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# RISING FROM THE ASHES

## *Our Trash Shouldn't Burn*

by Judy Chrstrup

A drab yellow Department of Public Works dumtruck pulls into a rusting sheet-metal alcove at the incinerator in northeast Washington, D.C. The driver positions the truck bed under a grimy chute and with a clattering roar, the truck fills with dense dark ash and charred twisted metals. Pausing only a moment, he pulls his truck out, the container full yet uncovered, and heads for the on ramp to I-295 East.

Our Toyota follows, bumping along the pitted interstate. The windshield darkens as the ash blows off the load. A circuitous route leads us to our final destination—a dumpsite in a ravine off Martin Luther King Avenue, in southeast Washington, behind the mission-style brick buildings belonging to Saint Elizabeth's psychiatric care hospital. The ash-filled canyon creates an eerie tableau. Crumpled bedsprings jut from the cooled embers while a noxious liquid, glimmering like a futuristic rainbow, trickles from a drainage pipe.

Saint Elizabeth's, called Saint E's by local residents, is one of the oldest and largest federal psychiatric hospitals in the United States. Dumping this waste in the patients' backyard is serious business—incinerator ash contains a host of dangerous toxic chemicals. But a certain irony is unmistakable. A nation neck deep in garbage, garbage that is rich in recoverable resources, is rushing to burn its refuse. The burning precludes recovery, releases toxic wastes into the air and leaves a poisonous pile of black ash, which is buried in the ground—certainly a form of madness, by any standards.

America's cities are drowning in garbage. With landfills in the U.S. closing at a rate of ten per week, the days of town dumps are clearly numbered. According to David Morris and Neil Seldman of the Institute for Local Self-Reliance, more than half the cities in the U.S. will exhaust their current landfills by 1990. More than 2,000 have closed in the last five years for environmental reasons, and another 700, for lack of space.

With the landfill clock ticking away, town and city councils are under pressure to make quick decisions about waste management. With little or no guidance from federal and state governments, they are forced to deal with their garbage crises alone. Well, not actually alone. Large corporations and high-priced consultants gladly offer their services, presenting what appears to be an out-of-sight, out-of-mind solution: mass-burn incineration.

Richard Denison of the Environmental Defense Fund (EDF) describes the usual scenario: "You have a local solid waste manager, a city government employee, with a garbage problem. An incinerator company or consulting firm waltzes in and says, 'Give us money, get municipal bonds issued, and we'll take care of your problem.' It's one-stop shopping." Hearing the hard-sell, most local solid waste managers don't even think about the residual ash.

And there's the rub. Both the ash and the smoke from the incinerator stack are poisonous. Fly ash, gleaned from the stacks by filters, is the most harmful; according to EDF's compilation of data from dozens of U.S. incinerators, all fly ash samples exceeded the Environmental Protection Agency (EPA) hazardous waste limits for cadmium or lead. Bottom ash, the burned remains of the garbage, exceeded



*While this pile of Philadelphia's ash sits on the incinerator grounds, shiploads have toured the Caribbean and Africa's west coast.*

PHOTOGRAPH BY TIM REASE

EPA's lead limits in four of ten samples, and roughly half the samples of combined fly and bottom ash were over the limit.

The EPA's November '87 report on four municipal incinerators supports EDF's findings—dangerously high levels of lead, cadmium, and other metals were found in the ash from all four incinerators. According to EDF's Richard Denison, "The EPA report corroborates what we've seen around the country but underestimates the problem. It's representative of one set of incinerators out there—the older ones." Ironically, ash from state-of-the-art plants is even more hazardous, because the modern facilities have more efficient air pollution control devices. Toxics scrubbed out of the stacks end up in the ash.

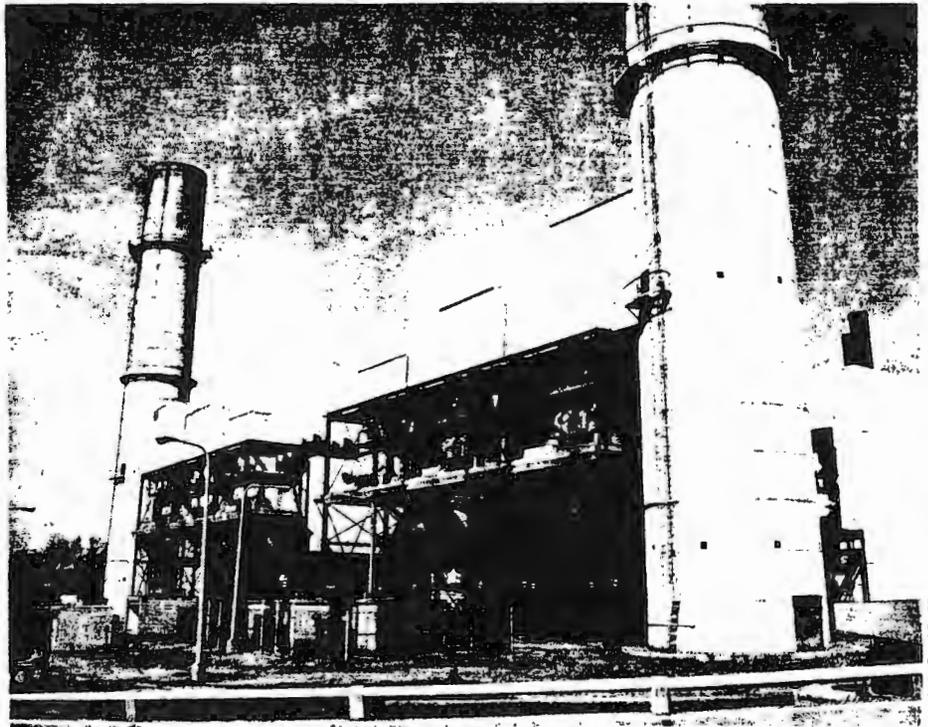
So why would any city in its right mind want to deal with the stuff? Jim Vallette, Greenpeace toxics campaigner, explains, "Right now most municipalities aren't worrying about ash. The EPA hasn't technically classified incinerator ash as hazardous waste, so they can landfill it as though it were household garbage."

But the city landfill is where the worries begin, not where they end. Ash is spread by wind and water. Dioxins and toxic metals in the ash accumulate up the food chain and are readily absorbed and retained in the tissues of living organisms. Bound to soil particles, their persistence in the environment increases significantly. As rain water trickles through buried ash, dioxins, heavy metals, and other toxic substances are carried along. They work their way down to the aquifers and streams, polluting local water supplies.

"It's ironic," says Jim Vallette. "The reason cities started building incinerators in the first place is because town dumps are filling up and polluting water supplies. Now they're dumping the same toxics that were in their garbage to start with, plus a whole new set created in the furnaces. The difference is that some of those toxics are more concentrated and more soluble in water than they were in their original state."

**W**hat comes out of the stacks is just as frightening. Besides dioxins and furans, incinerators emit roughly 27 different metals, over 200 organic chemicals and a variety of acidic gases. An average 1,600 ton-a-day incinerator blows out 0.06 pounds of dioxins and furans, 510 pounds of hydrocarbons, 5,000 pounds of lead, 361 pounds of cadmium, 2,244 pounds of chromium, 20 pounds of mercury, and 13,250 pounds of zinc every day.

The toxic effluent receiving the most attention is dioxin. According to Dr. Barry Commoner, it is actually created inside the



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*After failing to meet air quality standards in 1985, the 1400 ton-a-day District of Columbia incinerator was forced to shut two of its six furnaces, and it now burns less than 500 tons of garbage daily.*



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*Burned, dumped, and trampled: D.C.'s incinerator ash is flattened next to the basketball court owned by St. Elizabeth's psychiatric hospital.*



When thrown out into the street, our resources turn to trash.

smokestack after the gases leave the combustion chamber. His findings were confirmed by Canadian scientists, who reported in *The Journal of Chromatography and Science* that fly ash acts as a catalyst in the formation of dioxin.

EPA's National Human Adipose Tissue Survey demonstrated that seven out of ten samples of human fat tested in recent years contain the most toxic of dioxins: 2,3,7,8-tetrachlorodibenzo-p-dioxin (see Eco notes, *Greenpeace*, March/April '88). According to the Center for the Biology of Natural Systems (CBNS), the fatty tissues of citizens in several parts of the U.S. contain average dioxin levels of 6.4 parts per trillion. CBNS says that this dosage is sufficient to cause an "unacceptable" increase in cancers in the exposed population, especially breast-fed children. If all 220 of the incinerators proposed across the U.S. are built, dioxin emissions would bring many segments of the U.S. population beyond this already "unacceptable" level.

In a report released in the fall of 1987, the EPA estimated that the health threat from breathing incinerator pollution will be minimal — four to sixty more cases of cancer nationwide each year. But the agency considered only inhaled airborne pollutants, ignoring the other pathways into the human body: skin, food and water. "There hasn't been enough work on exposure to dioxins through the food chain, where the impact is much greater," says Dr. Paul Connett, assistant professor of chemistry at St. Lawrence University. Connett, who is national coordinator of Work on Waste U.S.A., says, "The brunt of risk analysis is being done by highly-paid consultants who are very conscious of the desired outcome by those footing the bill. Nobody knows what the cancer rate is going to be. These risk analyses can be off by a factor of a thousand."

Technologies do exist to limit the release of metals and acid gases into the atmosphere, but they are not systematically used, and they do nothing to reduce dioxin formation. Only a handful of the 110 incinerators operating in the U.S. — in Framingham, Massachusetts; Marion County, Oregon; Clairmont, New Hampshire; Biddeford, Maine; and Commerce, California — employ acid gas scrubbing procedures. The scrubbers in the Oregon facility, for instance, have reduced hydrogen chloride emissions to 10 parts per million (ppm). In contrast, the Peekskill, New York, incinerator emits 500 to 600 ppm of hydrogen chloride, a level which *Technology Review* magazine calls "typical of scrubberless plants throughout the U.S."

State-of-the-art pollution controls will not be required on current or new plants for some time. The EPA plans to impose



Philadelphia citizens say, "no!" to the endless string of ash-filled trucks leaving the incinerator.

technology-based limits on new incinerator emissions beginning November 1989 and on existing incinerator emissions beginning in 1993. Until the EPA writes emission guidelines, states and localities are on their own.

**D**espite the health and environmental issues, the rush to burn is being hastened by incentives provided by Congress, the EPA and the Department of Commerce. From the late 1970s through 1986, incinerator investors could take advantage of energy tax credits, the investment tax credit and accelerated depreciation rules. Since 1986, the trend is away from private ownership and toward government-owned waste-to-energy plants, which are leased to private firms that operate them. Public ownership means that tax exempt bonds can be used for financing. And the 1978 Public Utilities Regulatory Policies Act requires utilities to buy power from waste-to-energy incinerators at a price set by each state, guaranteeing another source of income.

EPA policy historically has tilted toward an incineration regime by not dealing with the garbage crisis. After President Reagan took office in 1981, nearly all of the money devoted to garbage disposal was diverted to hazardous waste enforcement—a hot issue at the time. But even after Superfund was implemented to help clean up hazardous dumps, resources were not directed back to garbage disposal.

Garbage and other “non-hazardous” waste programs were systematically starved—their budgets cut from \$29 million in 1979 to \$16 million in 1981, and their staff nearly halved, from 128 to 74. Then in 1982, 73 of the 74 employees were either reassigned or laid off, and funding plummeted to \$322,000. A particularly useful EPA grants program—one that provided money to states developing long-range garbage disposal plans—was discontinued.

There are now ten EPA staff members working on garbage programs. At press date EPA had neither issued new regulations for municipal landfills (ordered by Congress in 1984) nor formulated guidelines regarding incinerator ash disposal. In the absence of such requirements, waste handlers are free to fill in the blanks for themselves.

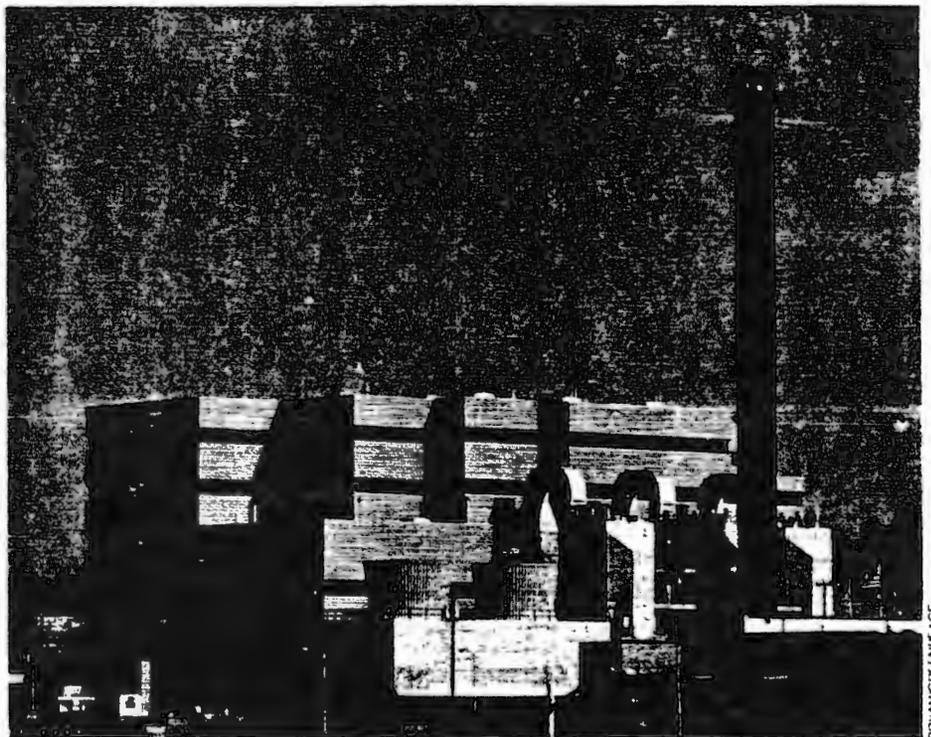
What this institutional bias has brought us is the modern mass-burn incinerator—technologically sophisticated, shiny and sleek and, unlike the Washington incinerator, difficult to approach without security clearance. All of the action is inside, in a vast storage room, where a crane operator is sealed off from the garbage by a plexi-glass window. With the slide of a lever, the gigantic steel crane is activated, lifting tons of trash with each bite, and forcing it down the gullet of the combustion chamber.

The trash is engulfed by scorching 40-foot flames, while the supporting grate shakes and mixes it to allow even burning. Actual incineration time is just a second or two at 2,000 degrees Fahrenheit. Forced air is injected above the fire to maintain temperatures in excess of 1,500 degrees, in an attempt to destroy some of the toxic gases. The burning trash heats water in the boiler to produce steam. The steam drives a turbine to generate electricity.

When approaching city and town councils, waste-to-energy corporations often cite the success of mass-burn technology in Europe. But trash incinerators in places like West Germany start from a different premise. Garbage is reduced at the source by discouraging excess packaging; glass, metals, paper and combustibles are extracted and collected for recycling. Only the remainder is burned.

U.S. incineration is approached in a more direct fashion—throw it all into the fire. In fact, many incinerator contracts require municipalities to produce a certain amount of garbage. If the quota is not met, garbage must be imported from other sources. This “burn everything” mentality wreaks havoc in the guts of incinerators and in the lungs of people breathing the heavy metals and toxic chemicals in incinerator-contaminated air.

European-style mass-burn incinerators used in America have suffered frequent breakdowns and repairs. Our trash (high in plastics and metals) produces strong acidic gases that corrode incinerator interiors, especially when it is burned at the temperatures required to produce enough steam for electrici-

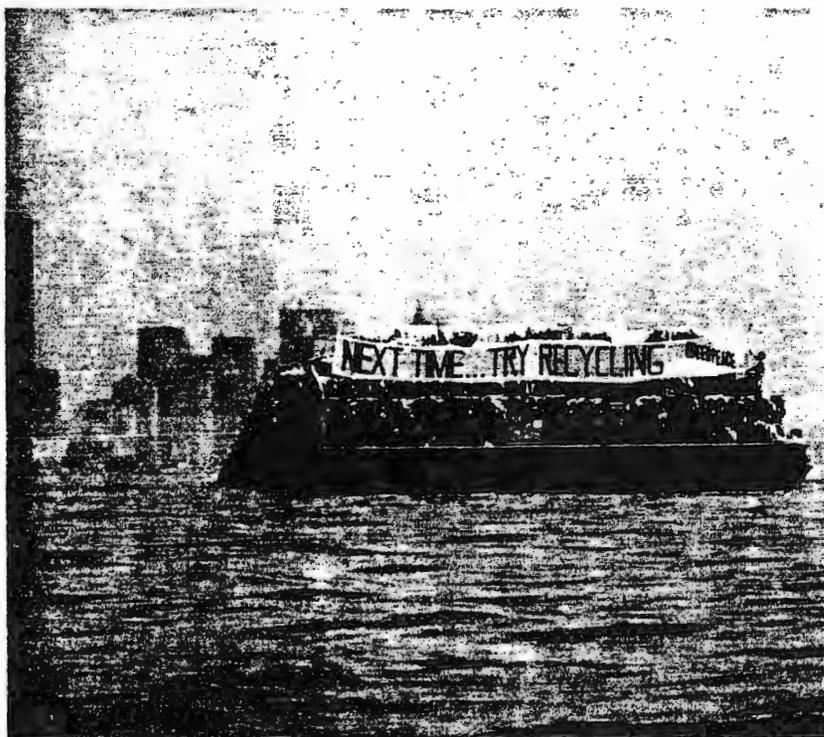


*Alexandria, Virginia's spanking new municipal incinerator, operated by Ogden Martin.*

ty generators. Most European plants don't generate electricity, although many use the steam to heat proximate buildings. According to a *Newsday* survey last year, half of all mass-burn plants operating in the U.S. have had unscheduled shutdowns, and three others have closed permanently.

The marketers of these facilities are as new to the business as their clients. Wheelabrator Environmental Systems, Ogden Martin, American REF-FUEL, Combustion Engineering, Foster Wheeler, Westinghouse Electric, Waste Management Inc., Consumat, and Thermo Electron are earning millions selling incineration technology, yet four of them have never built an incinerator plant of any kind. Ogden Martin Systems, one of the more experienced waste-to-energy corporations, is under contract to build 14 incinerators at a cost of \$2.3 billion, yet it has only three plants currently in operation, none more than two years old.

Still, waste-to-energy plants have been welcomed in more than forty states, the bulk of which are mass-burn facilities. More than 111 incinerators burn about 5 percent of the nation's garbage, and over 220 are planned or under construction. By the mid-1990s there could be 300 incinerators burning up to 25 percent of the municipal waste stream. According to Cynthia Pollock of the Worldwatch Institute, "Mass-burn plants appeal to city administrators because they require no change in waste collection patterns, their management can be turned over to a private owner if desired, low cost financing mechanisms are available and there is a guaranteed market for the energy produced."



*Rather than being recycled, trash aboard New York's infamous "garbage barge" took a three month Caribbean cruise, before it was burned in a Brooklyn incinerator.*

Reliance says that 30 to 40 percent of municipal waste can be separated at the source into compost material, cans, glass, and paper. Another 30 to 40 percent can be recovered at special processing plants. The final 20 to 40 percent can be landfilled—this is equal to the volume of ash produced by a modern incinerator.

"It's a plastic bag crisis, not a waste crisis," says Dr. Connett. "The solution is to go down and see what's in our plastic bags. The paper, cardboard, cans, glass, and food are all resources until they're mixed up and put into a plastic bag. Then they're waste. Using high-tech burning machines is simply perfecting the destruction of our natural resources. We need to recycle in a way we've never done before. People are ready for it, but they're not being given the leadership. When given a chance, people recycle. We've got to recycle as if there's a war on. And there is a war on — a war against waste."

*Judy Christrup is Associate Editor of Greenpeace Magazine.*

#### **RECYCLING: WASTE AS A RESOURCE**

*Connie Murtagh*

**W**alter Hang of the New York Public Interest Research Group (NYPIRG) spends a lot of time thinking about garbage. He wants communities and people to recycle rather than burn. America's daily ref-

**U**ltimately, this enormous investment of time, money and expertise, with its accompanying environmental and public health costs, is doing little more than reduce the volume of the nation's wastes. And even this small gain is disputed. Not all garbage in the waste stream is incinerated, and raw garbage compacts in a landfill. Given the practical realities, a well-operated incinerator will reduce the amount of landfill space required by about 60 percent. This means that landfill space will be extended by two-and-a-half times: five years of landfill space is extended to about thirteen. And the technology that provides this "service", the modern incinerator, has a lifetime of about 20 years and a cost of \$50-\$400 million.

The mind-set associated with incineration is that we can deal with the whole trash stream with one method, and we can if we want to "waste" our land, air, water, health and money. Incinerators perpetuate landfills and all of the problems associated with them—contamination of water supplies and loss of resources. Other choices are far cheaper and safer and can still achieve a 60 percent volume reduction in our waste stream. A combination of recycling and composting, source reduction, education, reuse and product redesign are affordable, environmentally benign solutions to our garbage problems.

Neil Seldman of the Institute for Local Self-

CAPOLONGO/GREENPEACE

use—consisting of newspapers and corrugated cardboard, food scraps, yard waste, metal and tin cans, plastics and packaging materials, cleaning solvents, motor oil and batteries—adds up to about 400,000 tons of garbage a day, or 3.5 pounds per person. Major cities generate the most debris per person; a study issued by the Worldwatch Institute revealed that New Yorkers throw away nine times their weight in garbage each year.

Opinions vary, but most sources say that at least half of the consumer waste stream is recyclable under present U.S. technology. Newspaper, paperboard, cardboard and other recyclable paper makes up roughly 40 percent of American garbage. About 28 percent of waste paper is recycled in the U.S., mostly by paper mills.

A good deal of the remaining waste paper is exported to other nations who, in answer to their own shortages of virgin materials, recycle and reuse it. Last year, 4.2 million tons of waste paper were exported by the U.S. to recycling nations such as Japan and Taiwan, where it was reformulated for, among other things, T.V. and stereo boxes, which are shipped back to the United States.

But in the U.S., most recyclables are competing with virgin materials and losing. Federal transportation subsidies are provided for the use of raw resources like timber, sand and bauxite. The government also offers tax breaks on shipping costs and capital investments for manufacturers using primary, rather than secondary materials. And the mass-burn incinerator industry requires so much trash that recycling in many communities is discouraged by the technology.

As prices for landfilling and incineration rise, recycling emerges as a cost-effective alternative. Nationwide, costs for garbage handling run from \$100 a ton for incineration and \$90 a ton for landfilling to \$40 per ton to recycle. Hang believes that European recycling programs in which new equipment separates paper, plastics, ferrous metals and food wastes from the waste stream can be copied in U.S. cities at a start-up cost of \$6 million. A new mass burn incinerator, by contrast, costs between \$50 million and \$400 million.

Unfortunately, a rapidly growing portion of the consumer waste stream is made up of plastics and packaging items. Packaging waste has increased by 80 percent since 1960, and plastics are making up an ever-increasing 8 percent by weight and 30 percent by volume of the national waste stream, according to a *Newsday* report. These plastics don't compact in landfills, they don't incinerate safely, and to date, they don't recycle easily.

But while recycling plastics is complicated, it is not impossible. A fledgling plastics recycling industry is taking plastic bottles and containers and shredding them, then using this as filler for sleeping bags, parkas, etc. At Rutgers University, plastic trash is being remade into plastic lumber. Similar in appearance to an ordinary plank of wood, the material can be used in the same manner as normal lumber, according to the developers.

Recycling can be made more attractive if the right incentives are established. A key factor in the success of a recycling program in the township of Camden, New Jersey, has been the Camden Recycling Facility, which processes and finds markets for 22 percent of the area's waste. Likewise, in rural Wilton, New Hampshire, 65 percent of the population takes part in a drop-off recycling program, The New Hampshire Resource Recovery Association. The non-profit association provides buyers for the town's processed trash.

Recycling has caught on in more than 500 rural and suburban communities across the nation. The township of Springfield, Pennsylvania, started a curbside recycling program in 1983. Over 85 percent of the citizens participate in the program, and officials say they divert 1,500 tons of garbage a year from landfills and incinerators. In 1981, rural Hamburg, New York, passed a two-year trial recycling law. After participation rates passed 95 percent, the town decided to make it permanent.

Still, most state officials are sluggish when it comes to recycling, largely because of the institutional and psychological bias in favor of incineration. In order to make recycling programs work, says Hang, the option for incineration has to be removed. "Tradition is to burn or bury. Everyone knows now that landfilling is bad, but the pitch for the past 20 years has been to build incinerators. We have to block incineration. You've got to go whole-hog if you want to go with recycling."

A recent study conducted by *Newsday* confirmed that while state governments have spent over \$300 million promoting incineration, a mere \$8 million was spent on promoting recycling. "They are loath to contemplate a program that has never been done anywhere else in the country. Incineration is the legacy we've inherited," says Hang. "We've got to declare a crisis. Everybody's got to pitch in."

Ultimately, of course, the real solution to the growing waste problem is to reduce our use of throw-away materials. Plastics, excess packaging and hazardous household chemicals can largely be eliminated from the waste stream. "Recycling them is better than burning them or burying them. But the ultimate goal is to live without them," said Pat Costner, Greenpeace's National Toxics Campaign Coordinator.

*Connie Murtagh works for the Toxics Campaign at Greenpeace.*



*Recycling aluminum is 95% cheaper than making it from scratch.*

You Create More Problems  
Than You Solve When You

# TURN TRASH INTO ASH

BY ANNIE EBERHART

On March 22, 1987, Islip, Long Island's "garbage barge" began its highly-publicized search for a place to dump its 3,100-ton cargo of municipal waste. Two months and 6,100 miles later, after being rejected by six states and three countries, the barge returned to New York where a court had ordered the Department of Environmental Conservation to find a disposal site for the outcast trash.

While this "garbage barge" drama played out, another vessel was continuing a much less notorious search that had begun in August 1986. The *Khian Sea*, looking for a place to dump its 15,000-ton cargo of ash from Philadelphia's municipal waste incinerators, traveled first to the Bahamas only to have the island country reject the trash, as did Columbia and a series of other potential sites. In January of this year, the *Khian Sea* arrived at Gonaives on the coast of Haiti, which had issued it a permit to spread the ash on a government farm. When Haiti tested the ash for nitrogen content and found none, it refused to accept the "fertilizer."

Unfortunately, by the time the ship's operators learned this, they had already hired workers to unload the ash and 4,000 tons had been dumped on the beach. One thousand tons were reloaded but the rest remains on the beach where the wind carries ash inland and the ocean tide carries it seaward. Meanwhile, the *Khian Sea* has left that fiasco behind to return to

Annie Eberhart is a former researcher for Public Citizen's Congress Watch.



PHOTOS BY IMPACT VISUALS ARTISTS:  
MAHMOOD NADIA (DUMP TRUCKS), [REDACTED]  
(PROTESTORS), ALL OTHERS BY JUDY [REDACTED]

Philadelphia, according to Jim Mallette of Greenpeace's Waste Effects Campaign, which has been monitoring the boat since last summer and brought the ash dumping story to the attention of the media. Neither the city nor the operators of the *Khian Sea*, have located a final resting place for the ash, so the vessel floats in the Delaware Bay.

### Metaphors for a Crisis

The Islip garbage barge, with its load of refuse and rubbish, was the perfect media metaphor for America's solid waste disposal crisis: with our landfills filling up, where can we dump our trash? In turn, the *Khian Sea*, bearing a mountain of ash left over from the burning of city garbage not unlike that carried by the Islip barge, is metaphor for new problems created by what many urban planners and industry proponents have hailed as a solution to the first crisis: municipal waste incinerators.

If we can't dump it, burn it: we have no other choice. That is the position being presented to citizens by federal policymakers and municipal leaders who have been coaxed and lobbied by the corporate interests that stand to benefit from large-scale industrial solutions to the waste disposal problem. This polarized view ignores the existence of other solutions such as recycling and waste reduction which their advocates argue are safer, more economical, and ecologically sounder alternatives to incineration.

Nearly 160 million tons of garbage are thrown into U.S. municipal waste systems each year—about 1,280 pounds per person. Much of this trash now goes straight into landfills, but existing dumps are quickly reaching capacity while new ones are becoming increasingly difficult to site because of the scarcity of affordable land, particularly near urban areas, and heightened concerns over their impact on the environment.

As an alternative, many municipalities have resorted to mass burn incinerators: huge furnaces which consume unsorted garbage at extremely high temperatures, from 1,800 to 3,000 degrees Fahrenheit, leaving ash that takes up as little as 10 percent of the space of the original trash. These high-tech incinerators also are known as "waste-to-energy" facilities or "resource recovery" plants since they produce energy in



the form of steam and/or electricity which can be used to operate the plant or sold to local utilities.

Currently, the U.S. burns approximately 4 percent of its municipal garbage with 77 operating incinerators. If all the incinerators that are scheduled to come on line by 1990 are actually built, closer to 20 percent of trash will be disposed of through incineration, according to Neil Seldman of the Institute for Local Self-Reliance, a non-profit organization that offers cities technical assistance in designing environmentally and economically sound waste disposal systems.

But in community after community, citizens are opposing the construction of mass burn incinerators because of concerns about adverse environmental effects of incinerator emissions and the leftover ash. They are also wary of the huge financial investments required to build incineration plants. In addition to the hundreds of millions of upfront costs required to construct the huge incineration complexes, citizens are concerned about "risk-shifting"—that they, more than plant operators or investors, will bear the brunt should operating costs turn out to be higher than expected, pollution control costs soar, ash disposal costs accelerate, and revenue from energy production fail to meet anticipated levels.

Furthermore, incineration opponents note that it is a solution which does nothing to discourage the proliferation of garbage and the attitude that disposed-of materials are totally valueless. Opponents point out that substituting incinerators for landfills as the final receptacle for trash merely delays responding to the ultimate issue of how America will dispose of the growing volume of trash produced by a throwaway society.

### Proliferating Incinerators

For much of this century, America disposed of its trash by burning it or by hauling it to open-air dumps or so-called "sanitary landfills" where the debris deposited each day is covered by a layer of dirt or ash. But with the enactment of the federal Clean Air Act in 1970, almost an entire generation of incinerators that had been in use since the early 1950s—some 300 nationwide—were shut down because they did not meet the new air emission standards. As a result, by 1978 nearly 90 percent of trash in the U.S. was being landfilled.

At the same time, the heightened consciousness triggered by the environmental movement of the 1970s led an increasing number of city and state environmental agencies to conduct groundwater monitoring which revealed that landfills were actually potent sources of pollution: rainwater running through decaying materials was discovered to leach toxic heavy metals such as mercury, cadmium, lead, and chromium into the underwater reservoirs which provide the drinking water for many communities. Such pollution was discovered to be caused not only by landfills holding hazardous waste from heavy industry, but also in municipal landfills where rusting appliances, car batteries, chewed-up tires, hospital waste, household solvents, dried-up paint cans, inky newspapers, and used-up pesticide containers are mixed in with paper waste, yard waste, sewage, and other detritus.

Documentation of the polluting capacity of landfills has dramatically reduced the ability of municipalities to site new landfills as older ones reach capacity. According to a survey by the U.S. Environmental Protection Agency (EPA), half of all municipalities will run out of landfill space within 10 years and a third of all municipalities will run out within five. Other analysts predict that a national garbage crisis is even closer at hand: Seldman of the Institute for Local Self-Reliance says that half the cities in the U.S. will exhaust their current landfill capacity by 1990.

As landfills close, pressure on remaining landfills increases exponentially. Philadelphia, for example, has exhausted the capacity of all its local landfills so the trash from this metropolitan area of 6 million must

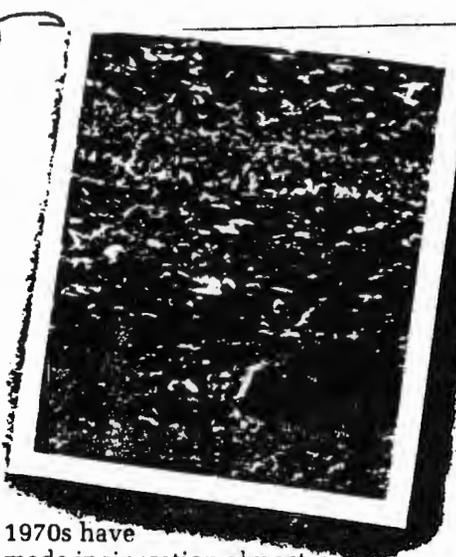
go to other fills, accelerating the rate at which those fills reach capacity. Since landfills closest to large cities fill up faster, garbage is being hauled farther and farther, often to other states and, as Islip's garbage barge illustrates, even to other countries.

Diminishing capacity has made waste disposal the fastest-rising part of many municipal budgets, according to Seldman. Minneapolis saw the cost of disposal rise sixfold in six years, from \$5 to \$30 per ton. Philadelphia's cost has increased to \$90 per ton, up from \$20 per ton in 1980. After the closing of a landfill in New Jersey last summer, Newark's disposal cost soared from \$23 to \$125 per ton.

Cost increases of this magnitude put severe pressure on municipal governments and on trash haulers in large cities who must dispose of anywhere from 2,000 to 14,000 tons of trash each day. In 1984, trash haulers drove garbage trucks around the Massachusetts statehouse in Boston to draw attention to the fact that they were running out of affordable places to dispose of the waste they collected.

According to Walter Harg, director of New York Public Interest Research Group's (NYPIRG) Toxics Campaign, in the late 1970s and early 1980s as the drawbacks of landfilling became increasingly apparent, citizens groups promoted recycling as a way to reduce the need for new landfills. But, he adds, activists failed to recognize that large industrial interests had entered the scene to reintroduce the idea of incineration as a one-stop solution to a city's garbage problem. For many city administrators, the idea of a single public works-type project was much easier to embrace than a recycling/waste reduction agenda involving a complex of operating strategies, new waste disposal requirements imposed on consumers and local industry, public education, and the creation of various financial incentives.

Indeed, the appeal of incinerators is that they directly replace landfills as a place for haulers to dump raw unsorted garbage, solving a huge disposal problem without requiring many changes in the structure of the waste collection system. In simplicity was added the argument that incineration is now safe industry proponents say that technological improvements achieved during the



1970s have made incineration almost pollution-free. They contend that the very high temperatures of the boilers destroy all harmful compounds and that other technical improvements, such as smokestack filters and acid scrubbers, protect against air pollutants.

Incineration has also made greater headway than recycling and waste reduction because it exists in a friendlier financial environment. Although the plants are very expensive to build, costing anywhere from \$100 to \$500 million, financing is supported by various government policies. The U.S. tax code has supported both public and private investment in incinerator plants by making private incinerator owners the beneficiaries of investment tax credits, energy tax credits, and accelerated depreciation rules and by permitting cities to issue tax-exempt bonds to finance construction. Though the incentives for private investors disappeared with the Tax Reform Act of 1986, that has merely encouraged the trend toward total public ownership of new plants.

In the 1970s, in response to the energy crisis, the U.S. Department of Energy and Environmental Protection Agency spent up to \$2 billion to promote "waste-to-energy" plants, according to Seldman; recycling, which saves energy rather than produces it, did not receive similar support. Furthermore, federal energy policy guarantees markets for the energy produced through incineration. In 1978 Congress adopted the Public Utility Regulatory Policies Act (PURPA) to encourage the development of alternative energy sources. Though consumer groups, including Public Citizen, support PURPA because it creates markets for safe alternative energy sources, the law does not define nor differentiate

between "safe" and "unsafe." It merely requires utilities, within certain limits, to buy the power produced by alternative generators, including mass burn incinerators.

In addition to revenue from generating electricity, incineration plants collect "tipping" fees from garbage haulers. Municipalities have generally not paid "tipping" fees to recyclers who take away trash, demanding that such operations be self-supporting based on their sale of materials. Bonds to underwrite the initial capital costs to start recycling operations are more difficult to obtain because long-term contracts with purchasers of recycled materials, which would guarantee revenue to pay back the bond, are not as available as are the federally-mandated energy contracts with utilities.

These factors have helped make incinerator plants a favored investment for cities and private entrepreneurs alike. Wall Street investment bankers have collected around \$194 million in fees since 1982 selling \$13.2 billion worth of municipal bonds for garbage incinerators. In one such deal, John Hancock Life Insurance Co. in conjunction with Wheelabrator Environmental Systems Inc. invested \$51.7 million in an incinerator in Westchester County, New York. The partnership expects to receive \$894.7 million in revenues over the next 18 years. As Robert Chambers, manager of municipal finance for the Ford Motor Credit Corporation, which also has invested in incinerators, told *Newsday*, "If we felt it was going to go away, we'd find somewhere else to put our money."

### Environmental and Economic Drawbacks

Despite the bullish attitude of the industry and municipal planners, citizens living near an incinerator—who are also the taxpayers that would bear ultimate responsibility for any defaulted bond issues—have mounted vocal opposition to incinerator proposals on both environmental and economic grounds.

Opponents' primary concern is that incinerators create a major environmental hazard. Until recently incinerator ash was assumed to be an inert substance, but studies by the EPA as well as by independent organizations such as the Environ-

mental Defense Fund (EDF) found that the ash contains concentrations of heavy metals that exceed those considered hazardous by environmental statutes. Scientific studies also reveal that the ash contains dioxins and their chemical cousins, furans, some of which are the most carcinogenic substances known. Also, incinerators emit acid gases which contribute to acid rain. Furthermore, depending on the incinerator design and the type of garbage fed into it, trash volume may be reduced only 70 percent, rather than 90 percent as industry claims, leaving unresolved the need for new landfill space.

Emission of dioxin into the air and its presence in leftover ash are perhaps the most troubling and least understood of the health hazards created by incineration. EPA has linked dioxin with the skin disease chloracne, weakening of the immune system, reproductive disorders, liver disease, and kidney cancer. According to Paul Connett, associate professor of chemistry at St. Lawrence University, dioxin concentrates in the food chain: research he conducted revealed that the concentration of dioxin in milk from cows grazing near incinerators was 200 times greater than exposure from inhaling the air in the same vicinity. In 1985, the Swedish government advised mothers living near garbage incinerators not to breastfeed because of high dioxin levels found in their milk.

Dr. Connett points out that while the industry claims its incinerators are pollution-free, only about six of the 77 existing U.S. plants are equipped with the state-of-the-art technology that reduces acid emissions and toxic residues to what the industry itself calls "acceptable" levels. Even if all plants built in the future are "state-of-the-art", older plants will still be in operation. "Some of the plants built in the early '80s are a mess," says Dr. Connett.

Few states have acted to set emission standards and to regulate ash disposal for the new generation of mass burn incinerators. Under the Clean Air Act, EPA must regulate air pollutants as they are identified, but the agency has yet to set a single standard for emissions from these incinerators. The Resource Conservation and Recovery Act (RCRA) charges

EPA with regulation of the disposal of waste, but EPA has not enforced RCRA by requiring incinerator operators to test ash for hazardous content and to ensure safe disposal. RCRA requires that waste be tested for toxicity if there is reason to suspect it might

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**In at least 15 communities, citizens groups have been instrumental in successfully halting plans to build mass burn incinerators. Says Seldman, "Anti-mass burn is an emotional, one-dimensional issue for people who are faced with it. People will dog a politician about this."**

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contain poisons. If the tested waste meets the statute definition of hazardous, it must be disposed of in stringently regulated, specially designed chemical dumps which have far higher fees for accepting waste than regular municipal landfills. As a result, incinerator owners avoid testing altogether.

According to EPA officials, the agency has issued "non-binding" regulations for air emissions from mass burn incinerators; regulations are not expected to be implemented until December 1990. The agency is not even working on regulations for testing and disposal of ash, though it is preparing "guidelines."

Citizens' environmental concerns are compounded by economic concerns. Once a city chooses to build an incinerator it is difficult to change course, at least until the bond issue is paid back, which generally takes 20 years. The large financial commitment required can divert resources from, and even counteract, efforts to implement other solutions such as

waste reduction or recycling. Since incinerators require a consistent amount of garbage to produce a consistent amount of energy, any policy that would reduce the size of the waste stream likely would be opposed by city managers concerned with generating the revenues to back the municipal bonds that financed the plant. According to the Institute for Local Self-Reliance, one Ohio city actually banned recycling by requiring all garbage be dumped in the city's garbage plant. Though this law was challenged and declared unconstitutional, Brenda Platt, staff engineer at the Institute, reports that almost every community with an incinerator has "flow control" ordinances designed to guarantee sufficient volumes of garbage to support its investment.

#### **Incensed over Incinerators**

**T**he debate over garbage is galvanizing Americans to greater passion than any other issue in recent memory, according to citizens group leaders. In at least 15 communities, citizens groups have been instrumental in successfully halting plans to build mass burn incinerators. NYPiRG's Hang feels that "opposition to garbage incineration is changing the face of the environmental movement" because it is radicalizing large numbers of citizens who are extremely adamant in their opposition to incinerator plants. Seldman adds, "Anti-mass burn is an emotional, one-dimensional issue for people who are faced with it. People will dog a politician about this."

In Saugus, Massachusetts, 10 miles north of Boston and home of the oldest metro-sized incinerator and ash landfill, two of five incumbent selectmen were recently ousted because of their support for the incinerator. One of their replacements is school teacher Pete Manoogian, who got involved in politics in 1985 when he found his two-year-old playing with hypodermic needles after a garbage truck spilled a large amount of hospital waste in his neighborhood.

An active opponent of plans to expand the Saugus plant and proposals for incinerators in other parts of the state, Manoogian sees the issue as a race between mass-burn and the alternatives. Once in place, the economics of removing or shutting down an existing incinerator are practically

*Continued on page 18*

## Moving toward a Moratorium

**B**ecause of EPA's inaction in enforcing existing environmental regulations against air and groundwater pollution by mass-burn incineration plants. Congress is now moving into the waste disposal debate. Legislators are considering whether to write more explicit directions for the agency—"command and control" legislation, as industry representatives call this type of detailed lawmaking. Sen. Quentin Burdick (D-N.D.) in the Senate and Rep. James Florio (D-N.J.) in the House are the primary sponsors of incinerator legislation which is moving in concert with an effort to reauthorize the Clean Air Act.

Both the Burdick and Florio bills (S. 1984 and H.R. 2517, respectively), would set incinerator emissions standards based upon the concept of Best Available Control Technology (BACT). BACT—a standard-setting mechanism first employed under the Clean Water Act—means that EPA would ascertain the most effective technology for controlling the release of air pollutants from incinerator stacks, and then require incinerators to meet the standard achieved within a specified period of time.

On the disposal issue. Sen. Burdick's bill would amend RCRA to require that incinerator ash be disposed of in a new category of "special waste" dumps that are more stringently regulated than nonhazardous waste dumps but less so than hazardous waste dumps. Rep. Florio's disposal bill does not call for the creation of "special waste" landfills, but that proposal is included in another bill, H.R. 4357, sponsored by Rep. Thomas Luken (D-Ohio). The Senate legislation was reported out of the Environment and Public Works Committee last fall and is waiting to go to the Senate floor. House considerations of incinerator legislation are still at the subcommittee level.

Opponents of incineration have been torn over the issue of whether to support this legislation, which would begin to set standards for incinerators, or to press for a moratorium on incinerator construction until more is known about ash content and its long-term effects. The Clean Air Coalition, a collection of groups working on the reauthoriza-

tion of the Clean Air Act, supports the incinerator legislation so long as it retains another provision prohibiting construction of any new incinerator until the affected communities develop waste management plans that involve as much recycling as possible.

Pragmatists note that no matter how successful efforts to stop incinerators are, more than three score already exist and some new ones will still be built, therefore, definition and enforcement of pollution standards is an important issue. "The true costs of incineration must include the cost of pollution," says EDF attorney Joseph Goffman, whose organization supports the legislation. "Requiring pollution control technology will more fairly define these costs."

Critics of a legislative approach, which include many grass roots activists, are concerned that the legislation amounts to an accommodation of incinerators by setting clear legal boundaries within which they can operate and avoiding the issue of whether they are a necessary or appropriate solution. Some critics call the disposal provision that creates a new category of "special waste" "linguistic detoxification of waste," according to Alexandra Allen, an environmental lobbyist for the U.S. Public Interest Research Group.

Legislation opponents say the recycling provision is unworkable because, in practice, incinerators set local economic agendas. They maintain that the phase-in of the BACT standards will not protect residents who live near incinerators that may not meet those standards for some time to come.

But a major concern of opponents to the legislation is that it would put off the difficult decisions the United States must make to reduce the level of trash it tosses away and doesn't recover. Legislation that implicitly endorses incineration, they argue, takes away the urgency for action in other directions, such as increasing federal and municipal incentives for investment into recycling, more efforts to compost organic waste and sewage, and the implementation of waste reduction techniques such as the development of recyclable cartons and reusable containers.

## INCINERATION

*Continued from page 12*

impossible, he notes. "I see it all over the country: Build now, ask questions later."

While citizens groups across the country work to oppose construction of new plants, environmentalists are working to hold operators of existing plants more accountable. The Natural Resources Defense Council filed suit against the EPA for failing to enforce Clean Air Act provisions on emissions from mass burn incinerators. Likewise, EDF is suing two individual incinerator operators because they are not testing their ash for hazardous content despite the Resource Conservation and Recovery Act (RCRA) which requires them to do so if there is reason to suspect the material may be toxic. EDF claims that there is more than reasonable grounds for suspicion: in a study of ash samples from 25 incinerators, the organization found levels of heavy metals in several samples that were up to six times higher than federal standards.

### The Gold In Garbage

**A**dding a new factor into the incinerator debate is the development of technology that proponents say resolves the problems of the traditional mass burn plant. European companies, involved in incinerator construction for about a decade longer than U. S. firms, have led the way. A new type of incinerator provides for the sorting of trash to remove recyclable materials and to reduce the toxicity of the emissions. The remaining trash is compressed into a pellet fuel (Refuse Derived Fuel, RDF) that can be sold or burned on-site to produce energy. Until 1982 RDF plants were more expensive to build and operate than mass burn incinerators, but, says Seldman, "they experienced a sharp learning curve." As a result, some of the largest incinerator contractors such as Westinghouse, Babcock & Wilcox, and General Electric have moved to RDF as the technology of choice.

Though cleaner than mass burn, RDF still produces ash that must be landfilled and has all the same economic consequences of mass burn plants. In addition, plant operators do not necessarily recycle the material sorted out before burning—most merely landfill it—and many RDF

plants have been plagued by equipment failures, unexpected cost overruns, accidents, and greater than expected amounts of leftover ash, according to *Recycling: The Answer to Our Garbage Problem*, a May 1987 report from the Citizens Clearinghouse for Hazardous Wastes, Inc. Activists seeking long-term solutions continue to promote recycling, composting, and reduction of the waste stream as economically and environmentally sound alternatives to landfilling and incineration.

"The key to thinking about the problem is 'value added,'" maintains Seldman. "Waste is not waste until you waste it." The challenge, he says, is to build a disposal system based upon separating resources—adding value at each step—instead of mixing refuse at each step in preparation for a mass burn or burial.

As it is, America disposes of a treasure trove of materials. According to *Mining Urban Wastes: The Potential for Recycling*, a May 1987 report by the Worldwatch Institute, the trash of a city the size of San Francisco can yield as much copper as a medium-sized copper mine, as much aluminum as a small bauxite mine, and as much paper as a good-sized timber stand. And resource recovery can be an economic boon, not just from avoided disposal costs. Recycling is labor-intensive, creating jobs, and it increases the availability of materials that can be cheaper than those made from virgin resources.

The value of the resources in garbage is not universally ignored. NYPiRG's Hang says that the two largest exports from New York Harbor are scrap metal and scrap paper, which are shipped to other countries for use as a cheap source of raw materials. The Netherlands, Scandinavia, the Soviet Union, and many developing countries have container deposit laws and parts of Australia, Canada, and Japan also have deposit programs. West Germany and Switzerland have successful voluntary recycling programs in place.

The U.S. recycled tremendous amounts of refuse during the Depression and WWII and some sections of the country have continued or revived those efforts. The aluminum can industry in the U.S. promotes recycling and American consumers have returned over half of the 30 billion cans bought since 1981, according to the

Worldwatch Institute. Nine states have container deposit laws. Oregon, Rhode Island, and New Jersey have taken up the challenge of statewide recycling programs and community groups across the country have set up independent recycling centers. In its

*Recycling* report, the Citizens Clearinghouse on Hazardous Wastes sums up the challenge: "... [T]he technology exists to recycle as much as 80 percent of our solid waste. The issue of what to do is not a technical issue but a political issue." ■

## Incineration: Another Albatross?

The issues surrounding mass burn incineration bear close resemblance to those affecting another controversial technology, nuclear power. Both nuclear power and mass burn incineration are highly centralized solutions that offer a "quick fix" to what seem overwhelming problems. The major upfront capital commitments required to finance both nuclear plants and mass burn incinerators mean that alternative solutions to the "energy crisis" and "garbage crisis," respectively, are squeezed out.

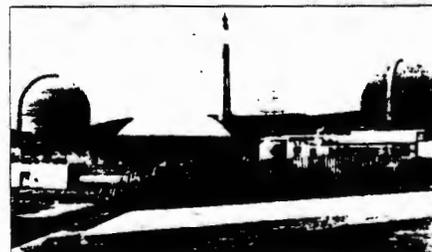
Recycling and waste reduction efforts receive the same short shrift from federal, state, and municipal policy makers that energy conservation and efficiency standards have received. As a result of favorable government and tax policies, mass burn incineration is now the lucrative investment that nuclear power once was. The failure of many nuclear plant investments—most dramatically, the defaulting on \$2.5 billion in bonds when two of three reactors owned by Washington Public Power Supply System defaulted, and the recent bankruptcy of Public Service of New Hampshire because of its investment in the trouble-plagued Seabrook nuclear power plant—are likely to be echoed in the incineration industry as the complex, high-tech plants fail to meet their promised reductions in trash volume, as equipment failures and accidents occur, and as increasingly stringent pollution control requirements raise the costs of operation.

Like nuclear power, mass burn technology was adopted without its proponents fully considering or explaining how they planned to handle the leftover residue created. Radioactive waste from nuclear power plants has been accumulating since the inception of the industry in 1945, and it has yet to find a final resting place. The waste is building up in a variety of facilities while the

Department of Energy continues its 43-year-old effort to develop a solution to the problem of how to dispose of it. The residue of mass burn—the ash and the air emissions—is the focus of increasing federal and community attention and likely will become an equally expensive "hot potato."

As with nuclear power, the decision-making process on waste disposal has been heavily influenced by large companies who stand to reap great profits from large-scale, centralized industrial solutions. Even the companies involved in incinerator construction come from the federally-subsidized nuclear power and synthetic fuels industries. They include Bechtel, Westinghouse, Babcock & Wilcox, General Electric, Combustion Engineering and Blount. These are companies with experience in heavy construction, large-volume energy production, and the public/private relationships connected with a major public works project.

Finally, the massive financial and political commitments required to develop both nuclear power and mass burn incineration technology create a momentum that can control the direction of public policy, becoming the tail that wags the dog. As Wendell Berry, essayist and professor at the University of Kentucky, reminds his readers, "...[P]ast a certain power and scale, we do not dictate our terms to the tools we use; rather, the tools dictate their terms to us."



Incineration's technological cousin

## EDF SUITS SEEK TO EXPOSE NATIONWIDE PROBLEM OF ASH DISPOSAL FROM INCINERATORS

In a legal move aimed at exposing the nationwide problem of incinerator-generated ash, the Environmental Defense Fund last week sued the city of Chicago and Wheelabrator Technologies, a New Hampshire-based company, for allegedly violating state and federal regulations in the handling of municipal waste ash generated at the incinerators they operate in Chicago, IL, and Peekskill, NY, respectively. "The bottom line here is that data in both cases show unquestionably that ash is a hazardous waste," explained an EDF scientist.

An EDF attorney stressed that the two facilities sued were not singled out for their excesses, but rather are representative of the 111 operating incinerators around the country. "We've looked at these two for quite some time and the samples indicate they're consistently 'flunking' the [ash] test. . . . We don't mean to imply these two incinerators are the only offenders, quite the contrary. . . . [But] irrespective of technologies, ash consistently flunks the test." Another EDF source claims the two suits "bring out the national scope of it," and "represent the new facilities [Peekskill, NY] and the old [Chicago], the city-operated [Chicago] and the privately-owned [Peekskill], landfill disposal [Chicago] and monofill disposal [Peekskill]."

"Industry as a whole and municipalities are looking increasingly to incineration and must comply with the laws and be willing to pay for it," claimed an EDF source who noted that while there are 111 such incinerators in existence, there are "scores" of new facilities in the developmental stage.

Extensive data compiled by EDF shows that ash from trash incineration contains dangerous amounts of the toxic metals lead and cadmium, and can also carry excessive levels of highly toxic dioxins. EDF maintains that toxic metals are readily leachable from incinerator ash at levels that surpass the limits defining a hazardous waste when EPA's proscribed 'test' — the EP (extraction procedure) Toxicity Test — is employed. EDF seeks an immediate halt to current handling and disposal practices and the imposition of civil penalties for the violations in both suits.

Although Congress intended for household garbage to be exempt from regulations under RCRA's hazardous waste rules, the law does not address how incinerator-generated ash should be managed. Ash is frequently treated as a "special waste" — regulated more stringently than garbage, yet not managed as a hazardous waste, EDF explains. Both states consider ash to be covered by the "household exclusion" provision in RCRA, which exempts incinerators of household municipal waste from hazardous waste regulation, regardless of the waste's toxicity. An EDF source emphasized: "This will be the central issue in the suits. . . . The court will have to evaluate the merit of exemptions," but added, "Ash is clearly not exempt under current [Resource Conservation & Recovery Act] regs."

The extent to which ash is exempted from regulation under Subtitle C of RCRA is an ongoing debate. According to assistant administrator for Solid Waste and Emergency Response Winston Porter, in a speech given last week: "Notwithstanding the possible exclusions provided by RCRA for certain ash residues, the EPA is concerned about the potential impact on human health and the environment of such residues." An EPA source says that the exemption practice is limited because household wastes are routinely mixed with commercial and industrial wastes prior to incineration. The agency is currently considering expansion of the exemption to cover these commercial and industrial wastes.

The Chicago Northwest Incinerator was built in 1970 and burns about 1,250 tons per day of the city's municipal waste. The combined fly and bottom ash was disposed of at Stearn's Quarry in Chicago until late last year; it is now transported for co-disposal with garbage to the Forest Lawn sanitary landfill in Michigan. A spokesperson for the Illinois-based Citizens for a Better Environment, joint filers with EDF in the Chicago suit, explained there was a "substantial community uproaring" about the ash disposal in the limestone quarry and the city subsequently agreed to stop sending the ash to Stearn's. All of the fly ash samples from Chicago's Northwest incinerator and 80% of the combined ash samples tested have exceeded federal standards defining a hazardous waste.

The Peekskill (Westchester County), NY, incinerator began operating in 1984 and burns approximately 2,000 tons of the County's municipal waste per day. The ash is disposed of at the county-owned Sprout Brook ashfill in Cortlandt, NY (Inside EPA, Nov. 27, 1987, p.3). More than 60% of the combined ash samples that have been tested exceed federal hazardous waste standards.

Wheelabrator Technologies maintains that the suit against the Peekskill facility has no technical or legal merit. One company official maintained: "The facility has always met the requirements at the local, state and federal levels — and until notified by the New York Dept. of Environmental Conservation or the U.S. EPA we will not alter our operation." Officials with the Illinois EPA have likewise maintained that the incinerators and landfills in Illinois are not operating in violation of state or federal laws.

## THOMAS ORDERS ASH GUIDANCE HOLDUP AS PACKAGE SPRINGS LOCAL LEAKS

EPA chief Lee Thomas has reportedly decided to hold up EPA's guidance on municipal ash disposal, delaying its early-1988 release to allow continued debate within and outside the agency on the legal status of the residue from incinerated garbage. Agency sources offer conflicting reasons for the administrator's decision; the most common involves his distrust of a legal call by the offices of Solid Waste and General Counsel that would redefine ash as a "special waste," leaving it exempt in some cases from hazardous waste laws, even though it may, in some cases, be dangerous. The agency nonetheless has been considering issuing guidance on how to handle ash in lieu of a decision on whether it should be tested (see related story).

There have been conflicting signals on EPA's direction on management of ash. Some agency sources have also reported confusion among staff over the issues. Two highly publicized studies about garbage leachate, landfills and ash disposal also stirred a great deal of controversy among EPA officials, environmentalists and congressional staff — each interpreting the results of the studies differently. Agency sources say much distrust remains over the way that EPA and states test ash to determine toxicity. The EPA toxicity test was not designed for evaluating ash, critics charge.

"Definitely there has been some rethinking," one agency source said. "Literally, there is a change [in plans] every day." This source said that under the current plan of action, there would be no reinterpretation of the Resource Conservation & Recovery Act's household exclusion rule that EPA hoped to employ

to exempt the ash from more stringent regulations. While work on the guidance continues, agency sources say, Thomas has indicated that there "is no hurry to get it out." At a meeting in early January, the administrator reportedly asked EPA staffers why they believed the guidance should be issued "in such a hurry," warning that they should be more "concerned that we are doing it right." For now, "we're waiting for further guidance," one source said.

A high-level source confirmed that delay is likely. "There are several important things to consider," this source said. "We need a sound basis for what we are doing and there are important local issues to consider. I think the issue needs some time with Congress, rather than us rushing out with an answer. Rushing ahead is not the best thing to do."

Another agency source, however, denied that the guidance would be delayed. "We'll still get it out in early 1988," this source said. "Most certainly by late February or early March."

In December, Emergency Response & Solid Waste chief J. Winston Porter told a Senate Environment panel that the agency planned to issue a legal interpretation that deems some municipal waste combustor ash "special waste" exempt from RCRA hazardous waste regulations. Porter also said the agency planned to issue the legal interpretation and technical guidance together (Inside EPA, Dec. 10, 1987, p4).

The household waste exemption was enacted in the 1984 amendments to RCRA, in section 3001. According to EPA's codification of the amendments, facilities accepting only household wastes are exempt from subtitle C hazardous waste regulation. EPA in recent months has also taken the position that the household waste exemption includes nonhazardous commercial and industrial solid waste — a stance that relieves facilities of the obligation to test wastes for toxicity and allows them to accept under RCRA subtitle D ash that might otherwise test toxic in solid waste landfills.

Several issues still under debate include: 1. whether EPA can reinterpret the law; 2. the role of the EPA toxicity test and whether it should be revised; 3. how ash testing will fit into the solid waste management program (the agency is expected to promulgate new technology standards for landfills); and 4. source separation.

Summa  
in 10/1987

# Garbage In, Garbage Out

Incinerators are quickly replacing landfills, but the toxic stew they produce is a bigger problem than the trash they burn.

Carolyn Mann

**W**HEN CAPT. DUFFY ST. PIERRE pulled his tug *Break of Dawn* away from a Long Island dock on March 22, he thought he was taking a short trip to North Carolina with 3,186 tons of garbage in tow. But after six states and three foreign countries refused to welcome the barge, St. Pierre's cargo became a fly-infested symbol of our throwaway society's disposal problems.

After more than two months at sea, the barge finally returned to New York — where it sits while the cargo's owner, Alabama businessman Lowell Harrelson, waits for court approval to unload the trash and burn it in a Brooklyn municipal incinerator.

Like Harrelson, many U.S. cities are

eyeing incinerators as they find themselves increasingly turned away from landfill sites. Americans toss out at least 150 million tons of trash every year, and 90 percent of that winds up buried. An April 1987 Worldwatch Institute study of the world's growing garbage glut revealed that by 1990 half the cities in the United States will have exhausted their landfills. As reports of groundwater contamination from buried garbage grow, city officials across the nation are encountering heavy local opposition to the expansion of existing landfills and to the opening of new ones. Cities often must resort to trucking their trash to rural areas, or even to other states.

It's no wonder, then, that waste-to-energy plants seem like the ideal solution. The plants burn municipal waste as

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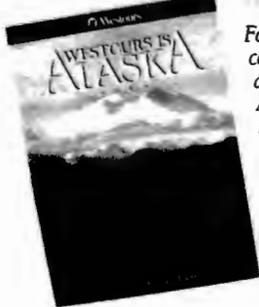
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fuel to generate steam and electricity, while reducing the volume of trash by 60 to 90 percent. At least 200 of these facilities are now being planned, built, or operated nationwide. Most are "mass burn" plants, which burn waste without first separating its components.

But along with electricity the plants are generating concern among environmentalists, who say the ash the plants produce and the emissions from their stacks are serious—and virtually unregulated—health hazards. Environmentalists also worry that efforts to reduce waste and to create or expand recycling programs will go up in smoke along with the trash.

**T**he issue of incinerator ash—in particular, how to dispose of it—has drifted to the forefront of the burn-plant debate. In EPA tests, every sample of fly ash, the fine particulate matter trapped in the plants' air-pollution control devices, showed unacceptable levels of toxic metals such as lead and cadmium. Tests of bottom ash, the unburnt residue that collects on an incinerator's grate, showed unacceptable levels of these elements in 10 to 30 percent of the test cases. Concentrations of the potent carcinogens dioxin and furan are also present in fly ash.

In short, incinerators turn bulky garbage into compact, toxic waste. While one would expect to find ash disposal strictly controlled, this isn't the case. Under the Resource Conservation and

Recovery Act, it's up to plant operators to identify their hazardous materials. Because ash content varies from day to day, testing must be continuous. Yet operators aren't eager to adopt costly control devices and monitoring programs, and the EPA does not force compliance.

As a result, ash is often dumped in municipal landfills, where its toxic components can leach into groundwater. According to Environmental Defense Fund scientist Richard Denison, many facilities routinely combine fly ash with the less-toxic bottom ash to avoid exceeding established hazard levels. But even the combined ash is failing many tests, Denison reports.

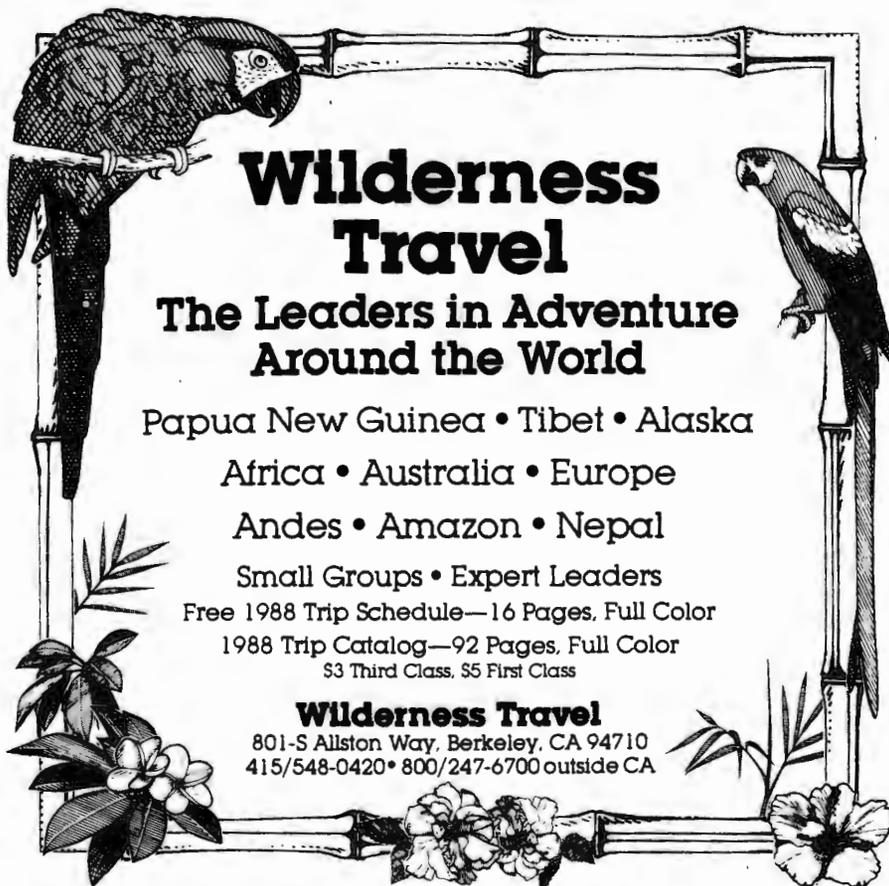
"If the incinerators had to dispose of their ash as hazardous waste," says Cynthia Pollack of the Worldwatch Institute, "it would make the plants ten times more expensive [to operate]." In 1985, according to the 1986-87 *Resource Recovery Yearbook*, disposal fees for non-hazardous ash averaged \$13 per ton, while those for hazardous ash ran as much as \$200 a ton.

The dearth of federal regulations of the plants' smokestack emissions is another concern. Depending on the sophistication of pollution-control devices used, an incinerator may emit gases that contribute to acid rain, as well as up to 27 heavy metals and extremely toxic dioxin and furan compounds.

Like ash, airborne pollutants (other than solid-particle emissions) are subject



This Dade County, Fla., incinerator removes many recyclables before burning waste, but it does not employ scrubbers to reduce smokestack emissions.



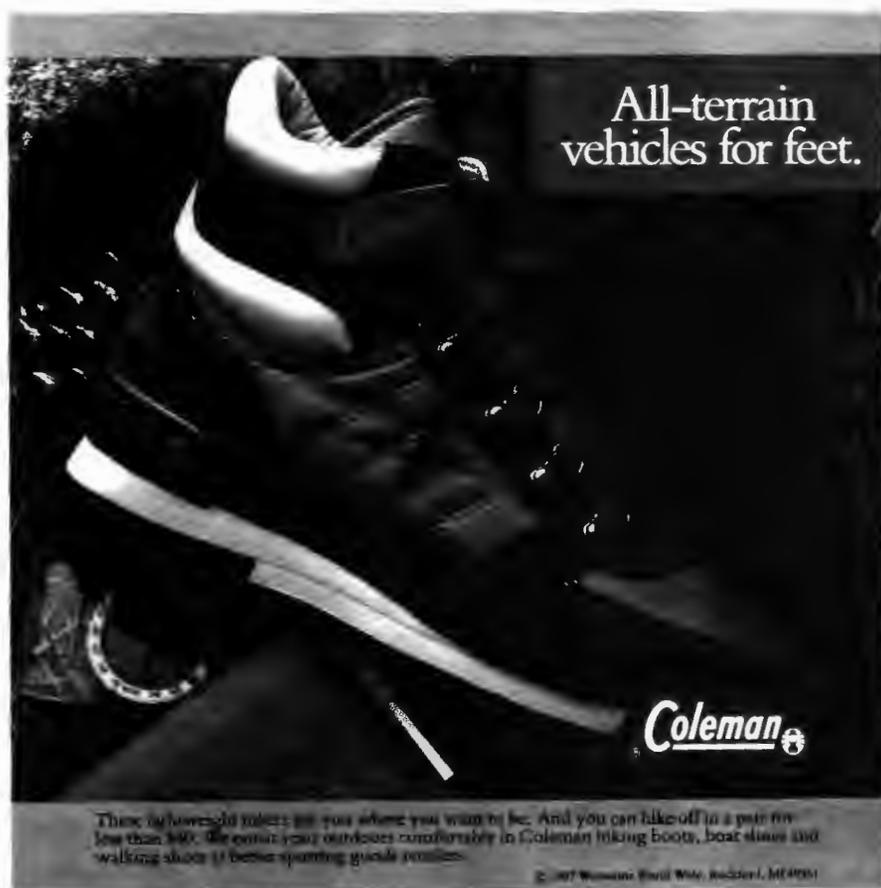
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to precious little federal regulation: of the 27 toxic metals that incinerators may produce, only three (lead, mercury, and beryllium) are controlled. Increasingly, states are requiring burn-plant builders to install scrubbers that must curtail up to 95 percent of these acid-rain-causing emissions.

Despite their known toxicity, dioxin and furan are not regulated by the federal government. "These are two of the most toxic substances made by man," says Dr. Paul Connett, a chemist at St. Lawrence University in Canton, N.Y. "They can damage the lymphatic system, cause birth defects, and promote cancer." When burned, chlorine compounds in waste products such as plastic, bleached paper, and table salt regroup and form these toxic molecules.

In general, burn-plant emissions do not bode well for air quality. Poor air is already strangling many parts of the country, and the rush to build waste-to-energy plants is likely to exacerbate the problem. "Burn plants can add as much lead to the atmosphere as has been removed by de-leading gasoline," says Sierra Club lobbyist Blake Early. "Communities with high lead levels have no business considering mass burn." Lead's fine particles lodge easily in the lungs, then find their way into the bloodstream and accumulate in bone marrow.

Beyond the debate over incinerator ash and emissions, activists feel that incinerators will do nothing to conserve resources and will gut the recycling programs that have taken years to establish. Recycling advocates point to successful European and Japanese operations, where as much as 65 percent of municipal wastes are recycled, greatly reducing the amount of garbage to be buried or burned. Japan, for example, recycles 95 percent of its beer bottles and two-liter sake bottles. Tossed in incinerators, these noncombustibles simply increase the volume of contaminated ash that must be buried.

Recycling is also cheaper than either dumping or burning, advocates add. The one-ton bales of rotting paper on St. Pierre's barge, for example, might have fetched up to \$20 a ton from recyclers but would have cost at least \$40 a ton to dump—if a landfill had been willing to accept them. Cities should burn

Eben and Ian McMillan, eighty-year-old brothers, ranchers, naturalists and environmentalists, are vigorous defenders of the California condor and its natural habitat. Life-long residents of San Luis Obispo County, they cite man's willful alteration of the environment as the real reason for the plight of this magnificent, nearly extinct species. With David Darlington as our guide, we investigate the interchange between plants and animals through Ian and Eben's eyes, and come to understand that the whole planet is really "condor country" and that not only it, but we, are in peril.

DAVID  
DARLINGTON  
**IN CONDOR  
COUNTRY**

A PORTRAIT  
OF A LANDSCAPE,  
ITS DENIZENS,  
AND ITS DEFENDERS

Jacket illustration Wendell Minor © 1987

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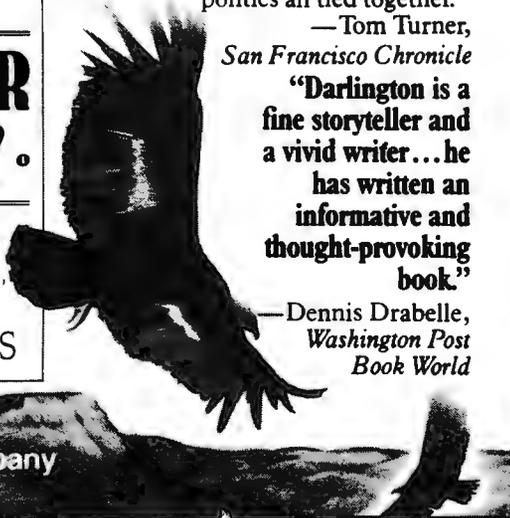
— Tom Turner,

*San Francisco Chronicle*

"Darlington is a fine storyteller and a vivid writer... he has written an informative and thought-provoking book."

— Dennis Drabelle,

*Washington Post Book World*



trash only as a last resort to their garbage crisis, activists say—and only after less-damaging waste reduction, recycling, and source-separation programs have been implemented.

"Should incinerators be built before a recycling program is in place, reducing the volume of garbage could be disastrous for plant operators and create conflicts with recycling proponents," wrote Allen Hershkowitz, director of solid-waste research for the New York environmental-research group INFORM, in a recent edition of *Technology Review*. Hershkowitz added that when burn-plant operators are forced to share their garbage with local recyclers after a plant has been designed, they usually seek permission to truck in garbage from other cities—an option most communities fight.

In the meantime, environmental groups, including the Sierra Club, are working to strengthen federal regulation of these plants. Because of a settlement reached with the Natural Resources Defense Council, in July the EPA announced regulations that would require new incinerators to employ the "best available technology" (BAT). That would mean the installation of scrubbers to reduce emissions. Operators would be required to ensure that the largest possible amount of waste and pollutants is destroyed in the burning process. The EPA plans to propose guidelines for reducing emissions from existing incinerators by late 1989.

Environmentalists and legislators are angry, though, that the EPA did not set specific limits on the amount of pollution incinerators may discharge. "The EPA's own data say that these incinerators are sources of numerous carcinogens," said Rep. Henry Waxman (D-Calif.), chair of the House Subcommittee on Health and the Environment, in a *New York Times* interview. "It is an outrage to say they should not be regulated as hazardous air pollutants."

A bill sponsored by Rep. James Florio (D-N.J.), H.R. 2787, is currently struggling through congressional committees. Besides requiring BAT standards for new burn plants, the legislation would set monitoring, operating, and maintenance requirements to ensure that burn-plant operators comply with

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the Clean Air Act. Florio has also introduced a companion bill, H.R. 2517, to regulate incinerator ash.

Meanwhile, a number of states either have passed or are considering mandatory recycling programs. Rhode Island, New Jersey, and Oregon all recently adopted recycling legislation, and New York has a solid-waste-management plan in the works that aims at recycling 50 percent of its waste within ten years.

But at presstime, 3,186 tons of New

York's garbage sits anchored off Coney Island. The load, largely composed of once-recyclable corrugated paper now ruined by sea water, waits to be burned in a scrubberless incinerator built 26 years ago. While incinerating the trash may rid America of a national embarrassment, many environmentalists feel that the real issue has simply been swept under the rug.

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CAROLYN MANN is Sierra's copy editor.

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# RACHEL'S HAZARDOUS WASTE NEWS #121

From Rachel: Weekly news and resources for citizens fighting toxics -- March 21, 1989

## INCINERATION VS. RECYCLING

Barry Commoner is the father of the modern environmental movement. Over the last 20 years, he has consistently led the way with clear thinking. His early book, The Closing Circle (NY: Knopf, 1971), is still the best introduction to the interconnected problems of our environment.

Now Dr. Commoner has once again provided leadership, giving us a way to think about the problem of municipal trash. In a speech March 4, 1989 to the New Jersey Environmental Federation, Dr. Commoner outlined our situation:

Our trash problems started with landfills. They are a non-renewable resource; once that hole in the ground is filled up, you have to go find another, more expensive one, and they're in short supply. Suddenly, a new, powerful industry has arrived on the scene claiming a solution to our trash problems: the incinerator industry. Where did this powerful new industry come from? Dr. Commoner points out that this is really not a new industry at all--it's merely the nuclear power people in sheep's clothing, selling new machines. Combustion Engineering, Westinghouse, Ogden-Martin... they were the nuclear industry, but they haven't been able to sell a new nuclear power plant for the last 11 years, so now they're selling trash incinerators.

Incinerators have one important feature in common with nuclear power plants: they produce pollution that didn't exist before the plant was switched on. Nuclear plants produce radioactivity, which no one knows how to dispose of safely, and trash incinerators produce toxic ash laden with dioxin and with heavy metals, which no one knows how to dispose of safely.

There are only three ways to deal with trash: don't make it (which Dr. Commoner calls "the best way"), recycle it, or incinerate it. Once trash is created, the question becomes, which is the best method for handling it--best in terms of getting rid of the trash, best for the environment, most affordable, and best for the economy

of the local community?

Dr. Commoner described two studies his organization has completed in the past two years, in Buffalo, NY, and in East Hampton, Long Island (New York). In East Hampton, one hundred families conducted a pilot study for 10 weeks; they separated their trash into four components: food garbage, paper, bottles and cans, and other (non-recyclables, mainly plastics). The East Hampton study showed that ordinary people, using existing technology could recycle 84% of their trash. (See RHWN #108.)

Dr. Commoner pointed out that Seattle, Washington, has achieved 60% recycling, and they are not even trying to compost their food wastes. "So it is clear that recycling can substitute for incineration to do the only thing that incineration is good at, which is to get rid of 70% of the trash. You can get rid of more of it by recycling," Dr. Commoner told his audience of 350.

The East Hampton study also showed that recycling is 35% cheaper than incineration. Even if the toxic ash from the incinerator is not shipped to an expensive hazardous waste landfill but is landfilled cheaply in a municipal dump, incineration is still 35% more expensive than recycling. Furthermore, the Buffalo study showed that recycling is much more beneficial to the economy of the local community. If a community purchases an incinerator, the money is paid from the local economy to a large, multi-national corporation. But an intensive recycling program creates jobs for local people. In the case of Buffalo, the local economy would receive \$12 million more per year from a recycling program than it would from an incinerator, even though the total cost of the recycling program would be less than the total cost of incineration.

Finally, recycling is environmentally superior to recycling not because of the environmental effects of the recycling operation vs. the environmental effects of the incinerator but because of all the pollution that is avoided when recycled materials are substituted for raw materials. A glass bottle is originally made from sand

and lime; the sand is melted to make the glass. A bottle made from recycled glass uses much less energy than does a bottle made from sand. The same is true for aluminum; an aluminum object made from recycled aluminum creates much less pollution in its manufacture than does an aluminum object made from raw bauxite ore which must be processed to extract new aluminum. It is the avoided pollution from processing raw materials that gives recycling its important environmental advantage over incineration.

Regarding the market for recyclables, Dr. Commoner points out that the manufacturers of paper, steel and aluminum save money by using recycled stock, so they will purchase as much of it as they can reliably acquire on a regular basis. These manufacturers need a guaranteed steady supply of recycled materials before they can gear up manufacturing processes reliant upon recycled materials. That is why community recycling programs will have to be mandated--communities will have to pass laws requiring participation in recycling programs--so the markets for recycled goods can be stabilized.

Dr. Commoner said his study of East Hampton had shown that you could give the recycled materials away free and still handle the town's trash more cheaply than you could incinerate it.

A major impediment to recycling programs is state laws, like the one passed by New Jersey, requiring all counties to establish recycling programs with modest goals such as recycling 25% of the trash. Dr. Commoner asks, What will happen to the other 75%? It will be incinerated.

Dr. Commoner points out 80% of our

trash can be recycled or incinerated but not both. Thus a program that sets a goal of 25% recycling will essentially guarantee that 75% of the trash will be incinerated. It will take 20 to 30 years to amortize (pay off) the cost of the incinerators, so during that period of time, the community will be prevented from establishing serious, far-reaching recycling programs. "I tell you, the New Jersey law is a sly way of insuring that incinerators will be built," Dr. Commoner told his audience March 4.

Dr. Commoner then put the trash problem into a larger framework. He pointed out that Washington-based environmental groups (but not grass roots groups) often say they favor incinerators "with proper controls." Dr. Commoner says this is how we got into the nuclear power mess to begin with--people accepting a lousy technology, hoping to make it acceptable by putting expensive controls on it. He said it's time we realized environmental pollution is like an incurable disease--our only hope is to prevent it.

Environmental pollution begins in the system of industrial and agricultural production. This means that we have to control the system of production, Dr. Commoner said.

He said the grass roots environmental movement "exemplifies the cutting edge of the environmental movement." He credited the movement with stopping the onslaught of the nuclear/incineration industry by asking for facts, seeking the truth and insisting "not in my back yard."

*Dr. Commoner is director of the Center for the Biology of Natural Systems (CBNS), Queens College, Flushing, NY 11367; phone (718) 670-4180.*

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REPORT BY STATE COMMISSION WARNS AGAINST  
RUSH BY CITIES TO BUILD TRASH INCINERATORS

DETROIT — (By a BNA Staff Correspondent) — Citing cost and efficiency factors, a watchdog agency says Michigan communities should think twice before they build trash incinerators to replace landfills.

"Considering the significant undesirable and unknown factors associated with incineration, many communities may in fact be trading one set of problems for another of equal or greater magnitude," the Toxic Substance Control Commission concluded in a recently released two-year study.

Richard Cook, the commission's vice-chairman and author of the study, said trash burners are expensive, inefficient, and generate significant amounts of toxic ash that must be buried in landfills.

While conceding that communities with a dearth of landfill space have limited options, Cook said communities first should make every effort to reduce or recycle wastes, then build the smallest burner possible.

A number of Michigan communities, including Jackson, Grand Rapids, and Detroit, already have pledged to build trash incinerators. Many others, including Muskegon, Kalamazoo, and Oakland counties, are considering incinerators as replacements for bothersome landfills.

But Cook said that when all costs are calculated, including future public expense of cleaning up landfills that leak the leftover wastes from incinerators, recycling becomes economically competitive with burning or burying trash.

Cook said each community should find its own best way to recycle, such as selling special low-priced trash bags for curb-side pickup of recyclable wastes.

Cole said the drawbacks to trash burners are that:

- ▶ Costs for construction, operation, and maintenance of incinerators almost always are far higher than expected.
- ▶ Landfill disposal costs for toxic debris from incinerators are likely to skyrocket in the future; and
- ▶ Incinerators need a constant supply of wastes, which creates a self-perpetuating demand for trash that hurts efforts to reduce or recycle wastes.

Despite early steps by Gov. James Blanchard and the legislature to promote recycling, there has been little action on the issue, the commission concluded.

"Unless the state takes an aggressive leadership role, incineration will in fact become the major alternative of choice," the report said.

David Dempsey, the governor's environmental advisor, said the state is beginning to discuss legislation that would make the recycling program a state priority.

He said one possibility is a law that would force communities to include recycling programs with construction of new trash incinerators. Also being considered is a law that would tax material dumped in landfills; the money would go for recycling projects.

Copies of the report, *Report on Trash Incineration*, dated Oct. 17, are available for \$4.00 from Jim Bedford, Toxics Substances Control Commission, P.O. Box 30028, Lansing, Mich. 48909.

50 CENTS

## ***Burning Issue***

### **Energy From Garbage Loses Some of Promise As Wave of the Future**

**Incineration Reminds Critics  
Of Nuclear-Power Fiasco;  
Recycling Again in Vogue**

**In Tuscaloosa, the 'Turkey'**

By BILL RICHARDS

*Staff Reporter of THE WALL STREET JOURNAL*  
POMPANO BEACH, Fla. — Towering over the sand and scrub pine at this city's outskirts is South Florida's tallest landform—Broward County's last legal dump. Lines of trucks snake up its sides, adding more than a thousand tons of trash daily. "Right now," says county waste official Thomas Henderson, "we are being pressed right up against the wall." Broward's solution: replace its mountain of trash with a mound of debt.

The county plans to spend nearly \$700 million on a pair of "resource recovery" plants—a giant new breed of incinerators that gobble garbage and turn it into salable steam and electricity. This, for many American communities, is the latest alternative to drowning in garbage.

Yes, say incineration's opponents, a panacea—just as nuclear power was. The waste-to-energy camp responds: The critics, not incineration, are the problem. 'Bill of Goods'

The 131,000 residents of Pompano Beach and two other Broward communities will take no part in the big project. They're building a recycling and composting plant instead. "Mass incineration is astronomically expensive and environmentally hazardous," says Pompano Beach City Commissioner Michael N. Gomes.

"Broward County has been sold a bill of goods, just like municipalities all over the country," says Frank Kreidler, an attorney for South Broward Citizens for a Better Environment. This group and the state of Florida have challenged Broward's project in the state supreme court.

The garbage crisis has promoted the construction of 73 waste-to-energy plants around the country, with hundreds more planned at a combined cost of more than

\$18 billion. Critics profess to feel an eerie sense of déjà vu in the trend toward burning. In the 1990s, they say, this could be a plant building binge was to electric utilities in the 1970s. It plunged many into an economic and environmental swamp in which a few are still mired, their huge cost overruns unrecoverable from customers, their shareholder dividends shrunken or ended.

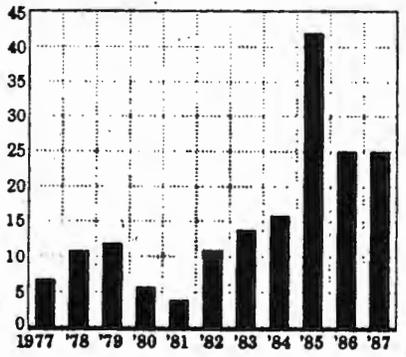
**Unhappy Surprises**

Robert A. Epler, the head of resource recovery for San Diego, says public officials today are repeating the utilities' mistakes in moving toward bigger and costlier projects instead of alternatives, mainly recycling. "These incinerators are the most expensive investment a lot of these communities will ever make," says Eric Goldstein, an attorney for the Natural Resources Defense Council, a New York environmental group opposing mass incineration. "A lot of them are just coming to realize the cost of a mistake could be very high."

The critics have a point. Already, the new incinerators are proving far more expensive than many communities dreamed. Some have spent millions of dollars to

**Plans for New Plants**

Number of municipalities that have signed contracts for waste-to-energy plants



Source: Kidder, Peabody & Co.

cover debt costs after revenues from electricity sales failed to meet expectations. More millions have gone into the tricky business of applying European garbage-burning technology to U.S. trash, loaded with abrasive plastics, glass and aluminum. Pinellas County, Fla., engineers were startled when the boiler on their new incinerator, which was supposed to last 20 years, began disintegrating in less than a year. The retrofit cost: \$5 million.

Perhaps more worrisome, the incinerators are burdening communities with thousands of tons of ash so laden with toxic heavy metals that it can be legally dumped in only a few places. Environmentalists are pressing for tough enforcement of federal dumping laws, which so far have been ignored, but industry officials warn that could be economically ruinous.

Such concerns have skittish local officials backing off in droves. More than \$3 billion in projects have been scrapped in the past 18 months, and new orders have slowed to a trickle. In Collier County, Fla., officials dropped plans for an incinerator last year after issuing \$88 million in bonds for it. "We took another look at the risks and decided to pull out and protect ourselves," says Arnold Lee Glass, the head of the board of commissioners.

For those still committed to waste-to-energy plants, unresolved problems

# Cincinnati Incinerator Sparks Joint Ohio/EDF Action

Through EDF's Environmental Information Exchange (EIE), EDF is working with state environmental groups in Connecticut, Illinois, Ohio, Michigan, and Wisconsin to promote environmentally sound management of municipal solid waste. A recent EIE effort in Cincinnati, involving a proposed "mass burn" incinerator, vividly demonstrates how EIE works jointly with state-level environmental groups to solve urgent state and national problems.

The Ohio Public Interest Campaign (OPIC), a member of the EIE network, invited EDF to help in Ohio. EDF staff attorneys Kathie Stein and Michael Herz and staff scientist Dr. Richard Denison went to Cincinnati for two days to meet with citizens groups, government officials, and the media to discuss problems with and alternatives to the incinerator plan and its "burn everything" approach.

Mass burn technology poses a number of concerns. The inclusion of noncombustible materials such as cans and bottles in incinerated waste can compromise the safety and efficiency of the entire process. Other products such as batteries, paint, and tires contribute toxic metals to trash—and to incinerator ash—and clearly should not be burned.

Also, in part because Cincinnati is not yet operating or even planning any large-scale recycling or waste reduction programs, EDF concluded that the proposed incinerator is oversized. Indeed, it would undermine efforts to launch such programs because Cincinnati would be required to send *all* its waste to the incinerator. EDF urged Cincinnati instead to reassess the need for the facility and begin long-term planning for safe management of its solid waste.

## Concerns Also Reach Washington

This EIE action may also have impact in Congress, where Cincinnati Representative Thomas A. Luken is an important figure in the progress of pending legislation to control the hazards of ash and air emissions from municipal incinerators. EDF's work on toxic ash has been reported in recent EDF LETTERS.

In response to EDF's concerns, Rep. James J. Florio introduced bills requiring the Environmental Protection Agency to specify stringent tests and treatment standards for ash that is hazardous to human health and the environment, impose technology-based controls on toxic incinerator emissions, and compel cities to adopt enforceable solid waste management plans before they can issue an incinerator permit. Similar legislation has been introduced in the Senate.

OPIC learned of these bills through EIE and is working with EDF to enact them. In its regular canvassing, OPIC told Cincinnatians about the bills and has made sure that Rep. Luken, who chairs the House subcommittee to which the ash bill was referred, knows they have strong local support. OPIC's efforts should convince Rep. Luken to hold prompt hearings.

## EDF MEMBER ACTION ALERT

EDF urges members to ask Representatives to support H.R. 2516 and 2517 and ask Senators to support the Sen. Env. Committee/Burdick Bill.



Donald A. Newman, a Cincinnati businessman whose property borders site of proposed incinerator, with Roxanne Qualls of Ohio Public Interest Campaign, and EDF staff Michael Herz, Dr. Richard Denison, and Kathie Stein.

Ohio Public Interest Campaign

# Nations Debate Plight of Elephants

Representatives of 86 nations met for two weeks in Ottawa, Canada, recently to address threats to rare species involved in international trade. The forum was the sixth biennial meeting of CITES, the Convention on International Trade in Endangered Species of Wild Fauna and Flora, the only global treaty governing commercial trade in wild plants and animals.

EDF participated in the meeting, as it has in past CITES meetings, as a non-governmental observer, a status that offers uncommon opportunities to take an active part in CITES deliberations.

Although CITES has reduced the menace of trade to many wild species, that threat continues for many others. Among these is the African elephant, and much of the Ottawa meeting was devoted to the plight of the elephant and to finding ways to stem its alarming decline. EDF Wildlife Program Chairman Michael J. Bean, who represented EDF at the meeting, took part in the special working group on the elephant problem and helped draft resolutions on other topics.

A report from the African Elephant and Rhino Specialist Group of the International Union for the Conservation of Nature presented a grim picture. The estimated African elephant population has been reduced from over 1.2 million in 1981 to only 750,000 in 1987. The decline has been even more dramatic in East Africa, with estimated populations down by more than half in this short time in Tanzania, Somalia, and Sudan.

## Halting Illegal Trade in Ivory

Habitat loss has reduced elephants in some areas, but the major problem is



Rick Weyerhaeuser for WWF-US

illegal ivory trading. CITES allows some raw ivory exports from individual African nations under a two-year-old quota system. Unfortunately, far more ivory is currently traded illegally than the amount traded legally under the quota system.

The primary offenders appear to be Burundi, an African nation with no remaining elephants of its own, and the United Arab Emirates, which recently became the first nation to announce its intention to withdraw from CITES. In an unusually blunt action, CITES delegates passed a resolution calling for diplomatic, political, and economic sanctions to pressure these two nations into cooperating with elephant conservation efforts. They also adopted other, less dramatic measures designed to make the CITES ivory quota system more effective.

Among several other important actions taken was a ban on further international commercial trade in the palm cockatoo and the hyacinth and military macaws, three large parrots involved in the pet trade. Proposals by France and Indonesia to reopen global trade in certain species of sea turtles were rejected, but trade restrictions on once-endangered crocodilians were relaxed.

*This will take leadership and vision.  
Reduce garbage to 80% without toxic incinerator ash and  
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THE NEW YORK TIMES, SUNDAY, JANUARY 29, 1989

*Maurice Weisberg*

# Don't Let City Garbage Go Up in Smoke

*Try it - you'll like it!*

By Barry Commoner

Properly handled, recycling could dispose of most of the nation's trash. But New York City and many other municipalities throughout the country are turning to incineration to solve their trash disposal problems. This is the wrong direction. Two recent developments serve as timely warnings. The first is the state Department of Environmental Conservation's refusal to approve a permit to construct an incinerator at the Brooklyn Navy Yard. The other is the long string of reports about the financial trouble being encountered in incinerator projects. The decision on the Navy Yard incinerator was based on two facts that were not considered by the Board of Estimate when, in 1985, it approved a plan to build five and eventually eight more trash-burning incinerators in the city. First, incinerator ash is toxic and therefore not disposable in the Fresh Kills landfill on Staten Island. Second, the city could recycle much more than 15 percent of its trash — its far from realized target — or even the 25 percent called for in a bill now before City Council. The Board of Estimate should reconsider its decision and instead direct the Sanitation Department to develop a trash disposal system in keeping with these new facts. A new system could be created simply by changing the way trash is handled in the city's present, voluntary recycling program. Participants separate trash into three categories. One of them, newspapers and cans and bottles, are hauled in compartmented trucks to a processing plant and converted into marketable products.

Barry Commoner is director of the Center for the Biology of Natural Systems, which develops intensive recycling systems, for the City of New York and East Hampton, L.I.

products. The third fraction — all the rest of household trash — is picked up as usual and taken to Fresh Kills.

According to the Sanitation Department, a maximum of 2,300 tons a day of recyclable materials could be obtained from households in this way — about 17 percent of the residential trash collected by the city (about 14,000 tons a day, or half the total trash stream). However, recycling collections in 1988 have averaged only 30 tons a day, less than 2 percent of this modest goal.

But the current recycling program targets only a fourth of recyclable trash. By the simple expedient of reorganizing the separation instructions, all of the recyclable trash (nearly 90 percent of total residential trash) could be collected and, with suitable facilities, processed and marketed. Recycling could then recover about 80 percent of all residential trash. This would do better than incinerators, which burn only 70 percent, leaving 30 percent as ash. More important, it would enable us to get by without building any incinerators.

The feasibility of this scale of recycling is evident from the results of a 10-week test of an intensive recycling system by 100 families in East Hampton, L.I. In the experiment, 84 percent of their trash was recovered as marketable materials.

## U.S. cities shouldn't build incinerators.

In New York City, under such a system householders would separate their trash into just three categories, as they do now. But the classifications would be different: food scraps and soiled paper; all forms of paper, cans

and bottles; all the rest (nonrecyclables). The food scraps and soiled paper, combined with yard waste (together, amounting to about 23 percent of residential trash), would be composted and marketed for horticultural and certain agricultural uses.

The second fraction, representing 60 percent to 65 percent of residential trash, would be hauled to a processing plant (like the one now operated for the city in Harlem), separated into various grades of paper, aluminum cans, tin cans and color-sorted crushed glass, and then marketed.

Allowing for inefficiencies, this system would recover and dispose of a total of about 80 percent of residential trash. The remaining nonrecyclable material would be deposited in Fresh Kills. By thus greatly reducing the burden on that overstressed facility, we would triple its expected life.

The same procedures could readily be applied to commercial waste, the other half of the city's trash stream. Experience shows that a high level of participation, which is of course essential, could be achieved if the new recycling program were mandated by law and accompanied by a large-scale education program.

An intensive recycling system could be operating within little more than a year — long before the Brooklyn Navy Yard incinerator, which could take four to five years to build. Certainly, the city could be recycling much more than the 3,000 tons a day that the Brooklyn Navy Yard incinerator is supposed to burn long before that now-paralyzed project could be completed.

The Sanitation Department claims that a high level of recycling from a city as large as New York would overwhelm the existing markets for recovered materials — that recycling can grow only after the demand for its products expands. In reality, the situation is just the reverse.

Recycled materials are cheaper than the virgin products for which they substitute. Aware that recycled materials increase profits, users of recycled glass, metal and paper have

Recycling is cheaper, cleaner and more efficient.

said repeatedly that they would expand the necessary manufacturing facilities if they could be assured of a steady supply. The adoption of intensive recycling by New York City is precisely the signal they need.

Intensive recycling is inherently cheaper than incineration, by 35 percent in the system designed for East Hampton. Moreover, incineration and recycling are mutually exclusive since about 80 percent of the trash components are burnable or recyclable, but obviously not both. A Warren County, N.J., incinerator has been forced to operate, uneconomically well below capacity because burnable trash components have been diverted to meet the state's mandate for 25 percent recycling. The proposed solution is to reduce the size of future incinerators, but that would freeze recycling at 25 percent — again uneconomically — for the 20-year lifetime of the incinerators.

Finally, we shouldn't lose sight of the environmental aspects of this issue. By supplanting the environmentally hazardous incinerator and avoiding pollution from the production of virgin metal, glass and paper, intensive recycling is clearly preferable to incineration.

Intensive recycling gives us an opportunity to transform the present trash program from an all-too-typical example of the city's failure to solve its public problems into a rare and inspiring success. □

# TRASH BURNING BRINGS NEW WOES

## Connecticut Faces Shortage of Landfill Space for Ash Left by Incinerators

By KIRK JOHNSON  
Special to The New York Times

HARTFORD Conn., Jan. 25 — Fifteen years ago, with empty land for garbage dumps disappearing, Connecticut became one of the first states to look to large incinerators as a way to dispose of trash. Today, the state is struggling to deal with the consequences of its own foresight.

The problem is that the garbage ash, originally envisioned as a sort of fire-purified landfill that could be disposed of in ordinary dumps, has become much more toxic, partly because of tighter air pollution regulations. The dioxin, lead and cadmium that once went up the stack now go down the ash chute, and the toxins are just as unpopular in the ground as they were in the air.

While other states have larger incinerator systems planned, Connecticut is already burning 40 to 60 percent of its household trash, the state estimates. It is so far ahead of other states that for a time last year, when plants across the country were mostly just beginning operations, Connecticut, the third-smallest state, had nearly one-fifth of the nation's trash-burning capacity.

### Landfills Nearing Capacity

"States like New Jersey and Massachusetts and Rhode Island will probably end up where we are," said Robert E. Moore, assistant deputy commissioner at the Connecticut Department of Environmental Protection. "We're just there a little sooner."

The state is financing research into ways to eliminate toxins from the ash, but faces a more immediate problem; the landfills it is currently using are nearing capacity.

In the next few months, the Connecticut General Assembly will be forced to decide whether to compel a handful of towns to take the ash or — in a year with a huge state revenue shortfall — pay hundreds of millions of dollars to have it carted out of state for burial.

The state wants 13 new landfills to hold ash from plants all over the state. Previously, communities accepted the ash in their landfills because in most cases the plants were providing an answer to the town's own garbage problem, and because they did not realize how toxic the ash was. But since most local zoning laws prohibit landfills from containing the contaminants now known to be found in ash, the Assembly would likely get its landfills only by empowering state officials to override local laws.



The New York Times Stephen Castagneto

Worker loading garbage ash onto a dump truck at a disposal plant in Hartford, Connecticut is struggling with the problem of garbage ash; once envisioned as easily disposed of, it is now more toxic.

## The leftover ash is now too toxic for most dumps to handle.

"Everyone is very unhappy, but my guess is we'll have to use the override," said Representative Mary M. Mushinsky, a Democrat and co-chairwoman of the Assembly's Environment Committee. She represents Wallingford, one of the 13 towns identified this month in a state study as containing a "geologically suitable" ash landfill sites.

### Benefits for Landfill Hosts

The study by the Department of Environmental Protection considered sites in every community in Connecticut, eliminating all but the 13 because of factors like the geology, water table or development of the sites. Although the report stressed that politics were not involved, population density was considered, and the result was that nearly half the sites are in the state's northeast corner, its least populous and least affluent area.

"Forget about the soil composition and geology — everyone knew this was how it would turn out," said Senator Marie A. Herbst of Vernon, whose district contains a proposed site.

"Many towns in my district have lit-

tle economic base," Mrs. Herbst, a Democrat, said. "Now the state is coming in and saying, 'Not only are you going to solve your own problems, but you're going to solve the problems for the whole state of Connecticut.' I think it's a little much to ask."

But opponents of the study's selections face intense pressure to find suitable alternatives. Having 13 clearly identified sites will, as one lawmaker put it, allow everyone else in the Assembly to band together and push through the legislation. A similar override bill which included no specific sites failed in the Assembly last year.

"Everybody thought it was going to be them, and no one wanted to be seen as approving something like this for their town," Ms. Mushinsky said.

Connecticut's five trash plants, in Hartford, Bridgeport, Bristol, Wallingford and Windham, process an average of 4,400 tons of trash and produce about 1,700 tons of ash every day. That is more than 10 times as much ash currently being produced in New Jersey, which has the most ambitious long-range incineration plans in the region, according to figures from Governmental Advisory Associates, a private company that researches waste disposal data.

Although New York has a greater incineration capacity, burning more than 8,000 tons daily, no similar ash-disposal crisis has arisen because the state is larger and because most of the plants are smaller and locally operated.

In Connecticut, officials said that towns picked for landfill sites would receive financial benefits in exchange. In

the hope that some communities might volunteer for participation, the legislation contains a provision that extra inducements, possibly including tax breaks, reductions in energy costs and other financial benefits would go to towns that step forward.

Because not all 13 landfill sites are needed to meet Connecticut's needs, the bill would create a six-month period after its passage during which the state and towns could negotiate. Each side would then submit a "last, best offer," and the agreement would be settled by binding arbitration.

Meanwhile, a state-financed research project at the University of Connecticut at Storrs is trying to find a way to eliminate toxins from the ash so it can perhaps be re-used for highway or other construction. But even if a solution is found, it could not be carried out immediately.

Critics say Connecticut rushed into trash-burning technologies and is now bound to incineration by the millions of dollars already spent and the momentum of plants that are up and running.

"It's too late for Connecticut communities that have bought into incineration in a big way," said Paul Connett, an associate professor of chemistry at St. Lawrence University in Canton, N.Y. Mr. Connett is also the national coordinator for a group called Work on Waste, U.S.A., which organizes local opposition to new trash plants in favor of composting, recycling and reuse.

"Think about it — the better the incinerators get, the more toxic the ash becomes and so we convert three tons of trash to one ton of ash," he said. "It doesn't make environmental or economic sense."

*Marianne Westberg*

