



TRASHING OUR FUTURE

**What Marylanders must know
about solid waste, landfills,
mass burn incineration,
recycling and the price
they'll pay for hasty decisions.**

*By Maryland Citizens'
Network*

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MEET MARYLAND CITIZENS' NETWORK

Maryland Citizens' Network is a new coalition of Maryland organizations concerned about the threat that toxic chemicals pose to our beautiful state and its wonderful people. We are:

Clean Water Action; Citizens for the Protection of Washington County; CODE; District of Columbia Urban Environmental Coalition; Friends of the Earth; Kent Conservation, Inc.; Maryland Division, Izaak Walton League of America; Maryland Public Interest Research Group; Maryland Waste Coalition; Northern Montgomery County Alliance; Peach Tree Citizens Association; Potomac Grass Roots Network; Prince George's Citizens Waste Coalition; Save Our Streams; Sugarloaf Citizens Association; United Communities Against Pollution; Urbana Civic Association.¹

We believe that one of the gravest toxic threats to the Maryland environment today comes from the headlong rush of local, county, and state government toward mass burn incinerators as a way to deal with our burgeoning load of trash. Also, we believe that trash incineration will prove to be far more costly to our government and its citizens than the government now appreciates.

We believe -- and the facts establish -- that this decision to go all out for incineration is premature and potentially very dangerous and costly. We fear that too-hasty decisions on the part of our government will needlessly endanger Marylanders and the state's natural resources, from the beautiful mountains and clear streams of Western Maryland, to the rich, rolling farmland in the middle of the state, to the priceless Chesapeake Bay, to the lovely rural setting of the Eastern Shore.

That is why we are acting together to call for the following steps to be enacted in 1989 to put the state's solid waste program on an environmentally and economically sound basis:

- A five-year moratorium on new trash incinerators.
- Strengthening of the Maryland recycling law and speedy implementation of those programs already planned.
- Systematic, integrated solid waste planning throughout the state that relies on the three "Rs" of solid waste management: reduce, reuse, recycle, with landfilling and trash burning only as a last resort and only with the most stringent environmental controls, monitoring, and ash handling.
- Retrofit existing incinerators to meet new emission and ash standards, as they become effective.

And that is also why we have produced this pamphlet, which we hope will serve as a reference all across the state for those who want to get beyond the mythology of mass burn and to the facts.

THE MARYLAND LANDFILL CRISIS: LESS THAN MEETS THE EYE?

The proponents of garbage incineration start with the proposition that we in Maryland are facing a landfill crisis, and that incineration will solve it, creating the misleading perception that incineration does away with the need for landfills. The reality, of course, is that burning only reduces the volume of trash. It does not eliminate the need for landfills and, as this paper explains, may make the landfill problem even worse.

Our landfills are filling up with trash faster than planned, and the incineration proponents assert that it is impossible to build new landfills in the state. What's more, they argue, the landfills are dirty, noxious facilities that are leaching toxics into groundwater.

Is this truth or fiction? That answer is that it's a mixture of both.

Landfills in the state are filling up, and some are environmental problems. Without new landfills, some Maryland counties will run out of landfill space in the 1990s.² Landfills can and do contaminate groundwater and drinking water supplies, through leaching of toxic organic chemicals and heavy metals such as lead. About a third of Maryland's landfills are currently under closure orders because of environmental problems.³

More than a landfill crisis, Maryland faces a garbage crisis. In 1986, Marylanders disposed of 6.6 million tons of trash, 91 percent in landfills, and 9 percent through burning. Both disposal techniques have major drawbacks, and there are workable alternatives that can reduce the dangers of landfilling and incineration.⁴

Fortunately, there is no evidence that it has become impossible to site new landfills in Maryland. Nor does the state face a crisis that forces the precipitous rush to burn that now seizes our state officials. We have time to get our garbage house in order, and come up with solutions that are better, not worse, than the problem. In order to understand this, it is helpful to start with a little history.

The dump, burn, dump, burn spiral

Before about 1950, most municipalities disposed of trash in old-fashioned dumps. But by about 1950, most authorities recognized these noxious facilities as public health threats. Many governmental bodies then turned to incineration as a way to dispose of trash. For the years prior to the late 1960s, incineration was the most common way that cities and counties in Maryland dealt with solid waste. Large,

belching smokestacks polluted the air at these facilities, and their ash was disposed of in crude, unlined dumps.⁵

But the rise of the environmental movement of the late 1960s, and specifically the passage of the first national Clean Air Act in 1970, rang the death knell for the old-fashioned incinerators. They were unable to meet even the relatively modest emission standards of the new law and were closed, all across the state. In Montgomery County, for example, the old incinerator on Gude Drive, which had been vaporizing the county's trash for many years, finally met the wrecker's ball.

The technology that replaced the old-fashioned, dirty trash furnaces was the so-called "sanitary landfill." The idea here was to bury trash in special landfills, covering each layer of trash with a thin layer of dirt. These landfills were expected to be safe, relatively clean repositories of the nation's refuse.

At the same time landfill technology was evolving, however, changes were also taking place in the nature of U.S. society that would eventually threaten to overwhelm the landfills. In the 1950s and into the 1960s, most beer and soft drinks were sold in refillable bottles and consumers paid a deposit on each. They were, as a result, recycled many times before being discarded for good. Also, most packaging was paper, and the fast food industry was still in its infancy.

By the middle of the 1970s, all that had changed. Drinks were distributed in steel or aluminum cans or bottles made of non-returnable glass. Few states had deposit laws. Plastic packaging replaced paper. Fast food outlets, with their non-degradable polystyrene clamshell containers, became a deeply ingrained part of the American way of life. At the same time, the magazine, printing, and direct-mail industries exploded, resulting in a blizzard of four-color magazines and advertisements filling mailboxes around the nation and state.

In terms of trash, the U.S. had become the most wasteful nation in the world. We throw out about \$227 million tons of garbage each year, more than any country in the world, including China, with a population four times that of the U.S. Every man, woman, and child in the U.S. produces 5.1 pounds of refuse each day.⁶

Siting a landfill in the more populous areas of the state, such as Montgomery County, had become a politically difficult proposition. The late 1970s battle over the Oaks landfill near Laytonsville was one of the most searing political fights in county history. However, siting was not yet difficult in rural areas in the state. Washington County, for example, was able to site and build a new landfill in the county in 1982, without much political uproar.⁷ But even where political opposition was not a problem, costs were rising rapidly. According to Frederick County Commissioner Mark Hoke, it would cost between \$300,000 and \$500,000 per acre to build a new landfill in the county.⁸

While siting landfills was becoming more difficult and costly, evidence was emerging that the sanitary landfills were not necessarily the harmless, hygienic places originally envisioned. There were two problems. Natural decomposition of the buried organic material in landfills was producing methane gas (CH₃), a combustible and polluting prod-

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uct that was rising from some landfills in unpredictable ways. Even more troubling was groundwater pollution. Rainfall hitting the landfills was percolating, or leaching, through the layers of dirt and trash and collecting pollutants such as lead and cadmium from printing inks, producing a noxious leachate that has the potential to poison wells.

Does all of this amount to a crisis? In some states, notably New Jersey and New York, there is a crisis indeed. Fortunately, that isn't yet the case in Maryland. Yet, there are people who want us to believe there is a landfill crisis in Maryland. They are the people in the incineration industry who are pushing their new, largely untried technology. Although there is no real landfill crisis in Maryland, the state clearly has a serious municipal solid waste problem. The state has time to plan for the future without the need to operate in a crisis atmosphere. Maryland should approach its problem with a careful, systematic program that evaluates all alternatives and seeks to minimize land-filling, without creating other, even worse, problems for the environment and public health.

Mass burn incineration: magic bullet or dud?

Troubling environmental problems. Increasing costs. Political turmoil. By the late 1970s, landfills no longer seemed the answer to the state's solid waste problem to many Maryland public officials.

But a promising new technology from Europe -- being heavily promoted by some aggressive U.S. firms -- seemed to offer a perfect alternative, just as landfills were becoming so problematic. The developers called the technology "mass burn."

In mass burn technology, unsegregated trash is burned in large boilers. The plants do not first remove recyclable glass, metals, and compostable organic matter. In the words of one newspaper, in these plants, "everything, except for the occasional Volkswagen fender, goes into the fires."⁹

The heat is used to raise steam. The steam is used to turn turbine-generators, producing electricity that is sold to the local electric utility. The remaining ash, about a quarter of the weight of the unburned material, goes to the landfill.

Officials call this technology a variety of names, such as "waste-to-energy," "resource recovery," "energy-recovery," or "energy recycling." All of these terms are designed to confuse. The primary purpose of the facilities is to burn solid waste. The energy component is secondary.

The private-sector promoters of the technology initially promised to take all the financial risks of the projects, in return for the opportunity to make a profit charging for waste disposal and selling electricity. To many state and local officials, mass burn looked like a "magic bullet" to solve the solid waste problem, easily and painlessly.

But it wasn't.

Although mass burn technology has been used for years in Europe, it has not been without controversy. Sweden has had a moratorium on

new mass burn facilities, and in 1985, Denmark closed eight plants because of dioxin emissions.¹⁰ Nor are European practices comparable to those in use in the U.S. The four European countries where mass burn is most prevalent -- Norway, Sweden, West Germany, and Switzerland -- recycle a far greater portion of their wastes than is typical in the U.S. and produce far less plastic in the waste stream. The European plants are also smaller than U.S. versions, and produce lower-temperature steam used for heating and cooling, not for production of electricity.¹¹

As one Wall Street analyst noted, "The transfer of mass-burn technology from Europe, where it has been used since the 1950s, has hardly been seamless." He added another important point about the European milieu and that of the U.S.: A "key difference between European and American resource recovery, however, is that European plants are necessitated by a lack of land disposal space rather than being driven by profit."¹²

Long on promise, mass burn projects in the U.S. have frequently turned out to be short on delivery. A plant built by Wheelabrator Environmental Systems for the town of Saugus, Mass., in 1975, suffered repeated shutdowns, needed \$11 million in repairs, and finally required a federal bailout. A Pinellas County, Fla. plant, built by the same company, also suffered breakdowns and expensive, unplanned repairs.¹³ (The same firm built the BRESCO mass burn plant in Baltimore and wants to build a plant in Kent County.) A \$350 million plant built in Hempstead on Long Island was closed in 1980 because of dioxin emissions and was dynamited in 1987.¹⁴ Those magic bullets were blanks.

Up the stack... and into the breadbasket

Mass burn plants have also turned out to be short on environmental performance and long on toxic pollutants. One of the most troubling pollution problems, first highlighted in Europe, is production of dioxins and furans in the smoke that goes up the stack. These cancer-causing chemicals were first identified as products of waste incineration in 1977. When Massachusetts regulators did their first dioxin tests in 1986, they found one trash incinerator emitting such high levels of dioxins that they shut it down, after it had been operating for more than two years.¹⁵

The chemical name for dioxins is polychlorinated dibenzo-p-dioxins, or PCDD. Furans are similar chemicals, with one fewer oxygen atom in the complex hydrocarbon molecule, and called polychlorinated dibenzofurans, or PCDF.

Both dioxins and furans are deadly toxins and carcinogens. Nor does there appear to be a threshold level below which exposure is not dangerous. The Scientific Review Panel of the California Air Resources Board has concluded that "an exposure level [at] which no significant health effects will occur cannot be identified." The Canadian Expert Advisory Committee on Dioxins concluded that it is "imperative to reduce dioxin exposure to the absolute minimum."¹⁶

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Nor are dioxins and furans the only troubling chemicals that come out of the smoke stacks at mass burn facilities. Conventional air pollutants, such as sulfur dioxide and oxides of nitrogen, which contribute to acid rain, also come from the plants. The plants also emit toxic heavy metals such as mercury, cadmium, and lead.

All of these pollutants and toxins find their way into our bodies, well beyond the immediate vicinity of the plants. Not only can local people breathe in the dangerous chemicals, but the pollutants will fall into local streams and rivers, eventually ending up in the Bay and into fish and other seafood.¹⁷ And they fall on the grass, where grazing animals eat them, and they end up in our meat, milk, and eggs. Dioxins, for example, concentrate in fat, where they remain for long periods.

Mass burn means burning eyes and lungs

Other air pollutants from mass burn facilities are the acid gas hydrogen chloride (HCl), and precursors to ozone, an irritating chemical that promotes smog and respiratory problems and is one of the most widespread air pollution problems in the U.S.

HCl is the most abundant pollutant from trash incinerators. When the gas contacts water, it instantly forms hydrochloric acid, which can cause stinging eyes, respiratory problems, acid rain that kills fish, and damage to buildings, statues, and other structures. A study by the New York State Department of Environmental Conservation found that trash burners may emit 40 times the HCl generated by coal-burning facilities.¹⁸

HCl comes from the burning of chlorine-containing wastes, particularly PVC plastic. PVC is about 50 percent chlorine by weight, and one of the most common components of household waste.

Flue gas scrubbers, which use lime or other alkaline substances sprayed into the incinerator stack, can reduce HCl emissions substantially. Widely used on coal-fired power plants, scrubbers in mass burn plants are still largely experimental, and the industry is resisting using them, because they add considerably to the capital and operating costs of a plant.¹⁹ Lately, there has been evidence that the alkaline environment of the acid gas scrubber may promote another mass burn problem: toxic ash.

Matter can neither be created nor destroyed

Remember high school physics and the law of conservation of matter? Mass burn incinerators don't destroy trash, they simply convert it. In the words of Dr. Richard Denison and Dr. Ellen Silbergeld of the Environmental Defense Fund, "In a systems sense, it is altogether incorrect to consider incineration a method of waste disposal. Incineration is a processing technology...."²⁰

About 75 percent of the weight of the material put into the furnace goes up the stack as air emissions. The rest becomes incinerator ash. Unfortunately, toxic substances in the waste, such as lead, become concentrated in the ash. The better the job the plant does at removing the toxic dioxins, furans, and heavy metals from the air emissions, the

more toxic the ash will be.

Denison and Silbergeld make the point that “the process of incineration is uniquely unsuited for managing metals. Incineration essentially destroys the bulky matrix — paper, plastics, or other materials — which contains metals [in municipal solid waste] and which acts to retard their entrance and dispersion into the environment. In this respect, incinerators can be compared to secondary metal smelters; by burning combustible materials they release metals, which are subsequently released in air emissions or concentrated in the residues in highly bioavailable form.”²¹

Mass burn plants produce two kinds of ash. Fly ash comes from the exhaust stream. Bottom ash comes from the bottom of the boiler, and may include large chunks of unburned, recoverable metals such as iron and steel, which are often separated by magnets before the ash goes to the landfill.

The most troublesome pollutant in incinerator ash is lead. According to toxicologist Silbergeld, a leading expert on the toxic effects of lead, “The levels of lead are so high that incinerator ash itself is as dangerous as lead-based paint, the same paint banned in the U.S. in 1973.”²²

Why was lead paint banned? Because lead is one of the most dangerous and toxic chemicals commonly encountered in the environment. At low doses, lead can damage the nervous system, leading to mental retardation in children. It is particularly damaging to developing fetuses in pregnant women. Even small increases in exposure to lead can have catastrophic results, because lead is already so prevalent. Denison and Silbergeld conclude that “failure to understand the incremental nature of lead poisoning and current exposure levels will blind us to the real risks of a major new source of lead in the environment.”²³

In 1987, New York State tested ash from six solid waste incinerators. Four of twelve samples of bottom ash were toxic under the criteria used by the U.S. Environmental Protection Agency for lead. All 25 samples of fly ash samples had toxic levels of lead and cadmium.

Acid gas scrubbers may also make it easier for the lead in incinerator ash to leach into the environment. That is because lead can easily dissolve in water that is either acidic or alkaline.

In summary, burning trash transforms pollutants in solid waste into more life-threatening form. It also combines components in trash to form new toxic compounds — dioxins and furans. Burning does not make the trash disappear safely. Instead, it magnifies the dangers of landfills.

Mass burn still requires landfills

Toxic ash from mass burn incinerators should be disposed of very carefully in hazardous-waste landfills that meet higher criteria than any landfill now existing in Maryland. Burning does not answer the landfill problem, and probably makes it worse.

If Maryland makes a major commitment to mass burn, then the

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state is also making an implicit commitment to future landfills, and probably of the most expensive type, with liners designed to serve as barriers to the toxic wastes. There is no way around it. The U.S. Environmental Protection Agency has consistently said that eventually all landfill liners will leak.²⁴

Although industry claims incineration eliminates about 90 percent of the volume of municipal solid waste,²⁵ that does not lead to a full 90 percent reduction in landfilling. First, incinerator ash does not compact much when landfilled, while unburned waste does. For that reason, several states, such as Massachusetts, always use weight, not volume, to compute landfill capacity.²⁶

Also, mass burn incinerators cannot handle at least five percent of the garbage that they gobble. Bulky items such as refrigerators, mattresses, tires, Volkswagen fenders, and the like, get separated from the burn pile and end up in the landfill.²⁵

A region that produces 500,000 tons of garbage a year, about what Montgomery County turns out, would need 11.5 million tons of landfill capacity with no incineration. With an incinerator, the community would still need 5.4 million tons of landfill space, or nearly half as much as if the incinerator had never been built.

	Landfill space needed (millions of tons)	
	Without incinerator	With incinerator
Space needed for three years of design, planning and construction	1.5	1.5
Landfill space needed after plant is built (20 years)	10	2.9
Diversion space (in periods when incinerator is shut down)	0	1
Total landfill space after 23 years	11.5	5.4

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Transporting ash puts pollution on the move

Another troubling aspect of mass burn projects is ash transportation. The ash has to get to the landfill from the incinerator, and that will often mean a trip of considerable distance. Project developers will want to locate the incinerator as close to an existing electric generating plant as possible, to reduce the costs of switchgear, electric transmission rights of way, and the like. But landfills require different sorts of sites, and their location is dictated partly by hydrology.

In Montgomery County, for example, the proposed site of the in-

cinerator is in Dickerson, in the northwestern part of the county near the Potomac Electric Power Co.'s major coal-fired power plant. That site is some 20 miles from the county's trash transfer facility in Shady Grove. On the other hand, the county's sanitary landfill is in Laytonsville, in the northeastern part of the county.

In some cases, ash will be hauled from the trash burner to the landfill by truck. In others, ash will move by rail. In some unusual cases, the ash haul might involve barge transport. Each transportation mode involves risks. In all cases, the ash must be carried in covered containers, which must be inspected and maintained regularly because ash is corrosive and abrasive.

Truck transport also raises issues of increased traffic, noise, congestion, and highway safety. The ash hauler, whether municipality or private contractor, will have to have an accident recovery plan tailored to specifically cleaning up after an ash spill as a public health measure.

Rail transporters will have to plan for how to deal with derailments, a fairly common occurrence on Maryland lines.²⁸ Again, there should be a detailed, tested plan for handling ash in an accident.

Barge transportation, which is the cheapest method of transport where available, offers a particular threat of an ash spill into water. Some components of ash are soluble and will dissolve in water, others will float downstream, and some will sink to the bottom. Dealing with a waterborne ash spill could be more difficult than a land spill from a train or truck system.

Transporters, whether public or private, will have to carry liability insurance to protect innocent parties in the event of an accident. If ash is determined to be a toxic substance, as now appears likely, then obtaining insurance could prove a difficult and costly matter.

There is an alternative to ash transport. Mass burn facilities might be located at the same site as the landfill, basically eliminating the need for expensive transportation. However, this approach has both political and potential public health problems.

Politically, many jurisdictions that deal with unpopular facilities such as landfills and trash burners often try to minimize the political burden by spreading it around. Thus, they promise people living near a landfill site that they will not locate the incinerator near them. Then they will assure the folks at the site of the incinerator that they won't visit a new landfill on them. It's difficult for politicians to avoid this tactic.

But once a mass burn facility has been sited, that fact will bring pressure on the jurisdiction to site its new landfills as close as possible to the ash source. Thus Montgomery County is now targeting the up-county area around Dickerson, where it plans a mass burn plant, for the county's next landfill.²⁹

The landfill-located incinerator also may require electric transmission facilities to get the power to the local grid. Siting transmission lines is at least as politically difficult as siting landfills, and often requires use of condemnation powers.

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TRASH TO CASH: THE PICKPOCKET'S PRIMER

Unlike the situation in Europe, in America promoters of mass burn technology are in it for a profit. Companies such as Ogden Martin, Wheelabrator Environmental Systems, Browning Ferris Industries, Air Products and Chemicals, Westinghouse Electric and General Electric are all promoting mass burn as a solution to the solid waste problem, and as an important new business opportunity for themselves.

From a business standpoint, the most attractive aspect of mass burn is the ability of project developers to shift much of the risk onto other shoulders. "Who takes the risks in a waste-to-energy project?" asks a Wall Street Analyst. "The division of responsibility varies from case to case, of course, but it's our belief that vendors usually can insulate themselves fairly well from potential difficulties."³⁰

The risk shifting is accomplished through a series of subsidies that insulate trash incinerators from the free market, turning those piles of municipal waste into mountains of gold. Waste to energy plants are truly trash-to-cash machines.

Picking the counties' pockets

The first subsidy that trash burners enjoy is access to low-interest financing. A variety of municipal financing mechanisms are available for these projects, including issuance of county bonds, issuance of industrial development bonds, or issuance of pollution control bonds. In any case, on a \$140 million project, a one percent reduction in interest payments could mean savings of more than \$1 million per year in project costs. That could mean a \$20 million savings over the 20-year life of the project.

BRESCO, the mass burn facility built by a Wheelabrator predecessor in Baltimore and operated by the Northeast Maryland Waste Disposal Authority, is fairly typical. The \$254 million project was financed with \$191 million in tax-free revenue bonds raised by the Northeast Authority, which was established by the legislature to take advantage of low interest municipal financing. Signal Environmental Systems (now Wheelabrator) put up \$63 million in equity.³¹

Mass burn plants are capital intensive. A standard rule of thumb in the industry is that the plants cost about \$100,000 for each ton per day of trash, excluding feasibility studies, environmental analysis and impact statements, and the like. As a result, building the plants can result in "tipping fee shock," a large increase in the tipping fee that the municipality must pay to deliver trash to the incinerator.

The tipping fee is the second, and most important, subsidy in the trash-to-cash business. In conventional energy projects, fuel is a cost item, recorded in the operations & maintenance (O&M) account. For most electric generators, fuel is the biggest cost item in the O&M account.

But in mass burn plants, fuel becomes a cash cow, not a cash drain. The key to the business is that municipalities pay the operator of the incinerator to take the fuel -- trash -- from the municipality. This is called the "tipping fee."

What is more, the contracts between the local government and the operator of the mass burn plant typically guarantee a flow of fuel (trash) to the plant, at a specified fee. If, for some reason, the county is unable to deliver the fuel, the county must pay the tipping fee for the contractual amount. So, for example, if the county agrees to supply 1,400 tons per day at \$25 per ton, or \$35,000 per day, but can deliver only 1,000 tons per day, the county still pays \$35,000 per day. This is called a "put-or-pay" contract.

The Northeast Authority's Harford County mass burn facility has a "put or pay" contract with the plant operators that is characteristic. According to the Authority, "if part of the Guaranteed Annual Tonnage is not delivered by or on behalf of the County, the County must pay the Tipping Fee as if it has been delivered plus a penalty related to the amount of energy revenues lost as a result."³²

The tipping fee is where the private-sector operator of the plant takes his profit. If a project operator is concerned that the high capital cost of a project will cause immediate rate shock, he can structure the tipping fee to be low in the first years of the project to minimize the shock, but then rise dramatically in the later years of the project's life, to yield the predetermined rate of return.³³

Picking the ratepayers' pockets

Returns from electricity sales are another source of significant income from the project, almost entirely profit, and also heavily subsidized.

In 1978, Congress passed the Public Utility Regulatory Policies Act, or PURPA. The purpose of PURPA was to encourage small, innovative ways of generating electricity, such as solar energy, wind power, and small hydropower. Instead, PURPA is now subsidizing a whole new generation of gas, coal, and trash-fired power plants.

The key element in PURPA is a requirement that conventional electric utilities buy power from non-utility generators, known as "qualifying facilities," at a premium price. Prior to PURPA, utilities frequently refused to buy independently generated power, or offered a price so low that the independent generator was unable to profit from the sale. PURPA requires that the utility pay the qualifying facility its "avoided cost" for the power, or what it would cost the utility to generate the additional power itself. The Federal Energy Regulatory Commission, an obscure federal agency originally named the Federal Power Commission, administers PURPA and tells electric utilities

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how to determine avoided cost.

PURPA has been the linchpin in the trash-to-cash business, because without it, waste-to-energy would be simply waste-to-ash. PURPA guarantees a return on electric sales that would be profitable even for conventional facilities. For trash burners, with fuel costs turned into fuel profits, the avoided cost figure is doubly profitable.

The proposed Montgomery County facility, for example, at 1,440 tons per day, will probably generate about 50 megawatts of power. Using \$0.125 per kilowatt hour as a rough approximation of Potomac Electric Power Co.'s avoided cost rate and assuming a 50 percent capacity factor for the county plant yields a revenue stream from electricity sales of about \$27 million per year. By contrast, a tipping fee of \$50 per ton would yield an annual revenue stream of about \$26 million.³⁴

Picking our childrens' pockets

Given the large profits that flow from the subsidies for mass burn plants, there is a predictable boom in construction nationally and in Maryland. There has been some talk in Maryland state government of perhaps eight mass burn incinerators being built in Maryland,³⁵ and more could be planned. But booms have a habit precipitating busts, and many of these plants could end up being expensive white elephants, as project developers walk away from uneconomic plants.

This boom-and-bust cycle has beset major energy projects in the past, including nuclear power, coal-fired power plants and, most recently, synthetic fuels. Once the economics that led to the boom mentality changed, developers abandoned projects on which millions, and in some cases, billions of dollars had been spent.

In those cases, the boom psychology was fed by inaccurate economic forecasts. Planners said electricity demand would grow by seven percent annually throughout the 1970s, requiring a doubling of electrical generating capacity. Instead, demand grew much slower, and ratepayers in many areas of the U.S. were left with enormous, expensive generating plants they didn't need. In synfuels, forecasters said the price of oil, then at \$30 per barrel and rising, would continue to rise forever. Billion dollar plants that would turn coal or oil shale into gasoline quickly sprang up. But oil prices fell, dramatically. Today, the price of oil is around \$15 per barrel, and holding.

Now there is evidence that the same cycle may be about to repeat itself in mass burn. Recently the Pennsylvania House Conservation Committee reported that the number of mass burn incinerators planned for the state could result in overcapacity of 2.5 million tons per year, forcing municipalities in the state to import garbage to meet costs, or shut the plants down altogether. "So we are faced with a problem of insurmountable dimensions if we approve all of these incinerators," said Committee Chairman Camille George. "If they can't get enough solid waste to feed their hungry furnaces, they'll never achieve the rosy revenue figures projected by their consulting engineers. And if they manage to get enough through price-cutting on

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their tipping fees, they'll still have to struggle to pay off their bond issues. The obvious result is that some of them are going to go belly-up with multimillion dollar obligations and mass burn plants could stand as rusting, decaying monuments to our stupidity."³⁶

And who will pay for those rusting white elephants? Because they were financed with bonds backed by the municipalities or the state, the answer is: our children.

“Some of them are going to go belly-up with multimillion dollar obligations and mass burn plants could stand as rusting, decaying monuments to our stupidity.”

THE TRASH RUSH OF '88

The prospects of turning trash into cash have lured a number of large, sophisticated players into the game. These companies generally build and operate the mass burn plants, either for municipalities or, as in the case of NEA, for a consortium of municipalities. Here are some of the principal companies offering to build and run mass burn facilities.

Ogden Martin Systems

Ogden Corp., a conglomerate that, among other things, runs ball-park concessions and office cleaning businesses, in 1983 acquired the U.S. rights to mass burn technology developed by Martin GmbH of West Germany. The mass burn division, Ogden Martin Systems, bids on public mass burn projects, and will sometimes take an equity position in the plants it builds. The Martin incineration technology is now used on about a third of all mass burn plants operating or under construction around the world.

1987 was a particularly good marketing year for the company, which landed a 3,000 ton per day plant in Fairfax County, Va., a 1,440 ton per day plant in Union County, N.J., and two sizeable orders in Pennsylvania. In January, 1988, Ogden Martin signed an agreement for a 750-ton per day plant in Rhode Island.

Ogden Martin makes environmental controls a major selling point of its plants. The company says its emission control equipment, using fabric filter baghouses and lime spray scrubbers, exceeds existing regulations. The company disposes of ash in monofills, landfills devoted only to disposing of ash.

Ogden Martin currently has seven operating mass burn plants in the U.S., with total capacity of 12,200 tons per day. The company has five plants under construction, totaling 6,187 tons per day of capacity, and 9 projects, with 13,440 tons per day of capacity, under contract.

Ogden Martin is also moving into the hazardous waste business. In late 1986, the company bought a proprietary technology for burning non-radioactive hazardous waste in a circulating-bed incinerator and is now poised to take a part of the Superfund cleanup market.

Ogden turned a 1987 operating profit of \$54 million (\$1.35 per share), compared to \$38.6 million (99 cents per share) in 1986. The company currently has about \$200 million on hand in cash and marketable securities, making it very well heeled indeed.

Wheelabrator Technologies

Wheelabrator is the most experienced mass burn vendor in the U.S., beginning with the 1975 Saugus, Mass., plant. That plant experienced considerable difficulties, and expensive upgrades, but has

been running for more than 12 years.

The company's origins are in a New Jersey firm named Wheelabrator-Frye, which developed a number of innovative combustion technologies, including atmospheric fluidized bed combustion of coal. Wheelabrator-Frye was bought up by Signal Companies. Under the name of Signal Environmental Systems, it was spun off as part of the Henley Group. Henley in September 1987 wrapped Signal Environmental, Signal Energy, and Rust International Corp. into a spinoff named Wheelabrator Technologies Inc. Trash to cash makes up about half of the company's income. Wheelabrator also manufactures cogeneration and alternative energy equipment, builds wastewater treatment facilities, and offers engineering services. Wheelabrator owns the U.S. rights to the European Von Roll incineration technology.

Wheelabrator likes to take a "merchant" approach to plant development. It owns and operates the plants as entrepreneurial ventures, without the guaranteed "put or pay" contracts with municipalities which characterize most deals in this industry. Wheelabrator is currently attempting to develop a project in Kent County on this basis. But the company also plays in the conventional market. Wheelabrator currently is trying to bring on line a major mass burn project in Brooklyn, which has been stalled since 1984 because of local opposition. The company is building a 575 ton per day plant in Gloucester, N.J.

Wheelabrator currently has 7 operating projects, with total capacity of 12,200 tons per day. Four plants totalling 6,000 tons per day of capacity are under construction, and another four (6,000 tons) are under contract.

Wheelabrator believes it has an ace in the hole, should the U.S. Environmental Protection Agency declare that incinerator ash is hazardous and has to be disposed of under the stringent terms of the Resource Conservation and Recovery Act of 1979. Wheelabrator claims it has developed a proprietary stabilization process that will allow its ash to pass the extraction procedure toxicity test and win a rating as non-hazardous.

After several years of financial declines, Wheelabrator's performance turned around in 1987. Net income soared more than 400 percent on an 18 percent climb in revenues. Recently, Waste Management Inc., the nation's largest hazardous waste handler, merged its waste-to-energy operations with Wheelabrator. The new firm, retaining the name of Wheelabrator Technologies Inc., is 62 percent owned by Henley, 23 percent by Waste Management, and 15 percent by Wheelabrator.³⁷

The merger will give Wheelabrator access to Waste Management's 110 waste disposal sites in the U.S., a number of which are permitted to handle hazardous waste. This could give Wheelabrator an advantage if ash is declared toxic.³⁸

American Ref-Fuel

Browning-Ferris Industries (BFI) and Air Products & Chemical established a joint venture in 1983, called American Ref-Fuel, to build

“Trash to cash makes up about half of the company's income.”

and operate mass burn incinerators. BFI is one of the largest waste management firms in the U.S. Air Products is experienced in operating large plants, and has been an important player in the energy business. BFI also brought to the venture its ownership of North American rights to the Dusseldorf Roller Grate technology development by West Germany's Deutsche Babcock Anlagen, used in Europe since 1961.

American Ref-Fuel currently has no plants in operation. It has won contracts for projects with total value of about \$1.3 billion, with two projects under construction. In 1985, the company was chosen to build a \$252 million, 2,250 ton per day plant in Hempstead to replace a failed waste-to-energy plant that opened in 1978 and closed two years later. The company has also landed a contract for a 3,000 ton per day plant in Bergen County, N.J., a 2,250 ton per day plant in Essex, N.J., and a 1,000 ton per day plant in Oyster Bay, N.Y.

Westinghouse

Westinghouse Electric Corp., the giant, Pittsburgh-based energy conglomerate, is one of the former nuclear plant vendors which has decided to make a major push for mass burn technology.³⁹ The company has been having a hard time selling reactor systems or large steam turbine generators, its bread-and-butter in the past, and is looking for new opportunities.

Westinghouse currently has two mass burn plants in operation, with combined capacity of 1,010 tons per day. One is in Bay County, Florida, and the other in York, Pa. Two others are under construction with 1,854 tons per day combined capacity, one in Islip, N.Y., and the other in Dutchess County, N.Y., and two plants (3,488 tons per day) are under contract for Delaware County, Pa, and San Juan, Puerto Rico.

Westinghouse uses a rotary, water-cooled kiln, called the Westinghouse O'Conner system, to burn garbage. The company says the technology is superior to other mass burn techniques because it offers more complete combustion. Because it uses hot air return, the O'Conner system also handles a variety of liquid and semi-solid wastes including sewage sludge, residual oil, and refinery bottoms.⁴⁰ According to Westinghouse, O'Conner combustors are now operating at six mass burn plants in the U.S. and Japan.

Mass burn is an immature technology with scale-up problems

"Technologists," says Walter Baer, a respected analyst of technology issues, "are basically optimists; they assume things will go smoothly. But the more they learn, the more difficulties arise, and the more expensive projects become."⁴¹

The phenomenon has happened time after time, in nuclear power, synthetic fuels, clean coal technologies. Projects take longer than expected to build, perform more poorly than expected, and prove very difficult to scale up from demonstration sizes.

The phenomenon is also occurring in mass burn. In the words of

“In 1985, the price of dumping garbage at the Pinellas County plant jumped 36 percent.”

Edward Kerman of Moody's Investors Service, "We're still in the infancy stage with this industry. There are only a handful of plants nationally with any kind of operating history." Moody's concluded in a report issued in 1987 that mass burn "is not yet a 'proven' technology" in the U.S. However, as Smith Barney's Leung observes, "The key question is whether this young industry can work profitably on American shores."⁴²

In the case of mass burn, American firms have taken a technology developed in Europe for a specific task — volume reduction of solid waste — and tried to modify it to perform a dual purpose, trash conversion and generation of electricity. In order to do this, they have had to increase the size of the plants, and increase the combustion temperature. The results have often been a series of technical and economic surprises that the optimistic technologists didn't bargain for. As examples,

- In Saugus, Mass., a plant built by Wheelabrator that opened in 1975 required \$11 million extra for unplanned repairs. Wheelabrator has acknowledged that European technology "is not directly transferable to the U.S. because of a number of reasons." At Saugus, said Wheelabrator spokesman Kevin Stickney, "It was a European plant burning American waste. And within two to three years, we had to replace the superheaters, redesign the furnace and redesign the combustion air system -- all towards accommodating this more abrasive and more volatile waste."⁴³
- Another Wheelabrator plant, this one in Pinellas County, Fla., suffered a similar fate. The \$160 million plant started having problems almost from the first day it started running in 1983. Boiler tubes and the superheater began to erode and break. The high concentration of plastics in the waste stream and the high temperatures necessary to generate electricity yielded much more acid gas (HCl) than planned. Repairs cost \$8 million. Unscheduled shutdowns built up 25,000 tons of garbage, costing another \$780,000 to haul away to the landfill. Wheelabrator failed to produce enough energy to meet its contract with the local electric utility for nine of the first 20 months of operation. Wheelabrator says it paid for the losses. Nevertheless, in 1985, the price of dumping garbage at the Pinellas County plant jumped 36 percent.⁴⁴
- In Tuscaloosa, Ala., local officials sued the manufacturer of the local waste-to-energy plant, Consumat Systems Inc. (which also built the Harford County plant) for \$20 million after the plant lost money for 34 consecutive months of operation. Critics call the project the "Tuscaloosa Turkey."

Mass burn proponents are long on promise, but short on delivery. According to Newsday's exhaustive survey of the subject, "half of the 32 mass burn plants already working have experienced unscheduled shutdowns, and three others have been closed permanently."⁴⁵

“Half of the 32 mass burn plants already working have experienced unscheduled shutdowns, and three others have been closed permanently.”

Mass burn repeats the mistakes of nuclear power

Lewis Strauss, chairman of the Atomic Energy Commission during the Eisenhower Administration, promised that the atom would “deliver to our grandchildren electricity too cheap to meter.” Today, those grandchildren are adults and nuclear power delivers electricity that is so expensive that every nuclear plant ordered since 1974 has been cancelled.

But some of the same companies that brought the nuclear fiasco — such as Westinghouse, Combustion Engineering, and General Electric — are now promoting mass burn with the same sort of mindless zeal. In touting its mass burn facility in Bay County, Florida, for example, Westinghouse describes the area as “a place where waste disposal is no longer a problem for the community. In Bay County, the Westinghouse Bay Resource Management Center is solving the area’s waste disposal problem and, at the same time, protecting the water, air and land that is so valued by this community.”⁴⁶

The reality is somewhat different. The plant was designed to burn 510 tons of refuse per day and produce 12 megawatts of power to be sold to Florida Power Corp. But the plant has never operated at that level. Instead, the state air quality operating permit limits the facility to burning 350 tons per day.⁴⁷ The plant is not equipped with an acid gas scrubber, and has been extremely controversial throughout the community, even though it has now been operating for more than a year. So controversial, in fact, that it has become a major election issue in the county.

Government has failed to protect its citizens

When it comes to protecting public health and environment from the problems of mass burn incinerators, neither federal nor state governments have developed an adequate regulatory regime. Because of their size, newness, and the crisis atmosphere that vendors of the plants have tried to foster, mass burn facilities have generally been overlooked by environmental regulators, and largely given a free ride in permitting and monitoring.

Unlike the case of coal-fired powerplants or other major industrial plants, there is no specific set of regulations at the federal level governing mass burn plants. “This lack of a specific regulatory framework for resource recovery,” says a Washington lawyer who practices in this field, “probably results in less stringent requirements in a number of areas than would be imposed under a comprehensive program geared specifically toward resource recovery facilities.”⁴⁸

The federal Clean Air Act uses a regulatory device known as “New Source Performance Standards” (NSPS) for regulating most new utility or industrial plants. For coal-fired power plants, for example, the New Source Performance Standards published in 1979 set stringent standards for emissions of particulates, sulfur dioxide and oxides of nitrogen.⁴⁹

While the federal Environmental Protection Agency has been looking into New Source Performance Standards for municipal incinera-

“Neither federal nor state governments have developed an adequate regulatory regime.”

tors, currently the NSPS for trash burners addresses only particulates.⁵⁰

Because state regulation generally follows federal, Maryland only regulates mass burn plants for particulates. (The state held hearings on new incinerator rules in June of 1988. While the new rules are improved, they still fail to address NOx, dioxins, and ash handling.)

Here is a situation at BRESCO, described in the *Newsday* series:

“The two state inspectors had come to look for smoke.

They stood a few yards from the garbage incinerator, glancing from their watches to the smokestack every 15 seconds. The sky seemed smoke free, the only visible emissions coming from cars whizzing by on nearby I-95. So, after 15 minutes, they drove back downtown and wrote a report that recommended a one-year renewal of the plant’s license to burn.

*The report on the incinerator — which is widely considered one of the safest in the country — did not mention emission rates for such common pollutants as lead, acid gases or dioxin. That’s because the State of Maryland, which has allowed the plant to operate for more than two years since such tests were last conducted, doesn’t require tests. In fact, the plant’s dioxin emissions have never been measured.”*⁵¹

The situation with regard to regulation of toxic ash from mass burn facilities is every bit as troubling as the regulation of air emissions. As a Massachusetts study put it, “EPA’s position on incinerator ash has been particularly confusing. On the one hand, the agency has taken the sensible position that ash that exhibits the characteristics of hazardous waste should be handled as a hazardous waste. But, on the other hand, EPA has repeatedly said that it believes that ash coming from municipal solid waste incinerators is exempt from the requirements of the federal hazardous waste law and therefore incinerator operators are not required to perform any tests on their ash to see if it has hazardous waste characteristics.”

EPA’s confusion is demonstrated by a flap that arose when EPA’s regional administrator from the Midwest wrote to Rep. William Lipinski (D-Ill.) in the fall of 1987, asserting that incinerators burning only household waste were exempt from the stringent requirements of the hazardous waste law. Industry officials immediately began touting the letter as a reversal of EPA’s earlier contention that ash failing the extraction procedure toxicity test must be treated as toxic.

But EPA wasn’t prepared to repudiate its earlier stand. Instead the agency issued a series of confusing waffles, saying that the regional administrator’s letter referred to facilities that burn only household waste, with no commercial or industrial solid waste. Then two senior agency officials told the *Wall Street Journal* they favored reversal of the agency’s long-standing position.⁵²

The lack of a proper regulatory framework for environmental and health protection at the federal and state level makes mass burn plants even more controversial at the local level. Faced with these controversies, local officials who have already bought the propaganda of the

“The sky seemed smoke free, so they wrote a report that recommended a one-year renewal of the plant’s license to burn.”

vendors and are determined to go ahead with mass burn, no matter what, face a difficult problem. They generally deal with it in a common way.

Pinpointing the powerless

Industrial developers and politicians often decry the controversies that arise out of siting industrial facilities such as mass burn plants as examples of the “not in my backyard” or “NIMBY” syndrome. Yet in most cases, it is the politicians who yield to the NIMBY impulses, and choose to site plants in the areas of least political resistance, even if better sites are available elsewhere.

The result, around the state and around the nation, is that mass burn plants generally get built in neighborhoods that house the powerless. This generally means siting in rural areas, in poor neighborhoods, and in minority neighborhoods.

The classic example of this is the Montgomery County decision to site a 2,000 ton per day mass burn facility in Dickerson, as opposed to a site at the county’s trash transfer station in Shady Grove nearer the county’s population center. The transfer station was designed and built for a co-located incineration facility. The county had never contemplated building an incinerator in the up-county area, because of transportation problems. Study after study showed conclusively that Shady Grove was the most economical site for the mass burn incinerator.⁵³

But, out of the blue, the county settled on Dickerson. As statements by then-County Council President Rose Crenca opposing the selection of Dickerson made clear, Dickerson had one compelling advantage over the Shady Grove site: fewer voters. So the County Council made the NIMBY decision, one which will cost all of the county taxpayers.

It was an easy course of action for Montgomery County. The county had taken exactly the same course of action earlier when it picked the rural Laytonsville area for the county’s new sanitary landfill, and when it picked Dickerson for a sewage sludge composting plant.

And once one of the powerless areas is picked for a major solid waste facility, its odds on being picked again increase. At Laytonsville, the county promised the citizens that the landfill would only be a temporary disruption. After ten years, the county would find a new solution to solid waste, the elected board promised. That, of course, was a hollow promise and the county was forced to disclose during the Dickerson mass burn proceeding that the Laytonsville landfill will have to remain open far longer, and take the potentially hazardous ash from Dickerson.⁵⁴

Similarly, the Washington Suburban Sanitary Commission promised Dickerson that the smelly sludge composting facility would be temporary, and set aside a \$2.8 million bond to guarantee the return of the facility to the rural condition that characterized the site before the composting began. But the site has never been restored to a rural condition, as promised, and continues in use as a county-wide leaf com-

“But, out of the blue, the county settled on Dickerson.”

posting facility.

A similar situation occurred in the Baltimore neighborhood where the BRESCO plant is located. Although Wheelabrator claims the facility is located in "downtown Baltimore," it is actually in a blue-collar neighborhood on the fringe of the downtown area. BRESCO's claim — "No more hiding the recovery plant on the wrong side of the tracks"⁵⁵ — is fraudulent.

BRESCO is the second garbage burning plant visited upon the neighborhood by a benevolent government. The first was a pyrolysis project, a new waste technology that attempted to dry out the waste to improve its energy content before burning. Funded with \$15.9 million from the U.S. Department of Energy, the pyrolysis plant was one of three built in the U.S. None of them ever worked satisfactorily and the Baltimore facility was closed in 1980. But the site was available when Wheelabrator came on the scene.⁵⁶

IF NOT MASS BURN, THEN WHAT?

Mass burn is a dangerous, expensive shot in the dark. The more we find out about it, the more troubling it becomes. Mass burn is clearly not the answer to Maryland's growing garbage problem, and is probably not even a part of the answer. Yet if our governments continue to yield to the pressures of the false crisis atmosphere perpetuated by the mass burn industry, Maryland taxpayers and ratepayers will end up subsidizing multimillion dollar capital investments all over the state. We will line the pockets of industry at the same time we are closing out the option of safer, cheaper trash disposal systems. We must act now, before the decisions are irrevocable.

A serious problem faces Marylanders, one that needs to be dealt with now. That is why we are advocating a positive program that will responsibly deal with the solid waste problems that are before us, in ways that won't poison or bankrupt us or our children.

Let's look before we leap

The first step is to **stop the headlong rush** to mass burn. We have time to think about our problem, and we don't have to make the kind of commitments to mass burn technology that our governments and the aggressive vendors of the technology are currently promoting.

For this reason, we are calling for a **five-year moratorium on mass burn in Maryland**. This will give us time to develop an integrated, comprehensive solid waste strategy designed to take realistic steps to reduce and reuse waste, recycle, reclaim, compost, landfill, and, as a last resort, make limited use of mass burn.

During this period, we should also be working to **establish an adequate regulatory regime for the mass burn facilities that already exist** in Maryland. There must be continuous monitoring of most air emissions, and regular, but unannounced, routine tests for dioxins and furans. Facilities out of compliance must be shut down immediately. However expensive this solution may be, the cost must be somehow borne, for the value of a healthy environment in which to raise our children and grandchildren is simply incalculable.

Additionally, **monitoring data must be available to the public** as soon as it is collected for any given facility. Many citizens' groups have access to the expertise necessary to understand and make conclusions from the data, but only if they have access to it.

At the same time, **fly ash must be treated as hazardous** and disposed of in hazardous waste landfills. Similarly, bottom ash should be considered hazardous unless it meets stringent testing procedures for all ash components.

An environmental agenda for the future

Recycling: Maryland recently adopted a recycling law, which is a

step in the right direction. But the state and its communities need to do much more with recycling, which offers the potential for a cost-effective way to reduce the burden on landfills in the state. Recycling costs should be judged on the same basis as mass burn plants and landfills. Thus, if it costs \$50 a ton to landfill and \$50 a ton to burn, a community can spend at least \$50 a ton on recycling and be ahead of the game.⁵⁷

As a first step, there must be aggressive implementation of the new recycling law all across the state. Communities that already have curbside trash pickup should move rapidly toward mandatory curbside recycling. Communities without trash pickup should quickly establish drop-off centers.⁵⁸

Waste reduction and packaging regulations: Maryland can do better than its recently enacted law, however. One area in which the state could be a pioneer, for example, is in waste reduction and packaging regulations. A growing percentage of U.S. waste consists of containers and packaging, which now make up 30 percent of the weight and 50 percent of the volume of the U.S. solid waste stream.⁵⁹

State and local governments could take a giant step toward reducing the waste burden flowing to the landfills either by regulating the packaging of products sold in their jurisdiction, or by taxing them. Waste reduction could be one of the fastest and easiest ways to buy more time for our landfills. As examples, the city of Berkeley, Calif., recently banned the use of styrofoam plastic food containers, as has Suffolk County, N.Y.

Innovative recycling efforts: There are also opportunities to go beyond the traditional recycling efforts which are aimed at such items as glass, metals, and paper. European countries have begun recycling plastics because of problems associated with burning them. Japan has a fairly aggressive plastics recycling program. In some states, particularly those with bottle deposit bills, plastic soft-drink bottles are recycled for use as fiberfill. Also, automotive battery cases are being recycled for reuse as audiocassette cases. Clearly, there is an opportunity for innovative approaches to reduce the Maryland waste stream and also to remove some of the most dangerous material.

Composting: Composting also represents an attractive way to reduce the amount of material flowing to our landfills. Composting eliminates a major landfill problem: the generation of methane gas from decomposing food wastes. Composting is a mature, well-understood technology. Among other positive features, composting facilities can be designed on a very small scale (fewer than 50 tons per day) and are far less expensive than mass-burn incinerators of that size. Thus, they are an attractive solid waste management tool for small communities. Composting reduces the volume and weight of solid waste by 50 percent, thereby minimizing transportation costs. Clearly, composting is an option that communities should carefully consider before committing to mass burn.

“Mass burn is a dangerous, expensive shot in the dark.”

Combining safety, efficiency, and good sense

An integrated, systematic approach to solid waste *can* result in a series of steps that reduce the final flow of material into Maryland landfills. Instead of a failed, inappropriate European import called mass burn, it is possible for us to adopt the successful European approach of integrated mixed-waste processing. The major characteristic of these facilities is that they are built around the concept that the best way to handle solid waste is to separate components of the waste stream so that they can be handled appropriately, depending upon their characteristics.⁽⁶⁰⁾

Once we are forced to examine the waste stream by component, it will become impossible to ignore the toxic materials and threats to public health in the waste stream. The result will be a focus on reducing waste, reusing what we can, and recycling as much as we can, rather than on pretending that we can solve the problem by burning our wastes and burying them out of sight.

It is crucial that governments make systematic comparative evaluations of solid waste management technologies, taking the full costs of environmental protection and public health into account. Such an integrated evaluation, we are confident, would eliminate mass burn. Viewing solid waste management as a system will lead to technologically and environmentally sound choices that will protect, rather than endanger, the citizens and the natural resources of our state.

NOTES

1. These groups represent citizens from every county in Maryland.
2. See Linda Joy, "Growing heaps of trash challenge elected county officials," *Frederick Post*, May 11, 1988, p. A-4.
3. Ron Nelson, Director of the Maryland Solid Waste Administration.
4. Maryland Recycling Act 1988, preamble.
5. For a good discussion of the history of trash, see "The Rush to Burn," a special section reprinted from *Newsday* and *New York Newsday*, 1988. For copies, write Cathy Mahone, Community Affairs Department, *Newsday*, Long Island, N.Y., 11747. (516) 454-2175.
6. Ibid.
7. Linda Joy, op. cit.
8. Ibid.
9. *Newsday*, op. cit.
10. David Morris and Neil Seldman, "Cities embrace wasteful idea: Burning trash," *The Sun* (San Bernardino County), May 11, 1986. See also, Allen Hershkowitz, "Burning Trash: How It Could Work," *Technology Review*, July 1987, pp. 26-34.
11. *Newsday*, op. cit.
12. Ch'uan-k'ai Leung, "Special Report--Resource Recovery," Smith Barney, Harris Upham & Co., Inc., February and March, 1988.
13. *Newsday*, op. cit.
14. "L.I. Blows Up Idle Trash Plant; Plans Incinerator," *New York Times*, March 30, 1987, p. B1.
15. *Newsday*, op. cit.
16. Scientific Review Panel to the State of California Air Resources Board, "Findings of the Scientific Review Panel on the Report of Chlorinated Dioxins and Dibenzofurans as adopted at the April 16, 1986 meeting." Also Environment Canada, "Report of the Joint HWC/EC Expert Advisory Committee on Dioxin," 1983, p. 19.

17. See J.M. Czuczwa, B.D. McVeely, and R.A. Hites, "Polychlorinated Dibenzop-dioxins and Dibenzofurans in Sediments from Siskiwit Lake, Isle Royale," *Science*, November 2, 1984, pp. 568-569. The researchers found dioxins and furans in lake sediments in a location which receives only atmospheric inputs. The source of the toxins is atmospheric transport of dioxins and furans formed by waste combustion.

18. Hershkowitz, op. cit., p. 32.

19. "Burning Question," *The Economist*, May 28, 1988, pp. 29-31. The Economist estimates that equipping a mass burn plant with scrubbers adds half again to the tipping fee without scrubbers. Thus, a plant without scrubbers that has a tipping fee of \$30 per ton would require a tipping fee of \$45 per ton to pay for scrubbing.

20. Richard Denison and Ellen Silbergeld, "Risks of Municipal Solid Waste Incineration: An Environmental Perspective," Environmental Defense Fund, October 1987, p. 5.

21. Ibid., p. 9.

22. Environmental Defense Fund, News Release, March 12, 1987.

23. Ibid., p. 12.

24. *Federal Register*, February 5, 1981, p. 11128, *Federal Register*, July 26, 1982, pp. 32284-32285.

25. The mass burn industry claims 90 percent reduction in volume, but is unwilling to provide data from operating plants to prove that reduction. Critics believe the volume reduction may be far less than 90 percent.

26. "Up In Smoke: Will Massachusetts gamble on incineration and forfeit a recycling/composting future?" MASSPIRG, February 1988, p. 31.

27. An EPA study put the figure at more than 11 percent, but most authorities hold to the five percent figure.

28. There have been at least five major derailments on the CSX line between Brunswick and the District of Columbia in the last 10 years.

29. See Montgomery County Council Resolution 11-787, April 19, 1988.

30. Leung, op. cit.

31. "Baltimore's Refuse-to-energy Facility: Burning Garbage Downtown," *Waste Age* advertising supplement reprinted by Signal, p. 2.

32. Northeast Maryland Waste Disposal Authority news release.

33. Leung, op. cit.

34. PEPCO avoided cost figures from "Cogeneration and small power producer service schedule CG-SP," effective May 1, 1988.

35. The eight are the BRESKO facility in Baltimore, the Harford County facility, two incinerators on the Eastern Shore, a facility serving Carroll and Howard Counties, a Prince Georges County facility, a facility serving Frederick and Washington Counties, and the Montgomery County facility.

36. Anne McGraw, "Lawmaker Questions Mass Burn Trash Plant," Associated Press, May 23, 1988.

37. Bill Richards and Frederick Rose, "Henley, Waste Management to Merge Line," *Wall Street Journal*, May 23, 1988.

38. Ibid.

39. Both Combustion Engineering and General Electric, also major players in nuclear power, are getting involved in mass burn, although CE appears to have the more aggressive program.

40. "The Westinghouse Bay Resource Management Center," Westinghouse Electric Corp. Energy Resource Systems, undated document.

41. "Technology and the Business of Information," EPRI Journal, April/May 1988, p. 25.

42. Kerman quoted from *Newsday*, op. cit., p. 6. C.K. Leung, "Pollution Control Monthly--Special Report, Resource Recovery: Part I," March 1988.

43. *Newsday*, op. cit., pp. 27-28.

44. Ibid., p. 28.

45. Ibid., p. 25.

46. "The Westinghouse Bay Resource Management Center," Westinghouse Electric Corp. Energy Resource Systems.

47. Westinghouse news release, February 1, 1988.

48. Andrew Mishkin, Beverdige & Diamond, P.C., "Environmental Issues in Resource Recovery -- An Overview," paper prepared for presentation to U.S. Conference of Mayors Resource Recovery Leadership Institute, Panama City, Fla., Nov. 16-18, 1987.

49. Known to insiders as "rocks, SO_x and NO_x."

50. Mishkin, op. cit., p. 3.

51. *Newsday*, op. cit., p. 29.

52. For a detailed description of this brouhaha, see Mishkin, op. cit., p. 21.

53. Mitre Corporation, Solid Waste Energy Recovery Project, Development of RFP, January 1982.

54. Montgomery County Council Work Sessions, June 1987.

55. "Baltimore's Refuse-to-Energy Facility," op. cit., p. 1.

56. Ibid, p. 3.

57. *The Economist*, op. cit., p. 29.

58. In this regard, the recent installation of a waste oil recycling drop-off point at the Frederick County landfill is welcome.

59. Cynthia Pollock, "State of the World 1987," Worldwatch Institute, p. 103.

60. Buhler-Miag, a Swiss firm, has installed 68 mixed-waste facilities since 1957, ranging in size from 44 to 600 tons per day. The facility screens incoming waste, co-composts the food wastes with sewage sludge, reclaims ferrous metals, non-ferrous metals, glass and sand, and produces a refuse-derived fuel from the paper and plastics.

News From Across The State

Baltimore City

Baltimore City is the home of two of Maryland's three mass-burn incinerators. A fourth—a 500-ton-per-day commercial waste burner—has been proposed for the Hawkins Point area, and a 100-ton-per-day infectious-waste facility for nearby Fairfield.

Currently, community opposition to incineration in the city of Baltimore is focused on existing and proposed infectious-waste incinerators, and on the Pulaski trash incinerator in east Baltimore.

The 1200-ton-per-day Pulaski incinerator was built more than 20 years ago and has a long history of operating failures and emission violations. It was recently retrofitted with electrostatic precipitators, continuous emission monitoring and a new stack. Community residents continue to report frequent violations, including visible emissions and odors.

In 1987, United Communities Against Pollution (UCAP) was organized to fight toxic threats in southeast Baltimore. The Pulaski incinerator is one of UCAP's prime targets. UCAP wants the incinerator to meet the same standards set by the state for the BRESKO incinerator, or, failing that, to shut down completely.

UCAP opposes mass-burn trash incineration on the state and national levels and supports recycling. For more information, contact Margaret Muldowney, 563-4402 or Dorothy Longo, 488-3979.

Frederick County

In an all-too-familiar scenario, Frederick County has found itself caught up in the solid-waste crisis. At the present rate of usage, the Reich's Ford County Landfill is estimated to reach full capacity in approximately three years. The Frederick County Commissioners are finding themselves seduced by an industry bent on profiting from a national dilemma. The mass-burn promoters' message is what the commissioners want to hear: that the solid-waste stream will continue to be out of sight and out of mind. Clearly, the elected leaders of Frederick County are highly receptive to an imported industry which is itself extremely susceptible to downtime.

While it is comforting to know that four out of five commissioners are pushing for a recycling program, largely because of state legislation, it is equally distressing to know that three out of five commissioners are looking to incineration as the future of solid-waste disposal in Frederick County. It is our responsibility, as environmentally concerned citizens, to educate our elected officials as to the effects of an unsound technology on the health, safety and welfare of the community. For more information, contact Pete Givan, 468-3882.

Kent County

Mass-burn incineration became an issue in Kent County on August 12, 1987, when the county commissioners signed a nonbinding memorandum of understanding to facilitate the independent construction and operation of a Wheelabrator mass-burn incineration plant in the county. According to a later proposal, the incinerator would provide for the trash needs of 17,000 Kent Countians at no cost and would pay the county \$1 per ton for approximately 2,000 tons of trash to be obtained from undesignated areas outside the county. In other words, Wheelabrator wanted to burn the wastes produced by approximately one million people, then bury the ash in Maryland's smallest county, directly jeopardizing the state's highest percentage of prime farmland, its fragile network of stressed rivers, the Chesapeake Bay and its people. The commissioners, prompted by the impending closing of the county's outdated landfill, had begun to investigate other options for solid waste, but stopped short after investigating two incinerators, the second of which was Wheelabrator's.

Kent Conservation, Inc., upon hearing the news, met with the commissioners and expressed concern over the future of the 17-year recycling program which had been adopted by the county with the assistance of KCI volunteers. Soon after, KCI was alerted to the mounting concern over both the short- and long-term impact of mass-burn incineration on health and the environment. After a thorough investigation, KCI concluded that this was indeed an extremely important issue that had a major impact on Kent Countians and on the people of the entire Upper Shore.

Through an extensive public-awareness campaign, the issue became common knowledge. The public obviously shared KCI's concern, as was evident by the participation at the Wheelabrator feasibility report, the county commissioners' meet-

ings, two petition advertisements and a county forum on the Wheelabrator proposal held in March 1988. The burning issue has quieted down in Kent County for the time being, as its people are closely following the findings of a citizen study group that was appointed by the commissioners in order to investigate the waste-management possibilities.

Meanwhile, KCI encouraged Kent County to take advantage of its keen awareness of trash and to increase its volunteer recycling. Three of its four towns which have curbside trash collection began an experimental curbside newspaper collection. The fourth, Chestertown, began a program which also included the recycling of aluminum cans and glass. Kent County tripled its newspaper volume in one month, and participation is steadily rising as more households and businesses join the effort.

Montgomery County

On July 7, 1987, the Montgomery County Council voted to amend its solid-waste management plan to allow for: a 2,000-ton-per-day mass burn incinerator in the rural town of Dickerson, with a provision that trash to (and ash from) the facility would be transported by rail; a modest expansion of the Oaks Landfill in Laytonsville to accommodate trash and ash from the incinerator; and membership in the Northeast Maryland Waste Disposal Authority, a state-chartered operation for the purpose of fast-tracking the implementation of this plan. As a result of testimony and heavy lobbying from Sugarloaf Citizens Association and other environmental coalitions, the council voted on March 21, 1988 to add a 30-percent mandatory recycling program to its solid-waste management plan.

The site for Montgomery County's mass-burn incinerator is adjacent to PEP-CO's electric generating station and proposed 750-megawatt coal gasification plant in a nonattainment area for ozone. The site is surrounded by a county-designated agricultural preserve. The incinerator will be 20 miles from the Shady Grove Transfer Station, where all county trash is centrally deposited. This location necessitates the unprecedented, expensive and complicated system of hauling trash by rail from the transfer station to the incinerator and returning the toxic ash residue. The ash will then be trucked from the transfer station to the Oaks Landfill, where it will be deposited on top of the existing waste stream. This proposal totally ignores EPA-drafted guidelines for ash disposal, which specifically forbid depositing ash over trash.

Led by SCA, the opponents to the county's plan contend that incineration is an expensive, unproven, unregulated technology whose long-term health and environmental risks are unknown. They support an aggressive recycling program which includes source separation of toxic materials and all recyclables, product bans and marketing procurement legislation as a means of reducing the volume and toxicity of waste requiring disposal in a landfill. SCA supports the use of liners and leachate collection systems in the design of landfills and stresses the importance of monitoring a landfill until all toxic materials have been stabilized. While these options would eliminate some of the health and economic risks associated with mass burn, the Maryland State Department of the Environment refuses to consider any solid-waste management plan which does not include an incinerator. Public hearings on the issue continue to draw strong participation from concerned citizens. For more information, contact Bev Thoms, 428-8223; Kerrie Kyde, 349-2003; or Karen Kalla, 972-7056.

Prince George's County

Although Prince George's County has, like Montgomery County, proposed a recycling plan which sets higher goals than those required by Maryland's new recycling law, county officials are also planning to build a 1,500-ton-per-day mass-burn trash incinerator by 1995.

County Executive Paris Glendenning has announced the selection of five potential sites for the incinerator and plans to move ahead quickly despite increasing opposition from community and environmental groups across the county.

Of the proposed sites, the Brown's Station site in Upper Marlboro is considered to be the most likely choice. The Prince George's County Recycling Coalition opposes the Brown's Station site, opposes mass-burn incineration anywhere in the county or the state and promotes recycling as a safe and economically viable alternative. For more information, contact Bobbie Mack, 627-3046.