

**Keynote Speech
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***CAN RECYCLING SUCCEED
WHEN LANDFILLS ARE PERMITTED TO POLLUTE?***

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I don't know about you, but for me recycling has been on quite a roller coaster ride over these past 10 years.

Yes, we have seen the mountain top, but we also been knocked out of those commanding heights that we enjoyed for those few blissful, but short, years at the beginning of the last decade.

How did this happen?

Remember John Tierney and his vituperative mad dog attack on recycling in that 1996 *New York Times* magazine. [SLIDE] Oh go ahead, it's quite alright to hiss.

"Recycling," Tierney rubbed in our face, "squanders money and good will and doesn't do much for the environment either". That going-over may have made you feel a recycled pinata, or, perhaps, like Jack LaMatta. [SLIDE]



But, in terms of longer reverberations, Tierney never represented anything more than an unreasoned, easily rebutted, religious jihad by the libertarian movement against any government program that the public thought was successful, even — no especially — one that was as popular as Snow White and hence, at all costs, had to be slain with a stake through the heart.

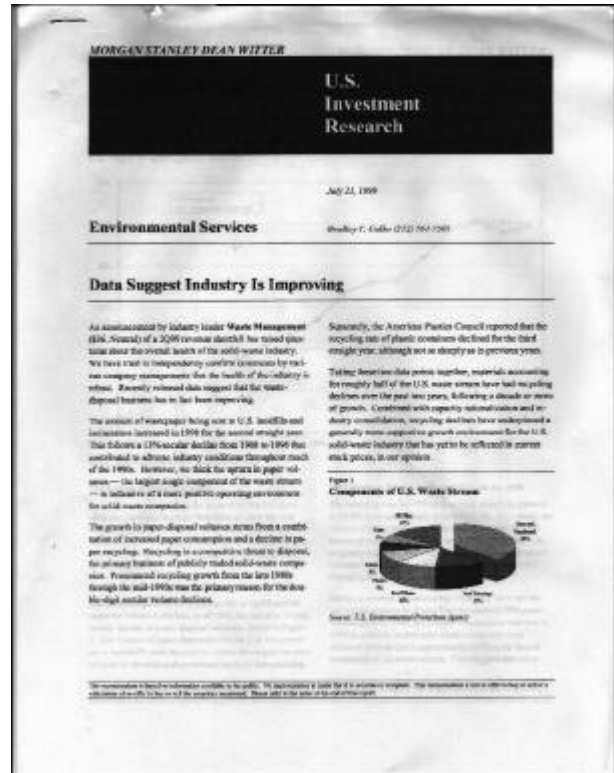
Their unshakable belief that it is written somewhere in the ten commandments and in the U.S. Constitution that no government can ever — *EVER* — do anything good had once

been relegated to la-la land. But after the Reagan era upturned conventional political wisdom, pronouncements from places like the Cato Institute, which Tierney cribbed from, had become quite chi-chi in the Eastern press as a way to manufacture excitement (as lampooned in Dan Akroyd dismissing his *Saturday Night Live* Counterpoint co-host, with “Jane, you ignorant slut”).

But, as the decade came to a close, another article appeared that most of you may not have seen because it appeared in financial analysts’ reports that only went to institutional investors.

Nonetheless, although not published in the popular press, it was of far greater import for our future prospects. The report took us down a notch with real facts that accurately described what was going on. And since the facts that they pointed to came from *BioCycle’s* STATE OF RECYCLING series, there wasn’t much we could say about their being manufactured anti-recycling diatribes. [SLIDE]

I suspect that most of you didn’t get to see this one, so let me show you some excerpts of what Wall Street said about us after being briefed on the waste industry scene by the chief financial officers of Waste Management, Allied, Republic and Waste Connections. Here is what they said—



“For nearly a decade, recycling has decimated aggregate volume growth in the traditional waste management business ... [R]ecycling has long been the enemy of the solid waste industry, stealing volumes otherwise headed for landfills ... [R]ecycling has reached a saturation point in the U.S. [in 1996] and should therefore not be nearly as large a threat to solid-waste companies going forward as it has been over the past decade. ... [L]ess recycling should lead to accelerating disposal volumes, which in turn should lead to pricing leverage for landfill operators.”

Essentially, Wall Street noted that, after a decade during which recycling ate the waste industry’s lunch with unexpected growth in diversion of discards from landfills, by 1996 recycling stalled out and hasn’t grown since. This was a fact of some import for the large waste consolidators that vertically integrated landfills with hauling, for they need to tighten the availability of landfills in order to make price hikes stick.

The fact that the brutal economics of the recycling business had not turned out as we had

expected, and we were no longer the “golden girls” on the environmental forefront, and indeed we were all too often having trouble just hanging on from day to day, sometimes unable to make payroll on Friday, may have made you feel like Harold Lloyd dangling by his fingernails from that clock.

[SLIDE]

Let’s look at ourselves honestly, just like we appear in the mirror in the morning before we’ve shaved or put on makeup or had our coffee. After more than 10 years of myriad market development programs, procurement and content requirements, start-up grants, matching funds, education initiatives and, most of all, the sweat of our brows, recycling, as a general proposition and apart from non-ferrous metals and high grade fibers, remains on life support.



To an embarrassing extent, the doctor only keeps us hooked up to intravenous tubes because of a patchwork of state mandates requiring curbside recycling — that and the dimming light of recycling’s Big Bang, the Mobro Garbage barge’s Flying Dutchman-like journey way back in 1987 and 1988.

With each foreign port that sent the lonesome barge on its way, the public perception grew that there was a crisis, that we were running out of places to throw our garbage.

And recycling became seen as something that we could all do to constructively solve this problem. There were so many crisis in the world that we couldn’t do anything about, but here was one that we could, physically, in our kitchens, every day, do something to relieve.

That is what has animated the modern recycling movement and put the wind at our backs for so many of our early years. But, you can’t bank on something like that lasting forever, not if the underlying economics don’t reinforce those tail winds. For those who don’t understand this, the future is not bright.

I remember all too well the enthusiasms of the alternative energy movement that I also belonged to in the early 1980’s following the Second Arab Oil Embargo — their energizing event. Instead of addressing the financial fundamentals that confronted them, they coasted on government’s 15% tax credits for anyone who installed a solar system, until the Gas Bubble in 1982 broke the back of double digit prices increases for oil. Soon thereafter the industry collapsed.

For recyclers, the defining fundamental grew unbeknownst to most of us out of the best of

intentions. That was the minimum landfill standards that the EPA promulgated in 1991 under Subtitle D of the 1986 amendments to the Resource Conservation and Recovery Act.

Intended to replace a discredited world in which the 20,000 unlicensed, unengineered open dumps defiled the countryside, the rules required, along with site restrictions, an elaborate engineered system of barriers and liquid and gas removal piping to protect the environment from the threats created when our garbage with its toxic constituents is thrown into the ground.

Threatening our drinking water, the moisture entrained with the trash, and water entering the site from rainfall that enter through any breaches in the liners, added to the organic material in the waste stream, sustain biological processes that drain those dangerous substances out of the waste load and form leachate that pools at the bottom of the landfill. This hazardous leachate must be isolated from groundwater, especially from our drinking water supplies, to protect the environment and public health.

To do this, EPA's landfill regulations require composite liners on the top, bottom and sides of the landfill to keep precipitation from infiltrating into and the leachate from leaking out of the facility, along with leachate collection systems to remove the pooled liquids that otherwise would jeopardize the integrity of the bottom liner.

As a sidenote, because most of the costs were for these barriers that were installed across the upper and lower breadth of the site, almost no additional capital costs were incurred if the facility were made higher, the so-called mega-landfill. With so much more tons spread across the same costs, the unit cost of disposal dropped dramatically. This made it possible for megafills to be built in remote areas where opposition was limited, because their lower cost structure offset the greater transfer costs to reach them. It was the shift to these megafills that ended the landfill crisis by the mid 1990's, notwithstanding the fact that more than 5,000 open dumps were, at the same time, being forced to close because they couldn't meet Subtitle D's requirements. And, with the end of the crisis, the thing that had sustained much of the public's devote enthusiasm for recycling began to recede.

Threatening the air we breath and rely upon to release, not trap heat, decomposing organic matter in anaerobic conditions within a landfill produces methane, a greenhouse gas with 21 times more global warming potential than carbon dioxide.

Methane also transports the hazardous compounds, such as benzene, polychlorinated biphenyls, vinyl chloride and xylene, that are in our waste stream and are known or suspected carcinogens, into the atmosphere.

Microbes responsible for anaerobic decomposition also converts elemental mercury into its lethal di-methylated form that is a nerve gas, and may create other equally serious biological or chemical interactions not yet understood.

Early studies suggest — but, because they were not sufficiently sophisticated to eliminate other factors, they do not prove — that these emissions may be the cause of elevated rates of bladder cancer and leukemia in females in New York State, and neural tube defects, abdominal wall defects and low birth weight in newborns observed among landfill neighbors in Great Britain. Unfortunately, EPA appears to have done nothing to provide the resources so that the kinds of more elaborate analyses needed to nail this down can get done.

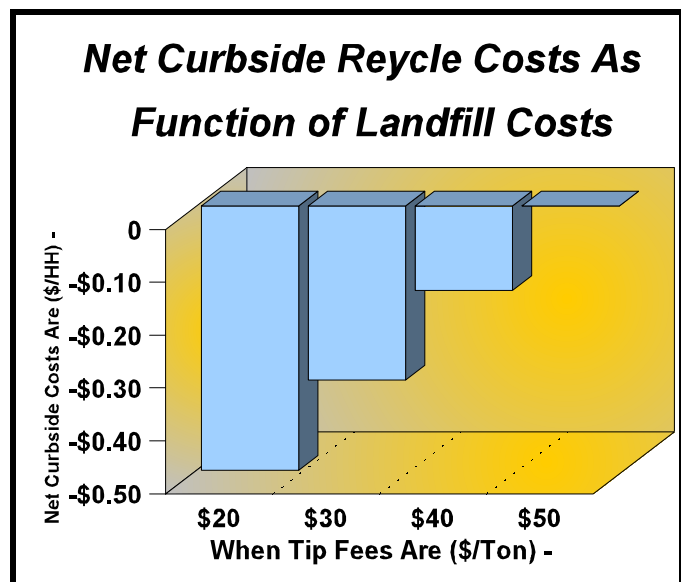
In an attempt to prevent this, however, later amendments to the rules in 1996 required that the largest landfills would have to install other collection systems to capture all these gases before they could escape.

It sounded good: damn good. So good that the first thing Subtitle D did was create a myth that these elaborate systems were so comprehensive that modern landfills were now perfectly safe and no longer a threat to the environment. I wonder how many of you in the room subscribe to this view (show of hands).

In fact, however, the entire fabric of the liner-based rules were fatally flawed in their misguided efforts to protect groundwater, and woefully inadequate to protect the air. And that was the second thing, the reality that, in fact, the rules did nothing of the kind.

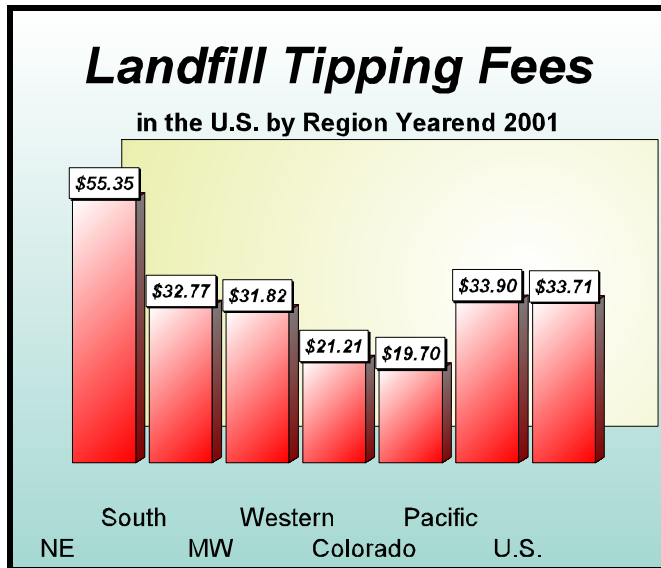
In fact, they fell woefully short of what was needed to protect the environment; and as such, permitted landfills to be built and operated far below their true costs; so far that the tipping fees at the scale house that recycling has to compete against were artificially dirt cheap.

Look at this slide, which illustrates what I mean. I'm assuming here that, in general, separate recycle collection costs in the order of \$2/HH/month, against which diversion can save perhaps 17¢/HH/month in net revenues and \$1/HH/month in avoided trash fleet requirements. The remaining cost to recycle as a function of the landfill tip fee that can be avoided doesn't disappear until those fees exceed \$50/ton.



Source: RecycleWorlds Consulting

By way of comparison, this chart shows the comparative tip fees from around the country last year, with this Western region being the lowest region, and Colorado's the lowest in the



Source: Solid Waste Digest (Jan. 2002).

region. [SLIDE] In the economic sense, welcome ladies in gentlemen to recycling hell. What you've done against such long odds is a miracle and testament to your commitment.

And that's one of the major reasons why recycling can never seem to get off the ground onto a truly self-sustaining trajectory. Similar environmental externalities in the extraction of virgin materials and their production into the goods and packages we recycle, along with the many tax subsidies that they enjoy, are another.

If recycling just could never compete with landfilling in the marketplace, absent government intervention, that might be one thing. Eventually, we'd have to face the music. But, that, most emphatically, is not the case.

Our predicament arises only because, in the words of EPA's Inspector General last year:

"EPA officials that we spoke to agreed that the [basis for the agency's landfill regulations] was not based on specific scientific criteria or research studies [but rather] on a compromise of competing interests]."

Most people have never heard any of this before, but, actually, most of this is uncontroverted, coming from EPA itself. Indeed, as far back as 1981 and continuing to the present day, EPA's technical experts recognized those flaws concerning groundwater:

"No liner, however, can keep all liquids out of the ground for all time. Eventually liners will either degrade, tear, or crack and will allow liquids to migrate out of the unit. Some have argued that liners are devices that provide a perpetual seal against any migration. EPA has concluded that the more reasonable assumption...is that any liner will begin to leak eventually."

The barriers only last for decades, but, EPA noted, the toxic laden waste load continues to remain a threat to the environment far longer, in a time frame measured in centuries. At best, pollution has only been postponed, not prevented, even though RCRA expressly requires that the Agency's rules "at a minimum" insure that "there is *no reasonable probability of adverse effects*

on health or the environment from disposal of solid waste.” This means that most of today’s engineered landfills will be tomorrow’s Superfund sites. While we may have partially protected our kids, that has only been done at the expense of our grandchildren whose drinking water we are permitting to be poisoned.

Is it, incidently, just a coincidence that EPA’s rules let the landowner’s responsibility to manage the site expire just before their staff anticipates that the liners will fail? Some will see disturbing ulterior motives in such a convenient coincidence. I couldn’t possibly comment.

The situation concerning landfill’s impacts on air pollution and climate change is not uncontroverted, but it is nonetheless real. The issue turns on whether the collection systems really capture 75% of the gases, as EPA claims. Because only slightly over half of the landfills are even covered by the landfill air rule, because these pipes don’t even get installed until seven and perhaps as long as 10 years after the landfill begins receiving garbage, and then are removed as little as 15 years after closure, and because they don’t even operate half that efficiently when they are installed, there is no factual basis to sustain a claim that they really capture much more than 10% of the gases.

Seen in this light, landfills’ contribution to climate change might not be 4% – as bad as that is – but something between 10% and 20%.

And global warming is just one side of these air emissions. As noted, preliminary health studies suggest that the carcinogenic air emissions may also turn out to be a very serious concern once more resources are devoted to sort out the causative factors.

The bottom line is that we simply are unable to manage decomposable material in the ground where it creates leachate that can’t be isolated for very long and creates methane, dimethyl mercury and transports VOCs.

That is precisely why the European Union in 1999 passed a law ordering the phase out of land disposal of organics, and why Minnesota is considering a proposal to ban the unprocessed waste into landfills.

It is also why the National Recycling Coalition and the Grassroots Recycling Network have asked the EPA to investigate a constructive alternative to achieve the same objective here. That is to source separate our organic material for composting to help restore fertility to our land, just like we already separate our newspapers, bottles and cans for recycling.

Because 60% of what we currently landfill is organic — most of which is unrecovered paper (31%), but also includes food scraps (14%), yard trimmings (10%) and wood (7%) — that could bring our overall recovery, once added to what we currently recycle, of more than 75%.

Thus, correcting for the current failing in today’s landfill rules could be the silver bullet for

recycling. Banning organics from the ground would essentially require that all of the incoming waste would have to be pretreated in an enclosed vessel until the load was stabilized, a process that would probably cost more than \$65 per ton.

At that rate, expanded composting would likely be competitive and landfills would be left with their proper role the management of inert waste, accompanied, hopefully, with more aggressive efforts to further exclude toxic materials as well, such as mercury thermometers and CRTs.

Unfortunately, in the tragically politicized world of the EPA, in which the financial interests of the large waste consolidators appear to predominate, something else is what is currently going down. Instead of exploring composting's potential to make tomorrow's landfills safer, EPA is devoting virtually all of its resources to the proposal of the landfill industry to turn Subtitle D on its head in a desperate effort to preserve the role of landfills in managing all municipal waste.

Effectively, the weight of these arguments have become so inescapable that very few in the landfill industry would any longer not concede that current rules will not work. In its place, however, they propose bioreactors. In a bioreactor, instead of going to great lengths to keep water out, liquids are deliberately introduced in an effort to accelerate decomposition, with the implication left that the waste load would be stabilized by the time the landfill was closed.

But, to accelerate decomposition requires bringing moisture levels up to as much as 65%. At that level, one has liquified the waste mass into a liquid slurry, a slurry laced with toxic substances. And remember too that, except for the base footprint, landfills are not in the ground, but rather are hundreds of feet above ground. So we're talking about an above-grade toxic slurry hundreds of feet high contained by little more than two feet of compacted dirt and a tarp.

Now it might be that, were money no object, it theoretically might be possible to specify a very highly advanced bioreactor design that, although it would never be able to stabilize much more than a part of the waste load, at least would not create in its wake a host of new extremely difficult if not impossible challenges to manage. Unfortunately, the bioreactors' proponents have made it emphatically clear that their design enhancements are limited to those which will not increase overall costs above dry tomb designs. Over and over again, rudimentary safety features that are intuitively obvious are rejected solely on the basis that they would increase net costs.

Were the concerned public to rise up and demand that EPA act technically, instead of politically, here's what would be accomplished:

- (1) The public will understand that today's cheap landfills, which recycling unfairly has to compete against – are only inexpensive because they pollute.
- (2) With the recognition that today's landfills pollute, the non-economic reason why the

public supports recycling – once met by a fear that we were running out of space – will be rejuvenating.

- (3) Out of that, the current flawed rules will be reformed and the specter of more landfills that will pollute and worsen climate change and threaten the health of landfill neighbors will recede.

But, with the terribly disappointing track record of the EPA in these matters, absent an aroused public, the compost alternative will be ignored and the landfill industry will succeed in winning new rules that will permit bioreactors to be approved on the cheap without even the most essential safeguards. By leaving the price tag for toxic legacy to the next generation, artificially low disposal costs will be perpetuated all over again and the constructive alternative offered by recycling and composting will be priced out of the market for another 20 years or more.

How can this be avoided. You know the answer. It is to –

- Educate ourselves
- Reach out, and
- Organize.

And how do we inspire ourselves to act? For myself, I've always drawn strength from the lives of those who came before us on whose backs we stand.

A century ago, the progressive forces seeking a better life for the common man looked to inexpensive public power for labor saving devices as a way to bring relief from the back-breaking work that marked most people's lives and made them little different than those living in the Middle, if not the Dark, Ages.

One of the ennobling spirits of those times a hundred years ago is someone who few today remember, but I know inspired the generation that lived through the Depression and World War II. That person was George Norris, whose selfless and single handed battles against all odds ultimately led him to become the father of the Tennessee Valley Authority. I know this because, in going through his letters at the Library of Congress, there were hundreds during World War II – after Norris had lost office and was in retirement at the close of his life – from American soldiers all across the world, during lulls in battle, writing to tell him how much his life had inspired them to lives their better.

Here's what Norris wrote to his children just a few months before he died –

“This new lively generation that is coming on to take the place of the old fellows that have passed away are taking hold of their new duties, trying to make a better world than my generation have been able to make. Trying to improve conditions, and bring a little more happiness and comfort to those who are suffering agony and distress, and to make of

this world a happier place to live. I believe they are going to succeed a measure, but improvement is so slow. You must watch centuries in order to observe it. But as far as my part is concerned, my work is finished, and there is no reason why I should linger around here with my friends all dead, living in a world that is better than I have ever known, that is gradually getting a little better, and that is now engaged in the awfullest struggle of its existence to maintain itself, but I firmly believe that out of the chaos and the misery and the doubt that there will come a happier day than this.”

In the middle of the Great Depression and on the eve of the Second World War, Franklin Roosevelt gave his second inaugural speech including the famous line that speaks to us as recyclers today –



“To some generations much is given. To other generations much is expected. This generation of Americans has a rendezvous with destiny.” [SLIDE]

And, at the dawn of the second millennium, as the waste and recycling industry stand at this great crossroads that will define and dominate the decades to come, our generation of recyclers has within its grasp — if we but choose to reach out and grab for it — the opportunity to seize the day, to realize through our efforts a brighter future for our children.

But, you must know all this talk about recycling is not the only big thing going on in the world today. As we sit here, George Lukas’ new *Star Wars* prequel is opening in 3,000 theaters across the county. In honor of this, and because I can’t think of any other way around it–

“May the force be with you.” Oh, and *carpe diem* and all that. ■