

**RECYCLING RUBBISH**  
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Recycling has always been a means of dealing with waste products. But until recently, most people recognized that the role for recycling varied in response to many conditions, including cost. Whether and how much individuals and firms should recycle were generally left to those who generated the waste.

Starting about twenty years ago, however, Americans' view of trash changed radically. State legislatures began debating alternative means of disposal, the Environmental Protection Agency made rubbish a matter of federal regulation, and Congress and the Supreme Court became embroiled in contentious debates over interstate garbage trucks and barges.

Aroused by fear of a garbage crisis, Americans lost their sense of perspective on trash. A new consensus emerged: Reduce, reuse, and—especially—recycle became the only ecologically responsible solutions to America's perceived crisis. Yet this consensus was founded chiefly on claims that were either dubious or patently false. The goal of this essay is to compile and distill these claims and show that they are, in fact, Recycling Myths.

### **A Brief History of Rubbish**

Rubbish is the unavoidable byproduct of production and consumption. There are three ways to deal with trash, all used since antiquity: dumping, burning, and recycling. For thousands of years rubbish commonly was dumped on site—on the floor, or out the window. What wasn't eaten by scavenging domestic animals or salvaged by the indigent was covered and built upon. Over time, cities gradually rose on the remains of prior centuries.

By the 18th century people started digging refuse pits, but progress was slow. In 1880

less than 25 percent of American cities had municipal trash collection. In 1895, New York City established the first comprehensive system of public-sector garbage management; by 1910, some 80 percent of American cities had regular trash collection.

Recycling—commonly referred to as scavenging—was an essential part of the rubbish disposal process. In New York City people paid for the right to scavenge through garbage, and throughout America rag dealers were a regular element of life well into this century. Another form of recycling seen in late 19<sup>th</sup> and early 20<sup>th</sup> centuries was reduction, stewing wet garbage and dead animals in large vats to produce useful by-products. The noxious odors and other pollution from such facilities forced their disappearance by 1959.

Although rubbish has been burned by humans for thousands of years, the first modern incinerators date to the late 19<sup>th</sup> century. By World War II 700 incinerators operated in the United States, in part because they permitted disposal volume to be reduced by 85-95 percent. Some communities have opposed incinerators, citing concern about air pollution, but combustion (far more complete and thus cleaner than ever before) is now used to dispose of almost 15 percent of all municipal solid waste.

The sanitary landfill originated in Great Britain in the 1920s, and was introduced in America a decade later by Jean Vincenz, public works commissioner of Fresno, California. During World War II, the U. S. Army employed Vincenz to guide its disposal of waste from huge military bases. Prompted by the Army's success, over the next 25 years the sanitary landfill became America's method of choice when dealing with municipal solid waste.

The modern era of waste disposal and recycling began in the spring of 1987 when a garbage barge named *Mobro 4000* spent two months and 6,000 miles looking for a home for its

load. *Mobro* set off in March 1987 with 3200 tons of New York trash, originally intended for a cheap landfill in Louisiana. Mis-communication between the barge and some landfill operators resulted in a series of rejection slips for *Mobro*. Although physical availability of landfill space was not an issue at any point in *Mobro's* voyage, that was not how the issue played out in the press. In fact, a strange cast of characters turned *Mobro's* miseries into a national cause.

The Environmental Defense Fund had been trying (without much success) to sell household recycling to America and *Mobro* gave the organization what it needed, for the barge's saga suggested that America was running out of landfill space. Meanwhile, members of the National Solid Waste Management Association trade group were seeking customers for their expanding landfill capacity. After *Mobro* hit the headlines, the organization announced that "landfill capacity in North America continues to decline". Panicked state and local officials began signing long-term contracts for dump space. And finally, the Environmental Protection Agency (EPA) also backed the view that there was a crisis—basing its judgment on the declining number of landfills in the U.S. What the EPA failed to notice was that landfills were getting bigger so fast that total landfill capacity was actually rising.

### **The Myths of Recycling**

Within months of *Mobro's* odyssey fear grew that America was running out of places to put its garbage, and that yesterday's household trash could become tomorrow's toxic waste. By 1995, surveys revealed that Americans thought trash was the number one environmental problem, and 77 percent reported that increased recycling of household rubbish was the solution. Yet these fears were based on misinformation and misinterpretations of mythic proportions.

**Myth 1: *Our garbage will bury us.***

Since the 1980s, commentators have argued that America is running out of landfill space. Former Vice President Al Gore asserted that America is “running out of ways to dispose of our waste in a manner that keeps it out of either sight or mind”. The great science fiction author Isaac Asimov was even more emphatic, claiming that “almost all the existing landfills are reaching their maximum capacity, and we are running out of places to put new ones”.

How did this notion get started? During the 1980s, the waste disposal industry moved to using fewer but much larger landfills. The EPA, the press, and other commentators focused on the falling number of landfills, rather than on their growing overall capacity and concluded that we were running out of space. Indeed, J. Winston Porter, the EPA Assistant Administrator responsible for that agency’s role in creating the appearance of a garbage crisis, has since admitted that the key EPA study was flawed because it counted landfills rather than landfill capacity, and it also underestimated the prospects for creating additional capacity.

The United States today has more landfill capacity than ever before; by 2001 nationwide landfill capacity had risen to more than 18 years. To be sure, there are a few places where capacity has shrunk. But the uneven distribution of available landfill space is no more important than is the uneven distribution of automobile manufacturing: Garbage has become an interstate business, with 47 states exporting the stuff and 45 importing it. Given that the total land area needed to hold all of America’s garbage for the next *century* would be only about 10 miles on a side, it is safe to conclude that far more rubbish than is worth considering will fit into far less area than is worth worrying about.

**Myth 2: *Our garbage will poison us.***

Landfill opponents argue that municipal solid waste (ordinary household and commercial

trash) is hazardous to health, water supplies, and ecosystem. Some people worry about methane emissions, produced when organic materials decompose (biodegrade) in landfills; others are concerned that landfill leachate (a fluid that drains to the bottom) will escape, contaminating groundwater and nearby wells.

The claim that our trash might poison us is impossible to completely refute, because almost anything *might* pose a threat. In fact, evidence of actual harm from landfills is remarkably difficult to uncover. The EPA itself notes that the risks to humans (and presumably plants and animals) from modern landfills are virtually non-existent: Modern landfills can be expected to cause 5.7 cancer-related deaths over the next 300 years—one every 50 years. To put this in perspective, cancer kills over 560,000 people every year in the United States.

It is true that older landfills possess the potential for harm to the ecosystem and to humans. Wetlands (or swamps) were once considered ideal locations for landfills. The space was cheap and reclaiming swampland aided mosquito control (and thus disease reduction), and created valuable building space. But there was a cost. Wetlands are important ecosystems that also provide flood control and water filtration. These functions are destroyed or impaired by filling in the wetlands, with potential harm to the ecosystem and humans due to leachate runoff.

When located on dry land, however, even old-style landfills are unlikely to yield much harm. Little biodegradation takes place; it usually ends soon after the landfill is closed; and because the contents of landfills tend to stay put, the potential harm from the materials that don't biodegrade is minimal. The real potential hazards of landfills have nothing to do with municipal solid waste. These hazards all stem from industrial wastes that were improperly or illegally dumped in municipal landfills—dumping that is unaffected by household recycling programs.

According to the EPA, today's landfills essentially eliminate the potential for problems posed by older landfills. Siting is away from groundwater supplies and the landfills are built on foundations of several feet of dense clay, covered with thick plastic liners. This layer is covered by several feet of gravel or sand.

To reduce potential leachate, modern "dry tomb" landfills minimize fluid going in (from rain, for example) by covering areas that are not currently operational. Any leachate is drained out via collection pipes and sent to municipal wastewater plants for treatment and purification. And methane gas created as a by-product of biodegradation is drawn off by wells on site and burned or purified and sold for fuel.

Toxic materials may not lawfully be dumped in municipal landfills and EPA regulations are designed to protect the environment in the event the law is broken. Moreover, excavations of landfills have found that the toxic materials in them migrate only a little within the landfill, and almost never outside it.

**Myth 3: *Packaging is our problem.***

Packaging is ubiquitous in the marketplace and in the landfill, amounting to perhaps one-third of landfill volume. Many people argue that the best way to save landfill space is to reduce the amount of packaging Americans use, by mandatory means if necessary. The arithmetic seems simple: one pound less of packaging means one pound less in landfills. But as with many facts of rubbish, less is sometimes more.

In fact, packaging can *reduce* total rubbish produced and resources used. The average household in America generates one-third *less* trash each year than does the average household in Mexico, because our intensive use of packaging yields less waste and breakage and, on

balance, less total rubbish. Packaging also raises our wealth, saving resources by preventing food spoilage and reducing breakage. Sanitary packaging also reduces the incidence of food poisoning. And there is the matter of mere convenience. Imagine shopping for milk, peanut butter, or toothpaste if such goods were not prepackaged.

Still, people worry about the volume of packaging and wonder if packages could perform today's services while consuming less space in landfills. The answer is yes. Indeed, the private sector reduces packaging's mass on an ongoing basis. During the late 1970s and 1980s, although the number of packages entering landfills rose substantially, the total weight of those discards actually declined by 40 percent, chiefly due to "light-weighting"—reductions in the amount of material used in functionally identical packages. Over the past 25 years individual package weights have been cut by 30 percent (2-liter soft drink bottles) to 70 percent (plastic grocery sacks and trash bags). Even aluminum beverage cans weigh 40 percent less than they used to.

**Myth 4: *We must achieve trash independence.***

Numerous commentators oppose interstate trade in trash, contending that each state should achieve "trash independence" by disposing within its borders all of its rubbish. Forty-seven states today ship some of their garbage to other states and forty-five of them import the stuff. Ten percent of the nation's municipal solid waste moves in interstate trade, driven by widely varying disposal costs and inexpensive transportation. As is the case for voluntary trade in other items, trade in trash raises our wealth as a nation, perhaps by as much as \$4 billion. Most of the increased wealth accrues to the citizens of the areas that import the trash.

One objection to interstate trade in trash is that landfills may harm citizens living near landfills, harm that may not be taken into account by those who dump. Yet, as noted above, the

EPA reports that the potential threat posed by modern landfills is negligible, and moving a ton of trash by truck is no more hazardous than moving a ton of any other commodity.

There is some evidence that placing a landfill adjacent to a piece of residential property lowers the value of that property, probably due to added truck traffic and to aesthetic considerations. But if adjacent property owners *voluntarily* agree to the placement of a landfill nearby (presumably in return for compensation), both their wealth and the well-being of society are enhanced. This is, after all, the essence of voluntary exchange. After twenty years, when the landfill is capped and closed, it will likely become open space or home to a golf course or public park—uses that enhance surrounding property values.

**Myth 5: *We squander irreplaceable resources when we don't recycle.***

Advocates of recycling note that we live on a finite planet. With a growing population, the only way to avoid running out of resources seems to be to recycle what we use. In fact, we are not running out of natural resources, but the reason is not recycling. While recycling can extend the lives of raw material stocks, more important activities are already doing that.

Consider forests. The amount of new growth that occurs each year in forests exceeds by a factor of twenty the amount of wood and paper that is consumed by the world each year. Partly as a result, temperate forests have expanded over the last 40 years. True, losses of forest land are taking place in tropical forests, at a rate of perhaps one percent per year. But these losses can be directly traced a lack of private property rights. Governments either have failed to protect private property in forests or have used forests, especially valuable tropical forests, as an easy way to raise quick cash. Wherever private property rights to forests are well-defined and enforced, forests are stable or growing. We would have more forests if property rights to them were well



defined and enforced, but today's forest losses would not be eliminated by more recycling of paper or cardboard.

What about non-renewable resources such as fossil fuel? Here, too, there is no reason to fear that we will run out. Despite repeated forecasts by the federal government and others that we shall soon run out of oil, it hasn't happened. Indeed, as we continue to use more oil, the standard measures of proven oil reserves get larger, not smaller.

Market prices are the best measure of natural resource scarcity. A rising price implies the resource is getting more scarce. A falling price implies it is becoming more plentiful. Applying this measure to oil, we find that over the past 125 years, oil has become no more scarce, despite our growing use of it. Reserves of other fossil fuels are also growing, despite growing usage of them, and while the costs of alternative energy sources are far higher than fossil fuels, those costs are coming down. It sounds like a paradox. We are using more resources and yet they are becoming more available. Human ingenuity resolves the paradox.

Proven reserves are not fixed by nature; instead, they reflect what is recoverable at current prices. When the price of a resource goes up, producers find more and consumers use less. The conventional analysis that looks at current reserves or current consumption patterns as being immutable will *always* produce incorrect conclusions.

Thanks to innovation, we now produce twice as much output per unit of energy as we did fifty years ago, and five times as much as we did 200 years ago. Automobiles use only half as much metal as in 1970, optical fiber carries 625 times more calls than the copper wire of 20 years ago, bridges are built with less steel, and automobile and truck engines consume less fuel per unit of work performed. The list goes on and on, and any analysis that forgets or ignores

innovation will *always* produce incorrect conclusions.

Everything can be done differently. Coal instead of wood can be burned for energy, and oil instead of coal. Cars and grocery bags can be made out of plastic instead of steel or paper and tank armor made out of ceramics instead of steel. It is not the substance that we demand, but the function it performs, and many alternatives can perform the same or similar function.

Substitution is commonplace, and human ingenuity seems always to be looking for ways to implement it. Analysis that forgets or ignores this principle of substitution will *always* produce incorrect conclusions.

There is no sign that humans will run out of resources in the foreseeable future. Prices of most industrial products have been falling over the last 150 years and since 1845, the average price of raw materials has fallen roughly 80 percent after adjusting for inflation. Are we running out? It certainly doesn't seem so.

Many life forms exist today in the quantities they do only because humans use them, and thus have taken care to make sure they are abundant. For example, many trees in the U.S. today exist only because there is a demand for pulp made from those trees. These trees will not be "saved" if recycling rates rise; instead, the land on which they grow will be converted to other uses. The desire to use natural resources encourages people to conserve them and even, to the extent possible, create more of them. Any view that ignores this simple fact will *always* produce the wrong conclusions.

**Myth 6: *Recycling always protects the environment.***

To many people, it is axiomatic that recycling protects the environment. Yet this belief is wrong in many instances. Recycling is a manufacturing process, and thus has environmental

impact. The U.S. Office of Technology Assessment says that it is “usually not clear whether secondary manufacturing [such as recycling] produces less pollution per ton of material processed than primary manufacturing processes.” Similarly, the EPA has examined both virgin paper processing and recycled paper processing for toxic substances, finding that toxins generally are more prevalent in the recycling processes. Over the past twenty years, a large body of literature devoted to environmental analyses of products from their birth to death has repeatedly found similar results for most products: Recycling always changes the nature of pollution, but it can increase it as well as decrease it.

This effect is particularly apparent in the case of curbside recycling, which is mandated or strongly encouraged by governments around the country. Curbside recycling requires that more trucks be used to collect the same amount of waste materials. Los Angeles, for example, has estimated that because it has curbside recycling, it has 800 trucks rather than 400. This means more iron ore and coal mining, steel and rubber manufacturing, petroleum extraction and refining—and of course all that extra air pollution in the Los Angeles basin.

Because proponents of recycling would rather not discuss such environmental trade-offs, there is a recurring tendency for misinformation to become conventional wisdom. Consider disposable diapers. *The New York Times* has called them the “symbol of the nation’s garbage crisis”, and the Portland *Oregonian* once reported that they made up one-quarter of the contents of Portland area landfills. But systematic study reveals that disposable diapers amount to perhaps *one percent* of landfill contents. Moreover, reusable diapers are *not* environmentally friendlier than disposable diapers—but it was years before the popular press stopped parroting the myth that reusable diapers were environmentally superior.

Consider polystyrene. During the 1980s, widespread opposition to polystyrene developed, predicated on the notion that paper was an environmentally superior packaging product. Systematic study reveals there is *no* environmental advantage to using paper rather than polystyrene in packaging. As with most things in life, there are tradeoffs—in this case, they are environmental tradeoffs that are not always apparent at first (or even second) glance. Good policy requires that these tradeoffs be fully and correctly assessed.

Additional confusion about recycling arises because recycling-based secondary manufacturing generally uses less energy and consumes less raw materials than does primary manufacturing. This is true enough, but used materials have value in the marketplace precisely because they enable manufacturers to use fewer raw materials and less energy. There is no “extra” value simply because recycling uses less energy or material. Separate reference to these savings is simply double-counting.

**Myth 7: *Recycling saves resources.***

It is widely claimed that recycling “saves resources.” Often, recycling proponents claim that it will save specific resources, such as timber. Or, particularly successful examples are singled out, such as the recycling of aluminum cans. Both lines of argument implicitly rest on the notion that reusing *some* resources means using fewer *total* resources.

But using less of one resource generally means using more of other resources. Fortunately, there is a way to measure the total resource usage of different waste disposal methods—by examining the resource costs of landfill disposal versus recycling. The lowest cost method necessarily uses the least amount of resources as valued by the market.

The accompanying table shows the costs per ton of handling waste via the three most

common methods: disposal into landfills (but including a voluntary drop-off/buy-back recycling program), a baseline curbside recycling program, and an extensive curbside recycling program.

**COSTS OF ALTERNATIVE MSW PROGRAMS  
(2002 dollars per ton)**

	<u>Disposal*</u>	<u>Baseline Recycling</u>	<u>Extended Recycling</u>
Landfill	\$ 34	\$ 0	\$ 0
Collection & transport	70	155	127
Recyclables processing	0	95	74
<b>SUBTOTAL:</b>	<b>\$104</b>	<b>\$250</b>	<b>201</b>
<u>Less: Recovery</u>	<u>0</u>	<u>68</u>	<u>50</u>
<b>TOTAL</b>	<b>\$104</b>	<b>\$182</b>	<b>\$151</b>

Source: Adapted from Franklin Associates, *Solid Waste management at the Crossroads*, 1997. Landfill costs have been updated to reflect 2002 actual costs. All other figures are Franklin Associates estimates, updated to reflect changes in the cost of living between 1996 and 2002.

It is apparent that, on average, curbside recycling is substantially more costly—that is, it uses far more resources—than a program in which disposal is combined with a voluntary drop-off/buy-back option. The sources of the high costs of recycling are simple: Curbside recycling of household waste uses huge amounts of capital and labor per pound of material recycled. Overall, curbside recycling costs run between 35 percent and 55 percent higher than the disposal option. As one expert in the field puts it, adding curbside recycling is “like moving from once-a-week garbage collection to twice a week”.

Why do so many people think recycling conserves resources? First, many states and local communities subsidize recycling programs, either out of tax receipts or out of fees collected for trash disposal. This reduces the reported bookkeeping costs for such programs to well below

their true resource costs to society. Observers also sometimes errantly compare high-cost twice a week garbage pickup with low-cost once or twice a *month* recycling pickups, without realizing that this makes recycling falsely appear cost-effective. Confusion also arises because many people focus on narrow aspects of recycling, highlighting valuable items such as aluminum cans, or stressing the value of recyclable items in periods of their highest historical value, or focusing on communities where local conditions (such as high landfill costs) make recycling more likely to save resources. The numbers presented here avoid these problems and make it clear that, far from saving resources, curbside recycling typically *wastes* resources.

A moment's reflection will suggest why this finding must be true. The only things that intentionally end up in municipal solid waste—the trash—are both low in value and costly to reuse or recycle. Hence, all of the profitable, socially productive, wealth-enhancing opportunities for recycling were long ago co-opted by the private sector.

Commercial and industrial recycling is a vibrant, profitable market that turns discards and scraps into marketable products. Curbside collecting from individual consumers is far more costly and yields items that are far less valuable. Hence, only disguised subsidies and accounting tricks can prevent the municipal systems from looking as bad as they are.

**Myth 8: *Without forced recycling mandates, there wouldn't be recycling.***

It is routinely asserted that without government recycling mandates, there wouldn't be recycling, supposedly because “planned obsolescence” by the private sector is inconsistent with recycling. The claim that the private sector promotes premature or excessive disposal ignores an enormous body of evidence to the contrary. Firms only survive in the market place if they take into account *all* of their customers ownership costs. The amount of obsolescence built into

products varies widely, and manufacturers respond exactly as though they were striving to minimize society's total costs of ownership.

Fifty years ago, when automobiles were technologically crude and relatively inexpensive, they were built to be replaced frequently. Today, because firms must install expensive pollution and safety equipment whether the vehicle has a short or long expected lifespan, firms are under strong competitive pressure to make vehicles last longer. Hence the expected lives of cars have grown—from 100,000 miles at most, to 200,000 miles or more.

Similarly, fifty years ago, when labor was cheap compared to materials, goods were built to be repaired, so the expensive materials could be used longer. As the price of labor has risen and the cost of materials has fallen, manufacturers have responded—in the interests of consumers and society—by building items meant to be used until they break, and then discarded. There is no “bias” against recycling.

There is, however, ignorance about the extent of recycling in the private sector, which is itself as old as trash itself. For as long as humans have been discarding rubbish, other humans have sifted through it for items of value. Contrary to what people say about prostitution, scavenging may well be the oldest profession. In modern times, long before state or local governments had even contemplated the word recycling, the makers of steel, aluminum, and thousands of other products were recycling manufacturing scraps, and some were even operating post-consumer drop-off centers.

One of the most peculiar aspects of America's obsession with recycling is that it has come at the time of our greatest wealth. It is the poor, not the rich, who are able to make productive use of household discards. Before New York City's garbage scows left the docks for

offshore dumping in the nineteenth century, they were first trimmed (scoured) by immigrant families for anything that might be of value. As distasteful as the work was, it was for them the best of a bad lot.

Today's *pepenedores* of Mexico work the nation's dumps from Mexico City to the U.S. border, hoping to find anything that has been missed by the men who push the garbage carts on the city streets, or those who drive the trucks transporting the trash to the dump. The *zabaleen* of Cairo specialize in particular products, with all members of the family assigned specific roles. America's *transmigrantes* acquire pickup trucks from junk yards, loading them with scavenged appliances and furniture, and transporting the load 2,000 miles to the neighborhoods of Guatemala or Costa Rica where the load—truck and all—finds a ready market. They, like their international colleagues, share one trait: the discards of the rest of society are sufficient to ensure their living. This is as it has always been: recycling household discards is the business of the poor, but only until they have improved their lot enough to pass it on to those who would follow in their footsteps.

## **Conclusion**

Informed, voluntary recycling conserves resources and raises our wealth, enabling us to achieve valued ends that would otherwise be impossible. In sharp contrast, mandatory recycling programs, in which people are compelled to do what they know is not sensible, routinely make society worse off. This includes government-mandated minimum content laws requiring goods to include a minimum percentage of recycled content, advance disposal fees that amount to arbitrary taxes on politically unpopular goods, and many curbside recycling programs. Such programs force people to squander valuable resources in a quixotic quest to save what they



sensibly discard. On balance, mandatory recycling programs lower our wealth.

Misinformation about the costs and benefits of recycling is as destructive as mandatory programs, for it induces people to engage in wasteful activity. Public service campaigns and “educational” programs that exaggerate the benefits of recycling fall into this category, but there are other offenders too. Bottle and can deposit laws, which effectively misinform people about the true value of used beverage containers, induce people to waste resources collecting and processing items that appear to be worth five (or even ten) cents, given their redemption prices, but in fact are worth a penny or less to society. Similarly, costly government-run recycling programs that pick up recyclables at no charge give people the incentive to engage in too much recycling, because they falsely give the *appearance* that the programs are without cost.

Except in a few rare cases, the free market system is eminently capable of providing both disposal and recycling in an amount and mix that creates the greatest wealth for society. This in turn makes possible the widest and most satisfying range of human endeavors. Simply put, market prices are sufficient to induce the trashman to come, and to make his burden bearable, and neither he nor we can hope for any better than that.