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A PLAIN MAN'S GUIDE TO GARBAGE: THE REAUTHORIZATION OF THE RESOURCE CONSERVATION AND RECOVERY ACT

INTRODUCTION

Congress this year is scheduled to reauthorize the 1976 Resource Conservation and Recovery Act—RCRA, or as it is pronounced, *Rick-Rah*. This Act established the policy framework for managing the disposal of hazardous waste and municipal solid waste (MSW), which is primarily common household garbage. Since 1976, reauthorizations have tightened and more clearly defined RCRA regulations. Now several proposals before Congress would give the federal government even wider powers to control waste management. The trouble is that these proposals would inflict costly new requirements on America's manufacturing industry. To make matters worse, these proposals rest on flawed assumptions about waste disposal.

Under the most troublesome proposals, the federal government would establish a priority list for methods of handling waste, and then require the private sector to use the higher priority methods. The first priority would be to change production methods to reduce the amount of packaging and other materials that end up as garbage; the second priority would be to recycle products; the third priority would be incineration.

The least preferred method would be burying the trash in landfills. The main reasons for ranking landfills so low are the assumptions that America is running out of landfill space, that landfills endanger public health, and that burying trash wastes scarce environmental resources.

Harmful Side Effects. Legislating a hierarchy of priorities may appear on its face to offer a sound, common sense approach to dealing with waste. Yet pressuring businesses to reduce packaging or to use recycled materials ignores many costly and environmentally harmful side effects. Example: While eliminating or reducing packaging for food items may reduce the volume of paper and plastic waste, it also could increase the volume of food waste. Using whole oranges for orange juice rather than packaging the juice in cartons, for instance, would re-

quire less packaging but it also would put more orange peel in household garbage. Similarly, encouraging recycling to reduce landfill waste can use more energy and create more pollution than dumping the used product in a landfill and making a new product from virgin material.

Policy makers thus need to ask some basic questions and weigh the evidence as they deliberate the RCRA reauthorization. Among them:

- ◆ **Is there a landfill “crisis?”** The evidence suggests that there is not. To be sure, landfill capacity has been declining 2.8 percent annually while the amount of waste has been increasing 1.6 percent. But the landfill decline is not the result of a shortage of appropriate land, which is plentiful in most regions of the country. Rather, the decline is the result of stricter government regulation, which has more than quadrupled the costs for new landfills in the last ten years. It is also due to the “Not In My Back Yard” (NIMBY) syndrome, by which local opposition to landfills is triggered by ill-informed health concerns.
- ◆ **What are the real health risks from using landfills and incinerators?** These are minimal. New facilities pose a negligible risk to human health and safety. In fact, a major criticism of RCRA regulations is that they have become increasingly strict and costly, leading to a decline in the construction of safe, new incinerators and landfills, even though the real health risks are minuscule. These rules have become so strict that a person sitting continuously on an incinerator smokestack operating 24 hours a day for seventy years has only a one-in-a-million chance of getting cancer from smokestack pollutants. Whether the current standards are too strict is subject to debate. Whether the state-of-the-art incinerators and landfills are safe is not.
- ◆ **Do reductions in packaging conserve resources?** Evidence suggests that mandating or otherwise pressuring businesses to reduce packaging actually can increase waste, as well as frustrate the legitimate functions that packaging serves. For instance, a pound of paper packaging used for foods on average reduces food waste by 1.41 pounds, while a pound of plastic packaging reduces food waste by 1.66 pounds. Further, business already has a competitive incentive to reduce packaging weights whenever possible since packaging materials are not only expensive to buy, but the additional weight adds to transportation costs. Not surprisingly, manufacturers have been decreasing their packaging weights steadily over the past two decades.
- ◆ **Does recycling always conserve natural resources?** Recycling sometimes can be an efficient and environmentally responsible way to deal with waste products. At times, however, recycling wastes resources. Whether it does so depends on the energy requirements, region, and the characteristics of the item to be recycled. Aluminum typifies efficient and beneficial recycling. Such recycling uses 95

percent less energy than does making aluminum from aluminum ore. But this is not true of all products. Take the case of resource-efficient packages, like shrink wrap. Manufacturing shrink wrap consumes few resources and produces enormous packaging capability because the wrap is so thin. Recycling plastic shrink wrap, however, would consume far more natural and economic resources than making shrink wrap from virgin material because so little shrink wrap accumulates within the average household at any one time. Thus, collecting, separating, and processing shrink wrap to recycle drives up costs to the economy and wastes resources. Mandated recycling thus can conflict with the goal of reducing unnecessary packaging. Similarly, widespread use of cloth diapers would mean that less landfill space would be needed than if disposable diapers were widely used. Yet making and cleaning cloth diapers create twice as much air pollution and seven times as much water pollution as do making disposable diapers.

- ◆ **Can government mandates conserve resources?** The evidence indicates that any attempt by Congress to conserve resources by interfering with production and packaging processes has the perverse result of wasting resources. Government policies that mandate packaging reductions, product material reductions, or recycling are designed to encourage firms to substitute for one material another material that consumes fewer resources. But to know which resources should be conserved or used in every situation would require the government to know the exact value of each resource in relation to other resources. This is virtually impossible for a bureaucracy with even the most powerful computers. It is done every day, however, by market prices. These fluctuate according to the latest information as to scarcity and value. These prices then encourage firms to economize on scarce resources. If government, however, attempts to determine resource values without using prices, it must set the value or "worth" of each resource according to an arbitrary standard.

To be sure, a number of benefits have resulted from RCRA, such as ending the disposal of hazardous as well as non-hazardous waste in open pits, which bred disease and contaminated groundwater.

But RCRA also has been extremely and unnecessarily costly. Two decades ago, many landfill tipping fees—the charges levied by landfill operators on the waste tipped by trucks into the landfill—were as low as \$2 per ton. Just one decade ago, the average tipping fee was under \$11.¹ By 1988, the average tipping fee was over \$20; in inflation-adjusted dollars, the fee has jumped 33 percent in six years. And the fee is expected to rise to over \$50 once the complete impact is felt from the new landfill rule published late last year. Yet each successive tightening of the

1 Lynn Scarlett, "Managing America's Garbage: Alternatives and Solutions," Reason Foundation *Policy Study* No. 15, September 1989.

rules has had smaller and smaller health benefits, while the cost has grown much larger. Observes William Reilly, the Administrator of the Environmental Protection Agency (EPA), which administers RCRA:

The nation's environmental laws, and the great successes achieved over the past twenty years, relied heavily on command-and-control approaches to regulation. [But] it is becoming increasingly clear that in a number of areas those approaches have taken us as far as they efficiently can. Further incremental pollution reductions frequently are limited in scope and very expensive to achieve.²

The goal now must be to enact RCRA reauthorization legislation that is based on facts rather than on questionable assumptions. In addressing solid waste management, it makes no sense to adopt policies that force product manufacturers and consumers to bear high costs when more sensible, inexpensive, and effective methods are available. Not only will costly policies do little to reduce environmental damage, in some cases, they increase damage. All reasonable Americans want a clean environment and the economical use of natural resources. The point is to achieve this goal without wounding the economy and destroying jobs.

WHAT RCRA DOES

Prior to 1976, the federal government did not regulate hazardous and solid waste disposal. Congressional interest in this began to grow in the early 1970s in response to public concern about the hazards associated with the U.S. Army's land transportation of ammunition and nerve gas for disposal at sea. This concern first led to the Toxic Substances Control Act of October 11, 1976. Later that month, the Resource Conservation and Recovery Act—RCRA—established a general hazardous waste policy and a national regulatory system for waste disposal.³

The most important provisions of RCRA are Subtitle C, which regulates hazardous waste, and Subtitle D, which regulates solid waste. These provisions, as amended in 1980 and 1984, regulate the methods by which hazardous and solid waste can be handled and disposed. The rules issued by the EPA, in compliance with RCRA, regulate and monitor such things as incinerator and landfill design and operation. The EPA also regulates the way that landfills are sealed when they are closed and ensures that money will be available from the landfill operators to clean up potential problems after closure.

² William Reilly, "Waste Policy Briefing," *Roll Call*, February 24, 1992.

³ Mark K. Landy, Marc J. Roberts, and Stephen R. Thomas, *The Environmental Protection Agency: Asking the Wrong Question* (New York: Oxford University Press, 1990).

Inconsistent Rules. RCRA has encountered problems since its enactment. Critics charge that it has failed to define clearly its purpose and the actions that the EPA is supposed to take to achieve that purpose.⁴ In many instances, EPA was left to set important policies that normally would be set by Congress. This has led to charges from the private sector that overzealous EPA officials have enforced RCRA in ways that go well beyond the law's provisions and beyond legitimate concerns for public health. Critics claim too that many RCRA rules are technically unfounded.

An example concerns the disposal of certain chemical fertilizers. Though the EPA has declared various chemical fertilizers safe enough to be applied directly on soil without endangering public health. RCRA rules prohibit the disposal of the same chemicals in even double-lined landfills.

High Cost. EPA's RCRA regulations are said to be unnecessarily expensive. For example, under the Clean Water Act of 1972, as amended in 1987, the EPA requires waste treatment facilities to file a simple form stating that a fence at the facility restricts entry by the public. RCRA requires the facility to submit an additional 25 pages detailing the fence design, the location of fenceposts and gates, a cross section of the fence's wire mesh, and other minor technical matters. The waste of time and money to meet the reporting requirements for RCRA is illustrated in the case of one plant, whose Clean Water Act permit application was only seventeen pages long while its RCRA application was seven feet tall.⁵

THE BAUCUS BILL

Given these and other RCRA problems, this year's scheduled reauthorization gives Congress the opportunity to conduct a thorough overhaul of RCRA's operation and effectiveness, and to ask fundamental questions about the proper federal role in solid waste disposal. Such questions include: Does America waste too much? If so, why is this the case and how can it be corrected? Would a streamlined RCRA alleviate or exacerbate its problems? What special problems are associated with an increased federal oversight of solid waste management?

One of the leading RCRA proposals was introduced in April 1991 in the Senate (S. 976) by Max Baucus, the Montana Democrat who chairs the Environment and Public Works Committee's environmental protection subcommittee. His proposal is a sweeping reform of how the United States deals with solid and toxic waste. The original version of the solid waste provisions of this bill mandated that each state develop a plan to reduce the amount of waste produced in it. Additionally, the bill mandated that certain percentages of various materials, such as 52 percent of newsprint, be recycled. EPA would be given the authority to set specific amounts of each product that would have to be made of recycled material. The EPA would have virtually unlimited control over industrial operational processes of

4 *Ibid.*

5 James Bovard, "RCRA: Origin of an Environmental Debacle," National Chamber Foundation, January 1991, p. 46.

firms unable to meet the requirements. This would be a quantum leap from existing environmental laws, which focus on control of equipment related to pollution output.

False Flexibility. These provisions were criticized for being too rigid. In response to this criticism, a draft amendment to S. 976 was published last month. Under this amendment firms such as The Coca-Cola Company would have the option to reduce packaging weight (known technically as source reduction) for products such as bottles by a designated percentage from a base year. This percentage would range from a minimum of 25 percent to 40 percent in 1995, and increase to 50 percent by 2000, subject to increases by EPA. Alternatively, firms could satisfy the requirement by ensuring that the same percentage of the firm's product was recycled or reused. The firm also could use a combination of these methods to satisfy the requirements.

This draft ostensibly instills flexibility into the Baucus bill. Rather than mandating a single approach, the bill would allow firms to choose among approaches. But the draft adds a new requirement that firms track or recover their own products. Using a high concentration of recycled material in a firm's product would no longer be acceptable; the recycled or reused material would have to have been recovered from the firm's specific product. In short, Coca-Cola would have to ensure that its recycled bottles originally were sold as Coke bottles and not as Pepsi Cola bottles. Even if Coca-Cola used 100 percent recycled bottles, if less than 40 percent of the recycled material originally sold as Coke bottles, the company could be forcibly closed.

Enormous Costs. Since the legislation would apply to virtually all types of packaging for products, not just soda containers, the individual separations would have to be as numerous as the number of different products distributed in each locality. This would tend to burden small businesses disproportionately. Since their products would be discarded by only a small number of households, the costs of collection of that single product would be enormous.

Any firm unable to meet the RCRA requirement, whether the firm were Ma's Carry-out or IBM, would first be fined \$2,500 per day, then \$5,000 per day, and then banned from selling its products. In short, any firm could be forcibly put out of business.

Senator Mark Hatfield, the Oregon Republican, meanwhile, has introduced S. 2335, which requires deposits on all beverage containers. In the House of Representatives, Representative Al Swift, the Washington Democrat, introduced H.R. 3865, which basically is a companion bill to the original Baucus bill. The Swift bill specifies that every state reduce its total municipal solid waste and that firms use a certain percent of recycled materials in their products. And Representative Gerry Sikorski, the Minnesota Democrat, has introduced H.R. 3939, which adopts the same general goals as the Baucus and Swift bills, but uses a different regulatory structure to achieve those goals.

All of these bills, like several others affecting RCRA, suffer from some or all of the same false assumptions underlying the Baucus bill. Based on these false assumptions, these bills mandate that certain methods of dealing with waste be legis-

latively preferred over others. When Baucus introduced S. 976 in April 1991, he called for the following hierarchy of priorities for dealing with solid waste:⁶

Priority #1: Source Reduction: Reduce the amount of materials that firms use in products like packaging so that less trash is produced.⁷

Priority #2: Recycling: Reuse discarded materials, like glass bottles. Typically, this involves breaking down the recycled material into base components and then combining these components with unrecycled resources to create new products. Some products can be reused without being recycled.

Priority #3: Incinerating: Trash is burned, converting waste into energy.

Priority #4: Landfills: Trash is buried in areas specially controlled to protect the surrounding area.

The hierarchy proposed in the Baucus bill is based on a 1988 EPA report.⁸ Yet this report warns against the very hierarchy that the Baucus bill would create. States the EPA report:

adherence to a rigid hierarchy is inappropriate for every community... every community can custom design its integrated waste management system to emphasize certain management practices, consistent with the community's demography and waste stream characteristics. For example, a community like Las Vegas, Nevada, where landfill tipping fees [the price charged for dumping] as low as \$6 per ton reflect the ready availability of land, may choose to continue to rely on landfilling as its primary waste management practice.⁹

The Baucus proposal ignores this EPA report warning and instead insists on strict adherence to the idea that recycling is always preferable to burning waste, which in turn is always preferable to burying it. Given the profound effect that the legislation would have, these assumptions are no minor matter. Tens of billions of dollars and tens of thousands of jobs could ride on the validity of the Baucus

6 The Baucus bill also deals with toxic wastes, but this study is limited to discussing solid waste. For a thorough discussion of toxic waste, see Clyde Wayne Crews, "The Economic and Safety Hazards of Toxic Use Reduction," *Environmental Perspectives* No. 5, Citizens For the Environment, January 24, 1992.

7 The revised draft of S. 976 allows firms to choose between priorities #1 and #2 in order to be more flexible, but the fundamentals of the hierarchy are maintained.

8 Environmental Protection Agency, "The Solid Waste Dilemma: An Agenda for Action (Washington, D.C.: Environmental Protection Agency, February 1989).

9 *Ibid.*

bill's assumptions. Thus lawmakers very carefully must consider these assumptions before voting on the Baucus bill or similar legislation. Each underlying assumption or justification should be separately analyzed.

ASSUMPTION #1: THERE IS A "LANDFILL CRISIS."

Americans in 1988 produced 179.6 million tons of Municipal Solid Waste (MSW) according to an EPA study.¹⁰ The MSW from a single day fills roughly 80,000 garbage trucks. Of this, 14.2 percent is incinerated and 13.1 percent is recycled. The remaining 72.7 percent is buried in the nation's approximately 6,500 landfills.

In recent years the public has read stories suggesting a "landfill crisis." Perhaps the most vivid was in 1987, when the garbage barge from Islip, New York, was towed from state to state for months, much like the legendary Flying Dutchman, unable to find any state willing to accept its trash.¹¹ It finally was forced to return to Long Island. Since then, what might be called a "garbage war" has been waged between the states, with many state governments attempting to keep out garbage from other states. Such episodes entrench in the minds of the public and policy makers the idea that America is running out of landfill space.

Yet by any reasonable measure, there is no shortage of land for landfills. The total waste produced in the U.S. for the next 100 years, for instance, could fit in landfills comprising just one one-hundredth of one percent of the total U.S. land mass.¹²

Misleading Statistic. One statistic often cited as evidence of a shortage is that half of all landfills now in use will close within five years. This implies that America soon will run out of available sites. This statistic, while true, misleads. Reason: this same statistic has been true at virtually all times in the past half-century. Most landfills, according to experts, are designed to be in use for only about ten years.¹³ Landfills eventually fill up and must be replaced.

Those convinced that there is a "crisis" counter that the number of new landfills being opened dropped by 25 percent in the mid-1980s. This too misleads, because the size of fills has been increasing. A 1986 EPA report notes that old inactive landfills average 9.1 acres in size while active landfills average 32.5 acres, with four times the waste volume capacity.¹⁴

Still, there has been a decline in landfill capacity. The U.S. is losing nine million tons of MSW old landfill capacity per year, while new facilities increase land-

10 Environmental Protection Agency, "Characterization of Solid Waste in the United States: 1990 Update" (Washington, D.C.: Environmental Protection Agency, June 1990).

11 New York Times Index: "Waste Materials and Disposal" (New York: The New York Times Company), 1988.

12 Calculated from figures supplied by Lynn Scarlett, Vice President of the Reason Foundation.

13 William Rathje, "Rubbish," *The Atlantic Monthly*, December 1989.

14 Environmental Protection Agency, National Survey of Solid Waste "Municipal Landfill Facilities" (Washington, D.C.: Environmental Protection Agency, 1986).

fill capacity by only four million tons per year.¹⁵ This represents a net loss of five million tons or 2.8 percent of capacity per year. To some, this implies a declining number of suitable locations to site landfills, and hence a problem. The problem, however, is that politics and regulations are blocking access to many appropriate sites.

There are a number of factors that explain the growing shortage of usable landfills:

1) The Increase in Solid Waste

The total amount of solid waste produced in America is increasing by three million tons per year, or 1.6 percent. Some critics say that the increase in waste products confirms that America is a "throw-away society" and that Americans simply waste too much.¹⁶

To an extent it is true that Americans have little incentive to reduce waste. The reason Americans waste too much is that few Americans are held directly accountable for the costs of disposal. These costs instead are borne by the community as a whole. Therefore, there is little incentive to reduce waste. If households were charged directly, the average waste created per person could be expected to drop.

Even so, the output of waste per individual is not increasing. Rather, waste is increased as population increases. The 3.6 pounds per day that the average American throws out today has remained remarkably constant since 1970.¹⁷ As per capita income and wealth rises, it might be expected that the waste per person would increase along with increased consumption. This is not the case. In fact, the average waste created per person in relation to gross national product, or "intensity of waste generation" as experts call it, actually has decreased.¹⁸ Stated another way, Americans now throw out less trash for every product they buy.

2) The "Not In My Back Yard" (NIMBY) Syndrome

The main reason for what decline there is in municipal landfill capacity is community reluctance to approve new landfills. This is known as the NIMBY syndrome. Stated simply, most Americans do not want landfills in their neighborhood. A 1991 survey finds that over 50 percent of the respondents would be concerned if a landfill were located ten miles from their home, believing that their

15 Interview with Jerry Taylor, Director of Natural Resources, Cato Institute.

16 The average waste generated per American is actually comparable to other countries when differences in measurement methodologies are taken into account.

17 Harvey Alter, "The Future Course of Solid Waste Management in the U.S.," *Waste Management and Research*, 1991. The roughly constant per capita waste since 1970 probably can be attributed to increased use of plastics and aluminum. Additionally, advancing technology in packaging design through use of computers allows for lighter packages, which consume less resources but serve the same functions as earlier, heavier packages. A caveat is that the available data allowed analysis only through 1984. But there is no solid evidence to suggest that per capita waste is increasing. The EPA report showing an increase is based on certain assumptions that have not borne true in the past.

18 *Ibid.*

property values would decline and that health would be damaged. This survey also finds strong feelings against locating incinerators nearby.¹⁹

This concern pressures local governments to restrict land use or otherwise prohibit landfills in their areas.²⁰ This increases the cost, difficulty, and time required to locate, obtain local permission, obtain EPA permits, and construct new facilities, thus adding to the problem of declining landfill capacity.

3) Tighter Federal Regulations

Increasingly strict federal regulations have been driving up the costs of operating landfills and thus contribute to the decline in landfill capacity by making good potential sites uneconomical. Increasingly stringent federal regulations have been introduced since the passage of RCRA. For example, as recently as last October, EPA tightened the regulations further. The increased regulations drive up the cost of the landfills. And the cost for new facilities is even greater than for older facilities, because the new landfills must use state-of-the-art design and equipment in construction, and are not granted exceptions from requirements as are many older landfills like Fresh Kills in Staten Island, New York.

State regulation also affects the availability and cost of landfill sites. New Jersey regulations, enacted twenty years ago, have reduced sharply the profitability of operating landfills in the state. Consequently, operators are building their facilities elsewhere. The result: a drastic reduction in landfill capacity in New Jersey and growing anger and apprehension within communities in states like Indiana which receive trash from New Jersey.

When one state, such as New Jersey, tightens its rules and effectively forces local governments to seek sites in other states, the response of other states understandably is to erect legal barriers to stop disposal within their borders of out-of-state waste. To be sure, if such rules against interstate transportation of waste are enacted, this will tend to drive the recycling rate higher, which most environmentalists support. But it could also have negative environmental effects. For instance, the lifespan of less modern facilities would be extended. Thus landfills such as the Fresh Kills landfill on Staten Island, New York, would continue to be used to handle excess waste. But some of these older landfills are not as safe as the state-of-the-art landfills located in other states.²¹

19 The Roper Organization, Inc., "Sorting out Garbage: America Looks at the Consumer Solid Waste Issue." This study was commissioned by Citizens for the Environment, October 1991.

20 As recently as August 1991, Yorkshire, New York, prohibited BFI from siting a 500-acre landfill due to fears of health risk.

21 For further discussion on landfills and other related topics concerning solid waste management, see Lynn Scarlett, "How the Free Market Can Clean Up America's Solid Waste Mess," in Edward L. Hudgins and Ronald D. Utt, eds., "How Privatization Can Solve America's Infrastructure Crisis" (Washington, D.C.: The Heritage Foundation, 1992).

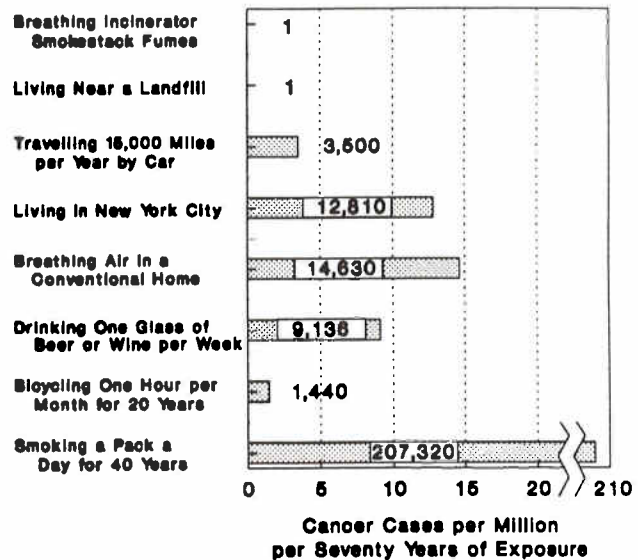
ASSUMPTION #2: LANDFILLS AND INCINERATION POSE HEALTH DANGERS

The public often does not distinguish between the risks of hazardous waste, like toxic chemicals, and non-hazardous waste, like paper packaging. The potential dangers and thus the proper handling of these two types of waste obviously differ significantly. RCRA legislation thus treats hazardous and non-hazardous wastes under different provisions. The scope of this study is limited to non-hazardous waste.²²

The risk to public health and the environment from the disposal of non-hazardous materials under modern techniques is minimal. Today's landfills are quite safe when operated correctly, and the EPA agrees that the threat to the public is negligible. To assure this, RCRA regulations of landfills are extremely strict. In particular RCRA requires monitoring techniques that tend, if anything, to overstate and overcompensate for dangers or leakage. A wide safety factor also is built into the rules governing what may be buried in a landfill

Strict Standards for Minuscule Risk. Under these strict standards, less than 20 percent of landfills, primarily old dumps, pose more than a one-in-a-million health risk of cancer over seventy years. To put this in perspective, a one-in-a-million health risk is equivalent to the risk of cancer from eating one peanut butter sandwich a month for fifteen years.²³ The standards are so strict that only 40 percent of landfills pose a cancer risk greater than the chances of being hit by a meteorite—about one in a billion.²⁴ Requirements for all landfills under Subtitle D of RCRA

**Chart 1
Incinerators and Landfills:
Safety Concerns Exaggerated by Critics**



Source: Based on Richard L. Stroup and John Goodman, "Making the World Less Safe," *Journal of Regulatory and Social Costs*, National Chamber Foundation, January, 1991.

Heritage DataChart

- 22 For a thorough discussion of hazardous waste and the Baucus bill, see Crews, *op. cit.*
- 23 Jerry Taylor, "Municipal Waste Combustion: Toxic Threat or Trivial Pursuit?" *Issues Analysis*, American Legislative Exchange Council, April 1990.
- 24 Adapted from Richard L. Stroup and John Goodman, "Making the World Less Safe: The Unhealthy Trend in Health, Safety, and Environmental Regulation," National Center for Policy Analysis, *Policy Report* No. 137, April, 1989.

were tightened further by the EPA last October. This will force existing landfill owners to make them even safer or to close them to further disposal.²⁵

Seeking More Trash. New landfills are extremely safe. In fact, Riverview, Michigan, has a popular ski slope on top of an active landfill called Mt. Trashmore. The ski slope becomes higher as more solid waste is brought in sealed containers and added to the slope. Not only do local residents support this recreational landfill project, but upscale homes are rising around the site because of its prime location. Since Mt. Trashmore is owned by the town, the profits generated by the landfill and ski slope pay for ambulance services and a library. Riverview actually seeks more trash.

The Baucus bill and similar bills are designed to reduce the amount of trash destined for landfills on the assumption that this will reduce health risks. This assumption is flawed. Modern, state-of-the-art landfills are extremely safe. Some of those supporting the Baucus bill argue that reducing the amount of trash destined for landfills will close older, unsafe landfills. This is simply not true.

First, only a few percent of older landfills pose any real health risk. Over 80 percent posed less than a one-in-a-million health risk over a seventy-year period when severe regulations were issued last year. Second, older landfills will continue to be used until filled, since the Baucus bill relates primarily to the amount of waste, not to the quality of landfills.

The result of the Baucus bill instead will be to reduce the demand for new landfills to handle waste disposal. This will tend to limit the construction of modern facilities that pose no health risk. Thus, no health problems are solved by enacting legislation to limit the amount of trash destined for landfills.

Extensive Emissions Controls. The primary concerns about incinerators, also known as waste-to-energy plants and municipal waste combustors, involve emissions and ash. At one time, waste-to-energy plants emitted large quantities of pollutants into the air. But state-of-the-art municipal waste combustors (MWCs) now use extensive emissions controls, such as acid gas scrubbers, fabric filter baghouses, and electrostatic precipitators.²⁶ According to Bruce Ames, Chairman of the Department of Biochemistry at the University of California, Berkeley, and perhaps the world's leading expert on cancer risk assessment, MWC emissions in 1987 were "a completely trivial possible hazard to the public" and the risk of cancer due to them was equivalent to "drinking one beer every eight years."²⁷ Despite this, stricter air emission standards for new and existing incinerators were issued in February 1991.

Another major concern with incineration is ash. Incinerators burn approximately 26 million tons of municipal solid waste a year. Although incinerators can reduce the total volume of waste by 80 to 90 percent, the remaining three million

25 Potentially, 600 landfills could soon be closed due to this final rule.

26 Taylor, *op. cit.*

27 *Ibid.*

tons of ash must be tipped into landfills. Because ash tends to be more toxic than other forms of waste, most states require that it be dumped in special sections of a landfill called monofills. These sections use special collection devices to capture leachate, which is the rainwater and other liquids that percolate through the landfill, collecting soluble toxics in the process. Monofills also have special devices to monitor nearby groundwater for contamination.

Flawed Tests. Some advocates of tighter RCRA controls over ash dumping in landfills fear that ash leachate is contaminating groundwater to an unacceptable degree. To support their claim, they cite two controversial tests. In these, known as the Extraction Procedure toxicity test (EP), and the Toxic Leaching Characteristics Procedure (TLCP), ash is collected from incinerators and tested for toxicants. The tests show that half of the tested ash is hazardous by federal standards. Since all ash must be dumped in monofills or landfills, the test results raise concern about toxics leaching from the ash into the groundwater. But the EP and the TLCP tests are flawed.

The problems with the two tests is that these procedures do not test ash in the conditions prevalent in monofills or even old landfills.²⁸ What they do is pour acid through an ash sample taken from an incinerator. Obviously, acid will tend to leach more toxic materials from ash than rainwater, which is the primary liquid percolating through monofills. Further, this ash has not been subjected to the same pressures as in a monofill. These pressures are created by the weight of new ash being dumped atop existing ash. The conclusions of the most comprehensive scientific study to date were published in 1990. This study, co-sponsored by EPA and the U.S. Conference of Mayors, concludes that the EP and TLCP tests "significantly exaggerate" the dangers of leachate from ash into groundwater. The EPA study took ash taken directly from monofills and compared it to ash derived from the originating incinerator. The tests found that the amount which had been leached from the monofill sample never exceeded the EP test's maximum allowable limits. In fact, the leachates almost met drinking water standards.²⁹

ASSUMPTION #3: THE BEST WAY TO DEAL WITH WASTE IS NOT TO PRODUCE IT.

Even though there seem to be few valid health or safety objections to landfills and incinerators, some policy makers maintain that the best way to deal with municipal solid waste is to reduce the production of such waste in the first place. The main target for reduction is packaging. These policy makers mainly seek what they call "source reduction," which means producing less of the products that later become garbage. They also stress recycling, which means reusing the materials in containers and other waste to make new products.

28 *Ibid.*

29 "Characterization of Municipal Waste Combustion Ash, Ash Extracts and Leachates," Coalition on Resource Recovery, U.S. Conference of Mayors, March 1990.

1) Source Reduction

Source reduction attempts to solve the alleged problem of “excess” or unnecessary packaging, which often is cited as the major ingredient of solid waste. Yet packaging has declined in the past two decades as a percent of the waste stream. Packaging accounted for 30.3 percent of waste in 1986, down from the 1970 level of 33.5 percent.³⁰

Much of this decrease can be attributed to businesses reducing the weight of their packaging to conserve space, raw resources, and transportation costs. Since the early 1970s, for example, plastic milk jugs have decreased in weight from an average of 95 grams to today’s 60 grams—a 37 percent decrease. Similarly, between 1976 and 1989, plastic grocery bags decreased in thickness from an average of 2.3 mils to 0.7 mils—a 70 percent decrease. This has helped reduce the percentage of packaging in waste.³¹

This trend toward reduced packaging weight is a key reason why Americans’ “intensity of waste,” the amount of waste per person as a percentage of GNP, has been declining.

State Targets. Despite the steady reduction in materials used in packaging products, some policy makers want to mandate more resource reduction or recycling for these products. Fast food companies such as McDonald’s Corporation have been a favorite target of state legislators seeking to force packaging changes.³² The legislators believe that the packaging used by such firms—typically polystyrene foam—creates much of the nation’s landfill waste.³³ In fact, as Table 1 shows, fast food polystyrene foam accounts for only 0.14 percent of municipal solid waste in landfills.³⁴

Paper and paperboard	46.0%
Plastic	27.0
Metal	15.0
Glass	7.0
Fast food polystyrene	0.14

Source: William Rathje, Letter to the Editor, *New York Times*, January 26, 1988.

30 Franklin and Associates, "Characterization of Municipal Solid Waste in the United States," 1990 update (Washington, D.C.: Environmental Protection Agency, 1990).

31 Lynn Scarlett, "Integrated Waste Management: Rethinking Solid Waste Problems and Policy Options," *Policy Insight* No. 128, Reason Foundation, May 1991.

32 This pressure has led McDonald’s Corporation to stop using polystyrene food containers. The substitution of paper, however, increases the amount of materials consumed in the production process. Additionally, hot food wrapped in paper cools more quickly than when it is packaged in polystyrene.

33 The additional concern is that polystyrene does not decompose quickly. This concern, while true, ignores the fact that very little of anything decomposes in a landfill. Because landfills are virtually airtight, many decades are required for any type of waste to decompose.

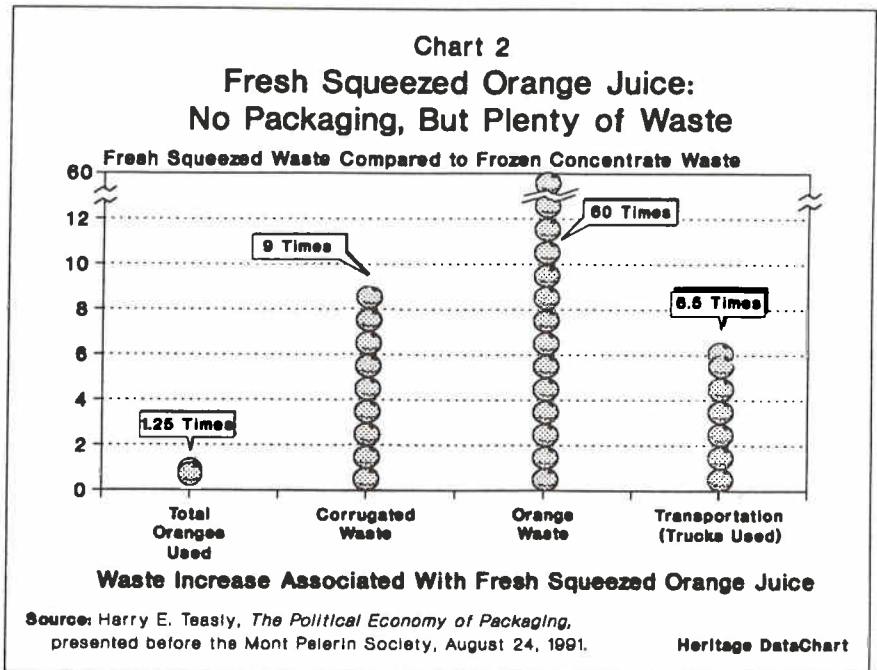
34 William Rathje, Letter to the Editor, *New York Times*, January 26, 1988.

Food packaging actually reduces overall waste. A study of solid waste in 1989 by Harvey Alter of the U.S. Chamber of Commerce, for instance, finds that "as the use of packaging material[s] is increased, the fraction of food waste in MSW [municipal solid waste] decreases... this correlation holds for data from many countries, over a considerable range of waste composition, and perhaps a broad period of time."³⁵ For every pound of paper packaging, 1.41 pounds of food that would end up as garbage is saved. Typically, a pound of plastic packaging avoids 1.66 pounds of food waste.

Take the case of packaged orange juice. Some advocates of packaging controls would prefer to see orange juice "packaged" as oranges; those consumers who want juice thus would squeeze their oranges. To be sure, this would reduce packaging waste. But waste would increase, since the oranges thrown away as waste would be greater than the packaging saved.

When a consumer makes fresh squeezed orange juice, 25 percent more oranges are required to make the same amount of juice that is available in a container. The plant that squeezes and packages the juice, moreover, recovers orange oil and d'limoene, and produces animal feed. Fresh oranges also generate nine times more corrugated waste from the boxes and cardboard supports with which they are packaged than do containers of orange juice. And orange juice from fresh oranges generates over 60 times as much poundage of waste as packaged orange juice. Finally, fresh oranges weigh about 7.5 times as much as frozen concentrate and requires 6.5 times as many trucks to distribute. As such, fresh orange juice increases air pollution and energy use.³⁶

Perverse Results. Encouraging packaging reduction thus can have the perverse result of increasing overall waste, while packaging actually may decrease total



35 Harvey Alter, "The Origins of Solid Waste: The Relations Between Residues from Packaging Materials and Food," *Waste Management and Research* 7, 1989, p. 110.

36 Harry E. Teasley, Jr. "The Political Economy of Packaging," Presented at the Mont Pelerin Society, Big Sky, Montana, Meeting, August 24, 1991.

municipal solid waste. Understanding this, William Rathje, of the University of Arizona's Garbage Project, found in a study of garbage being discarded in Mexico City in the early 1980s, that local households, which consume little packaged food compared with American households, discard 33 percent more solid waste than American households.³⁷ An example by Charles Van Eaton of the Midland, Michigan-based Mackinac Center, illustrates why this would be the case: Three or four ears of corn equal about 1.5 pounds. When the fresh corn is consumed, the husks are thrown away. When frozen corn is consumed, the husks are sold as animal feed, yet some paper or plastic packaging is necessary as a container.³⁸

When a product uses packaging considered by some critics to be "excess," it is usually because there is some direct benefit to the consumer, such as cleanliness or reducing food waste. Similarly, tamper resistant or childproof containers may require more materials than simple containers, and this could be viewed in one sense as excess, but they protect consumers. Some packaging provides consumers with detailed instructions for use that are too extensive to be printed on a small container. Other packaging reduces problems of theft of small, valuable products, such as compact discs.³⁹ Still other packaging protects products from damage or loss during transportation, thereby reducing waste.

The Need to Price Pollution. Those advocating source reduction as the centerpiece of RCRA reform ignore the trade-offs in reducing packaging. They ignore, too, the fact that many Americans would freely, and appropriately, demand sensible reductions in packaging waste if they paid directly for the cost of disposing of their garbage, because they would have tangible incentives to reduce waste.

Today the vast majority of Americans do not pay directly the costs of disposing trash. Usually the costs are covered by the local government out of general revenues or property taxes. The costs to each household of producing more trash is thus zero and choosing products to reduce the output of garbage does not lower taxes. Even if a municipality imposes a specific fee for trash collection, the household's fee will not be reduced if it produces less waste. In fact, consumers often receive an economic benefit from increased waste, such as protective packaging, without bearing the cost to dispose of that packaging. Thus, since they are not required to pay directly for the costs of their pollution, Americans have no incentive to consider whether extra packaging is worth the extra disposal cost.

The most direct and efficient way to encourage households to take account of the real cost of their waste, and to reduce their unnecessary waste, is for municipalities to charge fees based on the amount of trash that each household discards. This is what economists call "internalizing costs." This contrasts with shifting

37 Rathje, "Rubbish," *op. cit.*

38 Charles Van Eaton, "Managing the Michigan Solid Waste Stream: Markets or Mandates?" January 1991.

39 The music industry currently has plans to replace the long-box compact disc with packaging that produces less waste, but the recording merchandisers' group expects this to increase theft. *Washington Post*, February 28, 1992.

these costs to others. When households must bear the full costs of their actions, they have a strong incentive to act efficiently.

One way to internalize costs would be to charge each household according to its volume of waste, such as charging a uniform fee for each 32-gallon trash container emptied or selling stickers to be attached to each plastic bag of garbage thrown away.⁴⁰

Some critics of this approach contend that charging households according to waste volume or weight would encourage households to dump their trash illegally. Yet Spokane, Washington, and other municipalities that have used the pricing method have found no significant problems with illegal dumping. In part, this is because the cost of disposing of a 32-gallon trash container is usually much less than one dollar. It is not usually worth the time and inconvenience for a family to pack its trash into the car and dump it illegally. Nevertheless, if a community suspects that its residents might illegally dump trash, there is a solution. To reduce the incentive for illegal dumping, a community could allow individuals to dump limited amounts of trash free of charge in designated community dumpsters. These dumpsters reduce collection and hauling costs for the municipality, even though they create no revenue, while simultaneously protecting the environment.

2) Recycling

Supporters of the Baucus Bill see recycling as preferable to landfills as a means of dealing with solid waste. To be sure, recycling can be an efficient and environmentally responsible way to deal with waste. But it is not always the best method. In some cases recycling is extremely costly, wasting more energy and creating more pollution than the landfill alternative. Whether it is the best choice depends both on regional differences and on the item being recycled.

Recycling costs can mount rapidly because of collection and hauling expenses. Materials either must be collected separately and hauled in separate compartments or trucks to a recycling center, or they must be separated after collection. Wash-

Table 2
Percentage of Waste Material Recycled in the U.S. in 1986

Material	Recycled
Aluminum drink cans	54.0%
Aluminum	25.0
Glass bottles and jars	25.0
Paper waste	23.0
Glass	8.0
Metals	4.0
Rubber	2.0
Leather	2.0
Plastic	1.0

Note: Figure indicates share of each material that is recycled.

⁴⁰ For further discussion on pricing and other related topics concerning improved solid waste management, see Angela Logomasini, "How to Manage America's Trash: Private Solutions to a Public Problem," *Citizens For the Environment Environmental Perspectives* No. 3, December 9, 1991, pp. 22-28.

ington, D.C., for instance, now requires households to separate newspapers from other trash. For this, the city must send two trucks through each neighborhood on collection day rather than one. Spokane, Washington, pays over \$180 per ton for recycling its garbage; this is four times the cost of burying trash in landfills.

There are also indirect costs of recycling. Example: If households must spend time to separate their trash or to wash out and return bottles, this time has a real economic cost, but it does not appear in official cost figures.

In addition, recycling some materials raises more revenue to offset extra processing and collection costs than does recycling other materials. For example, ferrous and non-ferrous metals have been recycled profitably for most of this century.⁴¹ Much aluminum is recycled: 54 percent of all aluminum drink cans are recycled. This is because recycling aluminum cans uses 95 percent less energy per unit of "new" aluminum that is produced than refining aluminum from aluminum ore, known as bauxite. The percentage of materials that are recycled varies widely.

The reason for this variation simply is that recycling is not always profitable. It depends on the material. The total cost of recycling plastic, for example, including the cost of collection and separation, typically is 20 percent more than the cost of producing plastics from its raw materials. This is why most communities have not tried to recycle plastic waste.

Conflicting Goals. Some advocates of recycling retort that if a material, such as plastic, cannot be recycled profitably, then a recyclable substitute should be used. Any alternative, however, will have production and recycling costs. These not only may be more expensive than the original material, but may produce larger quantities of, say, atmospheric pollution. Example: metal and gas containers are heavier and bulkier than plastic containers, so more trucks would be required for transport. These additional trucks emit pollutants into the air and use fuel.

Plastic shrink wrap illustrates some of the problems with mandating recycling. Shrink wrap is relatively inexpensive because it consumes few resources, so it tends to be used whenever it can protect products. It also does not increase waste very much because it is thin and light. Recycling plastic shrink wrap, however, would consume vastly larger resources than manufacturing from virgin material. The reason: Such small amounts of shrink wrap accumulate in households at any particular time, that enormous resources such as fuel would need to be expended to collect, separate, and process it. But if a 50 percent recycling rate (or any other rate) is mandated, then use of shrink wrap is discouraged because alternative materials that are less expensive to recycle would be substituted. Generally, these materials are much bulkier and would tend to increase total waste destined for the landfill, even if the recycling rate were 50 percent. This illustrates that source reduction and recycling rate goals can be in direct conflict.

41 Note that the recycling of ferrous and non-ferrous metals are not "counted" in the recycling rates of most states. Similarly, materials that are reused in the manufacturing process are not "counted" as being recycled. This reflects a bias toward the belief that a material is not being recycled if it is profitable to reuse.

The more zealous advocates of recycling tend to overlook the wider environmental implication of the policies they seek. Policy makers, however, should consider the total effect of regulations on the economy and environment, not just in narrow sectors or small locations.

A goal of those who want to see greater source reduction or recycling in the case of paper, for instance, is to save old-growth trees. Yet old-growth trees typically are not used for paper production. These trees are more valuable as lumber or plywood than as pulpwood for paper. In fact, some 87 percent of the trees cut for pulpwood are commercial plantation-grown softwoods. These trees are planted in rows and harvested every twenty years as a rotation crop. If paper recycling were mandated, the recycled pulpwood would displace virgin pulpwood in products. With less demand for virgin pulpwood, these small trees would be less profitable as a crop and the land would be put to alternative uses, leading to a decline in the number of trees. Explains Jerry Taylor, Director of Environmental Studies at the Cato Institute: "acting to 'conserve trees' through paper recycling is like acting to 'conserve wheat' by cutting back on bread consumption."⁴² The relationship between demand for virgin pulp and the number of trees planted is highlighted by the fact that, since 1970, pulpwood consumption has increased while the number of trees in America has increased by 20 percent.

Recycling can have other unintended consequences. It can also increase pollution. Take the case of disposable diapers. Because they take up four times as much landfill space as worn-out cloth diapers, some environmentalists want regulations to discourage disposable diapers. Yet the production and cleaning of cloth diapers generate about twice as much air pollution and seven times as much water pollution as do disposable diapers, according to a study commissioned by the EPA.⁴³ Thus policy makers must ask which is better for the environment: Polluting more air and water to reduce by a small amount the waste entering landfills or putting more material into landfills in order to save clean air and water?

ASSUMPTION #4: GOVERNMENT MANDATES CAN SAVE RESOURCES

The central issue in determining whether mandated source reduction or recycling makes sense is whether more resources are consumed by these conservation techniques than in making the product from virgin materials. These policies are designed to encourage or compel firms to substitute one material in the production process for another that consumes fewer resources.

This requires government to compare substantively different materials and products against each other by setting the relative values or "worth" of each resource consumed in the process. There are a couple of problems with this. In the first place, this is a formidable task. Any "worth" established by the government will

42 Jerry Taylor, "Recycling is Not the Answer," *Roll Call*, Waste Policy Briefing, February 24, 1992.

43 Franklin Associates, "Energy and Environmental Policy Analysis of Children's Disposable and Cloth Diapers" (Prairie Village, Kansas, 1990).

tend to be an imperfect estimator of the resource's real worth. Thus, resources are wasted whenever the imperfect "worth" set by the government differs from the real worth. In the second place, businesses already perform this task every day through the use of prices, which reflect the relative scarcity and value to society of each resource.

Complicated Comparisons. In the attempt to answer the question of whether resource substitutions would actually save resources, government analysts would have to try to compare accurately the resources consumed in the processes of making goods from: recycled versus virgin materials; original versus substitute materials; and different production equipment. In simple terms, inputs and outputs of materials and products would have to be examined from cradle to grave and compared against each other for different methods of manufacturing and disposing of the product. This is known as comparative life cycle analysis.

Life cycle analysis, however, has an Achilles' heel. When comparing these different amounts of different resources, the government is forced to create an arbitrary "worth" of each resource, technically known as a "weight." The types of materials that the government would need to compare would be extensive, varied and have complex characteristics not easily reducible to a quantifiable precise "worth." The government would be required to determine, for example, whether 100 pounds of pulpwood was worth more or less than a barrel of oil or 100 pounds of steel. To use life cycle analysis, every resource such as pulpwood, oil, and steel, would have to be assigned an exact value per unit, such as 7.2442 or 12.6631 so that resource substitution and conservation decisions could be made.

"Ecological Theology." These weights would not be flexible, although conditions constantly would change. There would be sudden scarcities of some materials and sudden scientific breakthroughs for others—yet the process of creating the weights and changing them would be slow and subject to extensive review. Further, the weights assigned would not be based on science because, in the final analysis, a judgment as to the intrinsic worth of the resource and its attributes would have to be made by some decision maker. In fact, the Science Advisory Board, an independent advisory body to the EPA, in its September 1990 recommendations to EPA, proposes that resources be assigned "moral" values. This means decisions would not be based on scientific, economic, or political bases, but on what may be broadly termed as "ecological theology."⁴⁴

Obviously, if the government were to use prices to determine the worth of resources, they would not run into any of these problems. The worth, for example, of 100 board feet of lumber compared to a barrel of oil could be easily checked. If a resource becomes scarce, prices immediately rise to reflect it. If a scientific breakthrough reduces the demand for a resource, prices again reflect the changed worth immediately. Best of all, prices provide a precise "worth" that reflects the sum of information that consumers possess collectively.⁴⁵

44 Science Advisory Board, "Reducing Risks: Setting Priorities and Strategies for Environmental Protection," May 1990.

Prices also would demonstrate, as they do now, that recycling wastes resources whenever the total cost of recycling exceeds the cost of producing a product plus the cost of disposing of it. Ironically, using prices to determine the worth of a resource would show that legislatively mandated recycling percentages, such as 50 percent of all newsprint, actually waste more resources than they save.

Even if prices were used by EPA to set the worth of different resources, this would result in waste because of the expensive reporting requirements and bureaucratic red tape in permitting, which would slow businesses in their attempts to substitute less valuable resources into their production process. Additionally, EPA would be constrained by legislation to force businesses to use wasteful production processes, such as requiring that 40 percent of all paper products be recycled, regardless of more resource-efficient alternatives.⁴⁶

CONCLUSION: BAD ECONOMIC POLICY MEANS BAD ENVIRONMENTAL POLICY

Obviously, it is not good business to consume more resources than necessary to produce a product (as defined by price). It is also not good economics. Wasting resources puts American businesses at a disadvantage in the global marketplace. Businesses will not be able to compete in foreign markets, so exports will drop. This increases pressure to erect trade barriers just to offset the increased trade imbalance.

If businesses consume more resources in production, they must lower their profits, which reduces investment capital; or run at a loss, which ultimately increases unemployment; or they must pass the costs on to the American consumer, which reduces real wealth. Yet, a nation's real wealth is a significant factor in protecting the environment. In fact, a Princeton study of 42 countries last year finds that air pollution decreases as gross domestic product per capita increases for developed countries.⁴⁷

45 An EPA-sponsored study found that "[i]n the 1970s, when the life cycle analysis methodology was being developed by EPA and others, some attempts were made to devise a weighing system for comparing impacts [of using nine different beverage containers]. (Hunt, R.G. et al., "Resource and Environmental Profile Analysis of Nine Beverage Container Alternatives." Midwest Research Institute for the U.S. Environmental Protection Agency, 1974) Because of the difficulties encountered, the effort was abandoned." Franklin Associates, "Background Document on Clean Products Research and Implementation" (Prairie Village, Kansas, June 1990). This simply illustrates the problem. The most comprehensive project to date studied only nine beverage containers, not the thousands of slightly different products which would be "compared" in the real world, yet the study failed because of technical difficulties.

46 At least under S. 976.

47 Gene M. Grossman and Alan B. Krueger, "Environmental Impacts of a North American Free Trade Agreement," Discussion Paper #158, Discussion Papers on Economics, Woodrow Wilson School, Princeton University, November 1991.

Dangerous Irony. Wealthier nations devote more income toward curbing air pollution because clean air is a valuable good. Poorer countries cannot afford both the basic necessities and clean air, so these countries devote their resources to the most valuable goods—food and shelter. The Princeton study suggests that as America increases resource consumption per unit of output, it will have less capital to devote to curbing real environmental problems. Wasting scarce resources and possibly harming the environment in the name of conservation is not ironic—it is dangerous.

The reauthorization of the Resource Conservation and Recovery Act (RCRA) may be a pivotal point in U.S. environmental policymaking. The reauthorization debate can remove the barriers to sensible environmental objectives—such as excessively stringent rules that are counter-productive, and needless reporting requirements that discourage the best disposal methods for waste. Or the reauthorization debate can impose a raft of new regulations based on erroneous assumptions.

Some in Congress are calling for a legislated hierarchy of disposal and conservation methods which ostensibly would encourage some types of waste management and discourage others. But the rationale for this hierarchy does not stand up to scrutiny. There is, for instance, no shortage of land for landfill waste disposal, and the slight decline in landfill space is no crisis. In truth, the decline is caused by government interference and can be rectified by removing barriers to obtaining local government approval, obtaining EPA permits, and constructing facilities at reasonable costs.

The health risks from landfills and incinerators, meanwhile, are low for most older facilities and virtually non-existent for new ones. The proposed new hierarchy would affect only the construction of new state-of-the-art facilities. The lifespan of the few older facilities that do pose health risks would not be shortened. Some proposals to ban interstate transportation of waste actually could extend the life of the older facilities.

Solid Signals from the Market. Most Americans would agree that resource conservation is an admirable goal. Indeed, the prudent use of resources is a fundamental building block of a capitalist society. But mandatory source reduction and recycling goals can waste scarce resources. Whenever recycling is profitable, as is the case for aluminum, energy and other resources tend to be conserved. But when recycling is unprofitable, it is usually a signal that resources are being wasted.

When prices are allowed to reflect the real cost of using resources, and the relative costs of different methods of waste disposal, they become powerful signals to manufacturers and consumers. They are also signals that reward those Americans who take prudent steps to conserve valuable natural resources, and that penalize those Americans who squander them.

By contrast, a system of bureaucratic rules and regulations designed to guide manufacturers and consumers can never be as effective. For one thing it only tries to mimic—less effectively—what market prices tell Americans. For another, it means imposing some official's view of what is important to conserve in the envi-

ronment, rather than the cumulative view of Americans as expressed in the market for natural resources. And further, a mandatory hierarchy, enshrined in red tape, is less sensitive than market prices to changes in environmental conditions.

Thus a mandatory hierarchy would not be just bad economics. It also would be bad environmental policy.

John Shanahan
Policy Analyst

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