



Overview of Solid Waste Management

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- 18 years with  NC STATE UNIVERSITY
- Vermicomposting
- Composting
- Recycling
- Reduce & Reuse
- Businesses, Industries, Farms, Schools, Institutions, Individuals



www.bae.ncsu.edu/people/professionals/sherman

worms.ncsu.edu

NC Disposal Rate 2008-09

- 9,910,031 tons of MSW, C&D waste
- 14% decrease from previous year
 - Largely due to new beverage recycling law for commercial establishments
- 1.07 tons per person per year disposal rate



Local Government Recovery 2008-09

- Organics: 45.1% (yard waste, pallets, wood)
- Fiber: 26.7%
- Tires: 11.2%
- Glass: 5.5%
- Metals: 5.3%
- C&D: 3%
- Plastics: 1.9%
- Special Waste 0.6% (electronics, used oil, filters, antifreeze & batteries)
- Other 0.6%

Modern Landfill

- Carefully designed structure built into or on top of the ground in which trash is isolated from the surrounding environment (groundwater, air, rain). This isolation is accomplished with a bottom liner, synthetic (plastic) liner, and daily covering of soil.



Federal Regs for Landfills

- Municipal solid waste landfills (MSWLFs) receive household waste
- MSWLFs can also receive non-hazardous sludge and industrial solid waste
- All MSWLFs must comply with the federal regulations in 40 CFR Part 258 (Subtitle D of RCRA), or equivalent state regulations

North Carolina MSWLF Regs

- [*Municipal Solid Waste Landfill Regulations*](#)
(AG-473-16, 1995, 8 pp.). Provides a summary of North Carolina's requirements for constructing, operating, and closing sanitary landfills
- On my website at
<http://www.bae.ncsu.edu/people/professionals/sherman/all-ext-pubs.html>

Summary of MSWLF Regs

- **Location restrictions**—ensure that landfills are built in suitable geological areas away from faults, wetlands, flood plains, or other restricted areas.
- **Composite liners requirements**—include a flexible membrane (geomembrane) overlaying two feet of compacted clay soil lining the bottom and sides of the landfill, protect groundwater and the underlying soil from leachate releases.
- **Leachate collection and removal systems**—sit on top of the composite liner and removes leachate from the landfill for treatment and disposal.
- **Operating practices**—include compacting and covering waste frequently with several inches of soil help reduce odor; control litter, insects, and rodents; and protect public health.
- **Groundwater monitoring requirements**—requires testing groundwater wells to determine whether waste materials have escaped from the landfill.
- **Closure and postclosure care requirements**—include covering landfills and providing long-term care of closed landfills.
- **Corrective action provisions**—control and clean up landfill releases and achieves groundwater protection standards.
- **Financial assurance**—provides funding for environmental protection during and after landfill closure (i.e., closure and postclosure care).

NC Solid Waste Section



- NC-DENR, Waste Management Division
- Regulate municipal waste trash (landfills & incinerators), construction & demolition debris, yard debris, septage, land application, medical waste, tires, white goods, recycling
- Seven branch offices: compliance/enforcement
- <http://wastenot.enr.state.nc.us/AboutSW.htm>

NC Landfill Bans



- Used oil
- Yard debris
- White goods
- Antifreeze
- Aluminum cans
- Whole tires
- Lead-acid batteries
- Beverage containers
- Vehicle oil filters
- Rigid plastic containers
- Wooden pallets
- Oyster shells
- Computer equipment
- Televisions

? What county bans coat hangers?

Environmental Landfill Problems

- **Air Emissions**

- Landfill gas - from soon after opening and for possibly several hundred years thereafter
- Noise, dust, odor, and possibly bio-aerosols (viruses)

- **Water Emissions**

- Leachate into groundwater
- Contaminated surface water run-off

#1 methane emissions from human activities: LANDFILLS

Are YOU Contributing to the Problems with Landfills?

Do you:

- Compost your food waste?
- Use cloth/reusable bags to shop?
- Choose less packaging and what is recyclable?
- Use both sides of paper?
- Avoid using disposables?
- Carry a reusable cup or bottle?
- Hold on to bottles until you find a recycling receptacle?

Think about it....

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