

Solid Waste Issues

➤ Recycling of Televisions

Discarded electronic equipment is a growing waste management issue because it represents a large source of heavy metals and organic pollutants in the waste stream. Without effective phase-outs of hazardous chemicals and the development of effective collection, reuse and recycling systems, highly toxic chemicals found in electronics will continue to contaminate soil and groundwater as well as pollute the air, posing a threat to wildlife and people.

In 2005, used or unwanted electronics amounted to approximately 1.9 to 2.2 million tons nationwide. Of that amount, only about 345,000-379,000 tons were recycled. (Source: EPA)

In 2007, Americans threw away about 2.5 million tons of electronics, including TVs, computers, printers, scanners, faxes, keyboards, and cell phones. In the same year, 20.6 million individual TVs were discarded, with about 18 percent (414,000 tons) of those recycled. The rest were landfilled, incinerated, or stored for later disposal. (Source: EPA)

With an ample supply of newer, faster electronic products on the market, Americans continually replace older models. This trend shows no signs of slowing. As a result, electronics have become one of the fastest growing "waste streams" or portions of our trash. Computer monitors and televisions are hazardous because they contain significant amounts of lead (an average of four pounds of lead each).

Consumer electronics-including TVs and other video equipment, computers, assorted peripherals, audio equipment, and phones-make up almost two percent of the municipal solid waste stream. (Source: EPA Municipal Solid Waste Characterization Report).

As consumers continue to upgrade technologies -- transitioning from analog to digital technology and cathode ray tube (CRT) to flat panel televisions -- they need more convenient and predictable opportunities to safely manage their old TVs. Recycling TVs helps to conserve natural resources and reduce energy use, greenhouse gas emissions and other pollutants related to extraction and processing of virgin materials.

Why Recycle?

Televisions and other electronics contain valuable, reusable materials. Plastics, glass, scrap metal (including copper and gold), and many other materials can be extracted from old TVs and used to make new products.

Televisions contain harmful materials, including lead, chromium, mercury, and polybrominated flame retardants. If landfilled or incinerated, these chemicals can be released into groundwater, surface water, or the air where they pose a risk to human and environmental health.

Legislation Introduced But NOT Passed in 2009

2009 Bill Introduced: SB 364 – This act creates the "Television Electronic Recycling Act". This bill placed the majority of the burden of recycling on television manufacturers and retailers.

SB364 - Provides labeling and recycling requirements for television manufacturers

<http://www.senate.mo.gov/09info/bills/sb364.htm>

Obstacles: Collection/Ensuring Proper Recycling/Disposal, Data Crunching by DNR

Notes: Determine/Confirm - Fines have to go to general fund versus Department

Senate Resolution Was Also Passed on 2009

2009 Senate Resolution SR 210 - Urges Missourians to recycle their unwanted analog television sets

<http://www.senate.mo.gov/09info/bills/sr210.htm>

➤ Keeping Yard Waste out of Landfills

Composting of yard waste material is environmentally preferable to landfilling. The advantages of composting yard material are well-substantiated by research and form the basis for public policy across the United States. Recently,

however, some landfill operators have advocated lifting yard material landfill bans in order to increase methane generation and boost energy production at landfills. We should be concerned the environmental consequences and costs of lifting yard waste landfill bans significantly outweigh any potential increase in energy recovery.

Solid waste landfills are the single largest human-caused source of methane gas in the U.S., accounting for 23% of all emissions (*Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2007, US EPA April 2009*). Methane is a powerful greenhouse gas (GHG) that is 72 times more effective than carbon dioxide at trapping heat in the atmosphere over a 20-year period (*Intergovernmental Panel on Climate Change (IPCC), Climate Change 2007 – The Physical Science Basis, Table 2.14*). It is the only major GHG with greatly increasing impacts over the short-term. **Keeping organic material out of the landfill can eliminate the methane this material otherwise would have generated.**

Why isn't landfill gas-to-energy the solution to the problem of methane from landfilled yard materials?

- **Poor Overall Recovery:** A 2005 EPA report estimated those landfills that are required to have gas collection systems in place recovered less than 60% of the methane they generated. An estimated 35-50% was collected on average, and this occurred only during about 32% of the landfill's lifetime gas generation.
- **Incomplete Recovery:** Methane produced in active areas of the landfill is uncontrolled and readily putrescible wastes such as grass clippings and food scraps degrade well before gas collection systems are in place.
- **Not Designed for the Job:** Landfills are neither designed to efficiently produce methane as a fuel source nor to reduce GHG emissions. The IPCC estimates that, factoring in landfills where no gas is collected, only about 10% of all gas produced at U.S. landfills will ever be collected.
- **Lack of Organics Not the Problem:** Gas generation in most landfills is not generally limited by a lack of organic matter, but rather by moisture deficiency and barriers (e.g., plastic bags) to water movement.
- **Incomplete Decomposition:** Lignin found in yard materials does not degrade under the anaerobic conditions found in landfills. Lignin comprises 44% of leaf dry matter; 33% of branch dry matter; and 28% of grass dry matter (*Eleazer, W. E et al., 1997, "Biodegradability of Municipal Solid Waste Components in Laboratory-Scale Landfills," Env. Sci. Technol., 31, 3, p. 911 – 17*). Composting aerobically decomposes lignin without generating methane.

Lifting the landfill yard waste ban would represent a step backwards in the fight to curb GHG emissions and avoid the dangerous implications of human-induced global warming. The Solid Waste Association of North America (SWANA, which represents professionals from all segments of the solid waste industry) and the US Composting Council (USCC) issued a joint statement in May 2006 favoring composting over landfilling organic wastes:

"SWANA and the USCC agree that composting of organic materials is the highest and best use of these residuals and that emphasis should continue to be placed on recovering and recycling as much organic waste as possible from the solid waste stream."

The US EPA states: *"Yard trimmings and food residuals by themselves constitute 24% of the US municipal solid waste stream. Composting offers the obvious benefits of resource efficiency and creating a useful product."*

Finally, an excerpt from the USCC "Keeping Organics Out of Landfills" position statement:

While some form of composting has been practiced since ancient times, as a modern industry it is barely 30 years old. As the market for compost products matures and differentiates, the demand for compost will grow. At that point the regulatory support may become unnecessary [. . .] we need to keep the bans and other policies in place and not allow yard trimmings to end up in landfills, bioreactor or otherwise. The path to a sustainable society may be long and difficult, but composting organics is clearly a step in the right direction.

(INFORMATION PROVIDED BY THE ASSOCIATED RECYCLERS OF WISCONSIN (AROW) – 2009)

Relevant Legislation – Yard Waste:

Legislation Passed in 1990 – SB530 - Yard Waste Ban in Mo. Landfills

Exemption Made: 2007 – City of Columbia's Bioreactor Landfill

HB1056 - Allows yard waste to be disposed of in a municipal solid waste disposal area if the disposal area operates as a bioreactor and its landfill gas is used to produce electricity

<http://www.house.mo.gov/billtracking/bills071/bills/hb1056.htm>

**For more information, contact Missouri Recycling Association <http://www.mora.org>
Environmental Summit, November 2009**

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