid and Hazardous Waste Branch in the Division of Health Services administers the hazardous waste program mandated by the Resource Conservation and Recovery Act. The Radiation Protection Section in the Division of Facility Services administers the low-level radioactive waste program. Both agencies enforce standards for handling wastes at the source, for making proper inventories of wastes, for transportation, and for disposal.

Other responsibilities for chemical wastes are spread across a number of state agencies. The Department of Transportation regulates for-hire carriers of wastes. The Department of Agriculture regulates pesticides. The Department of Natural Resources and Community Development (NRCD) administers the Oil Pollution and Hazardous Substances Control Act of 1978, which prohibits discharges of oil and other hazardous substances. NRCD also issues several kinds of permits necessary to build waste disposal facilities. The Department of Crime Control and Public Safety shoulders primary responsibility for responding to emergencies such as dangerous spills of volatile chemicals or radioactivity. (See flow chart on page 8.)

Governor Hunt, having made strong commitments to both industrialization and environmental protection, appointed a Task Force on Waste Management in July 1980 to evaluate the state's approach to hazardous and low-level wastes. The 17-member group represented utilities, universities, medicine, industry, government, and conservation organizations. Technical advisory committees to the Task Force presented detailed reports on low-level and hazardous wastes which contained extensive background materials and options for action. After a series of highly publicized hearings and working sessions, the Task Force presented a final report to the Governor in February 1981.

The state's economic future may depend in large measure on how its leaders respond to the Task Force's recommendations and findings. Just as President Carter was the first American president to recognize the extent and danger of the waste problem at the national level, Governor Hunt is the first North Carolina governor to give the problem the broad consideration it needs. He has called the waste problem "one of the major issues that faces this state today." As if to show that this is not just another of the many issues he calls major, he told the final meeting of the Task Force: "As soon as I get your report I will begin to

work on a bill . . . that I will be prepared to fight for with all that I have as Governor." On April 9, 1981, Governor Hunt announced his legislative package and submitted it to the General Assembly. (See summary of the proposed legislation on page 6.) If the Governor succeeds in creating an effective waste management plan, he will have changed the direction and philosophy of industrialization in North Carolina.

Because North Carolina, like most states, is only now becoming fully aware of the chemical waste problem, a good part of the Governor's proposal focuses on cleaning up wastes created by existing or past industry. When the Technical Advisory Committee on Hazardous Wastes listed known disposal sites, it could account for "only a very small percentage of the total volume of hazardous waste generated in North Carolina." The Committee went on to say, "We do not know, and have no way of verifying at this point how the remaining waste has been treated or disposed of." In other words the Committee had no idea who had been exposed to hazardous wastes, what drinking water has been endangered, or what illnesses might have been caused. Almost every county with any industry had one or more old landfills where hazardous waste may already be seeping away from the borders.

The Governor's Task Force recognized the economic importance of waste management to both industry and the state. Large industries, it said, generally recognize "that it is inefficient to generate waste products during the manufacturing process which have no useful purpose." Emphasizing prevention of waste production if at all possible, the Task Force urged the Governor to consider its technical information and its recommendation for new directions as "vital to the state's economic survival in the future." The Task Force considered the problem so urgent and present state efforts so disorganized that its letter of transmittal to the Governor urged him "to appoint the recommended Governor's Waste Management Board as soon as possible. . . ."

Real action on the Governor's recommendations could cost the state and many industries a lot of money. In these times of economic austerity and tax rebellions, the Governor has opened debate on when the real costs of hazardous wastes should be paid and by whom. Serious debate on this issue will shed new light on the costs of industrial development and the consequences of the state's industry hunting policy. No one who has visited the dark and poisoned landscape of industrial New York, New Jersey, Ohio, Illinois, or Indiana can object to a little light in the shadows. □