



# Green Care: Design of a Modern Landfill

Contrary to popular belief **waste materials do not readily biodegrade in modern landfills.** Today's modern municipal solid waste (MSW) landfills are designed to discourage biodegradation by isolating the waste from oxygen, sunlight, and water, all of which are required for biodegradation to occur.

## How a Landfill Works

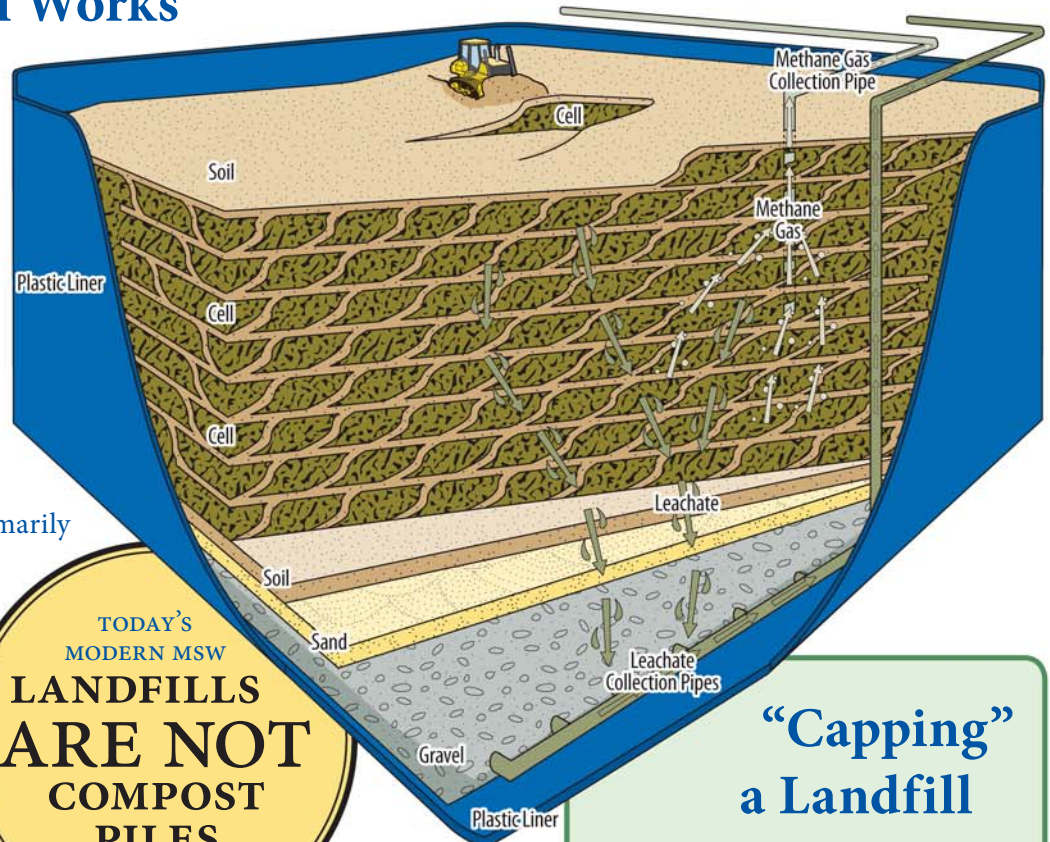
**cell:** where the trash is stored inside of a landfill.\*

**cover material:** material, usually soil, that is used in a landfill to cover the refuse after it has been compacted at the end of each day.†

**liner:** a barrier that prevents trash from contaminating the outside soil and groundwater.\*

**landfill gas:** a mixture of primarily methane and carbon dioxide that is generated in landfills.†

**leachate:** liquid that has percolated through solid waste or another medium and has extracted, dissolved, or suspended materials from it.†



TODAY'S  
MODERN MSW  
**LANDFILLS  
ARE NOT  
COMPOST  
PILES**

## “Capping” a Landfill

When a landfill is ready to be closed, a final layer of clay and soil “cap” the landfill.


Landfill operators continue to monitor the landfill for gas and leachate emissions.


Closed landfills are often able to be used as an open place for communities to use for things like parks and other recreational areas.

\* <http://science.howstuffworks.com/environmental/green-science/landfill6.htm>

† <http://www.epa.gov/wastes/nonhaz/municipal/dmg2/glossary.pdf>

## Did you know....

 Dart's largest factory uses landfill gas to run the boilers for its foam cup production.

 Polystyrene foam foodservice products constitute less than 1 percent, by both weight and volume, of our country's municipal solid waste.



# Green Care: Dynamics of Waste-to-Energy

Incineration of polystyrene foam through a controlled process called Waste-to-Energy (WTE) is another waste management option. When incinerated in a licensed and properly operated modern incinerator, the material generates a high BTU (a measure of heat-energy) content. At over 16,000 BTUs per pound, polystyrene foam contains twice the energy of coal and burns cleanly.\*

## Making Electricity from Waste

### Step #1

Municipal Solid Waste is unloaded from collection trucks on the tipping floor and shredded or processed to ease handling.

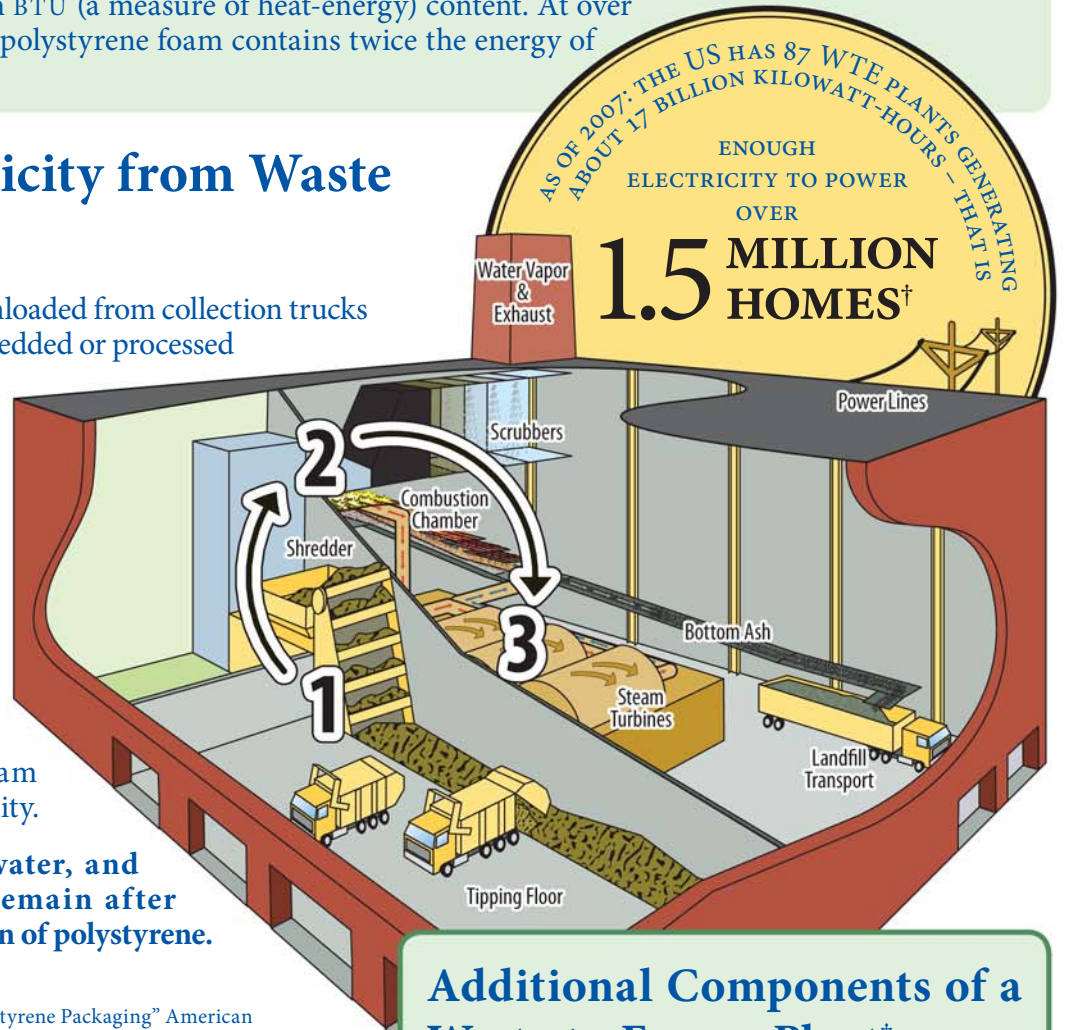
### Step #2

Materials are sorted and prepared for the combustion chamber.

### Step #3

The heat released from the refuse is used to produce steam, which turns a steam turbine to generate electricity.

**Only carbon dioxide, water, and trace amounts of ash remain after waste-to-energy conversion of polystyrene.**



## Additional Components of a Waste-to-Energy Plant‡


**bottom ash:** the remaining noncombustible material collected during the combustion process that is transported to a landfill.

**scrubber:** common anti-pollution device that uses a liquid or slurry spray to remove acid gases and particulates from municipal waste combustion facility flue gases.

\* "Take a Closer Look at Today's Polystyrene Packaging" American Chemistry Council. 2007  
† Based on the average annual electricity estimate of 10,896 kWh. (Energy Information Administration, <http://www.eia.gov/tools/faqs/faq.cfm?id=97&t=3>)  
‡ <http://www.epa.gov/wastes/nonhaz/municipal/dmg2/glossary.pdf>

## Did you know...

 Dart foam products burn cleanly in modern municipal waste-to-energy facilities.

 The energy generated by the incineration of polystyrene foam cups and other solid waste can provide heat and light for neighboring communities.

**DART CONTAINER CORPORATION**  
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