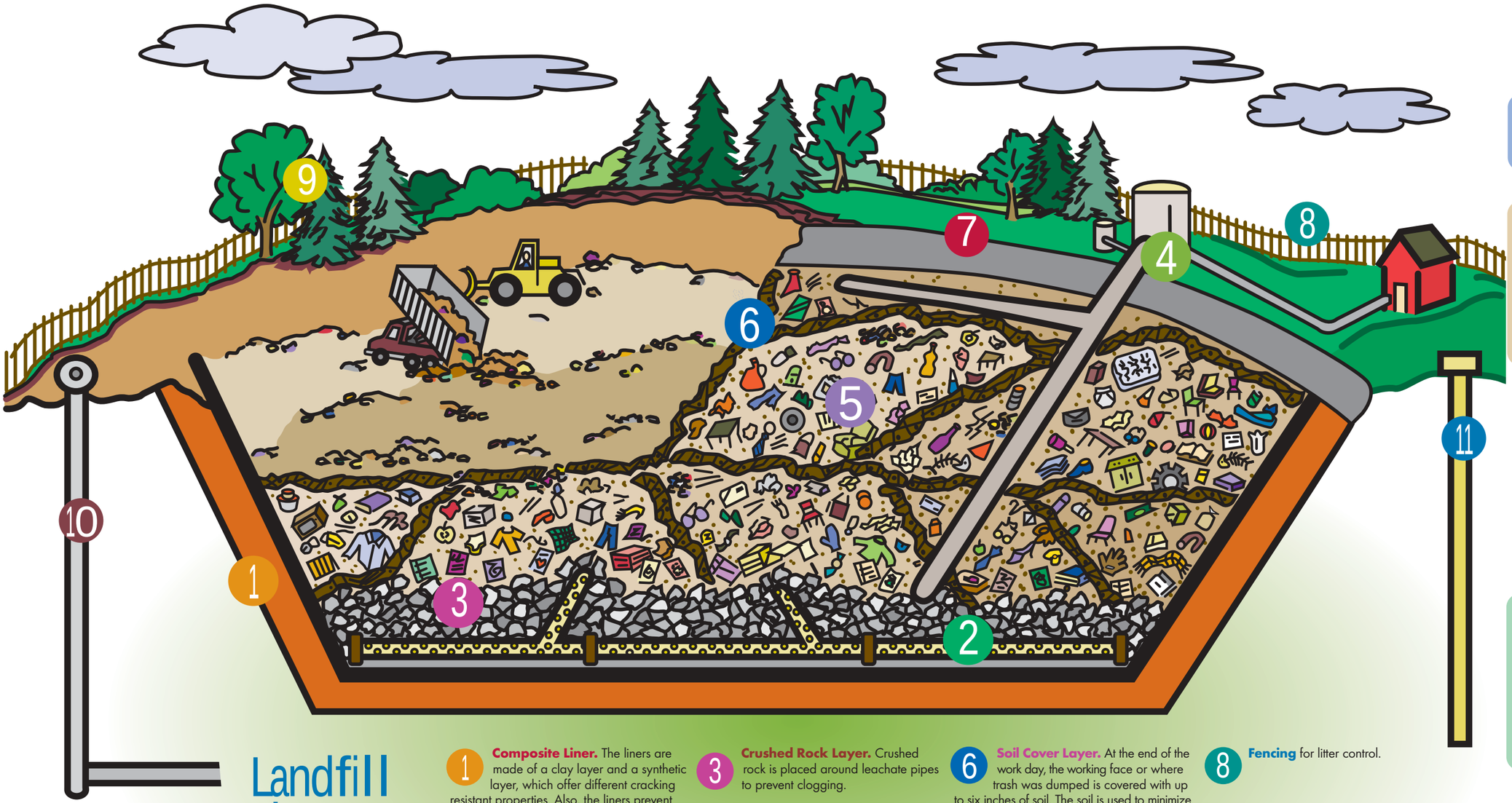
Last stop For trash: A Landfill



A landfill containing three million tons of garbage can produce enough gas to meet the heating and cooling needs of about 18,000 homes for 15 years.

A liner made from HDPE would have to be 60 mils thick, which equals a stack of 60 garbage bags. The construction cost can be as high as $750,000 per acre.

Leachate is created when rainwater washes through trash picking up chemicals, inks and heavy metals creating a "toxic soup."

Methane gas, a flammable, odorless and colorless gas, is created when trash decomposes without oxygen. The methane gas can either be burned off or captured as a fuel to be converted to electricity. Carbon dioxide and other gases are released from landfills as well, but landfill gas is almost 60% methane gas. Methane, a greenhouse gas, is a major concern because it is an air pollutant and it destroys the ozone layer contributing to global warming.

Current studies are trying to increase the rate of decomposition to make room for more trash without having to build new landfills. Studies suggest that trash would decompose faster if air is added and leachate is circulated. Air and water if added will mimic natural processes. The studies claim that a wet landfill will break down trash in five years, and left over materials can be mined for reuse.

In June of 2001, the Nestle Corporation constructed a pipeline to use methane gas to heat the hot water used in Stouffer's cooking process. The Cuyahoga Regional Landfill in Solon provides the methane for Stouffers, which prepares packaged meals. The gas is chilled to remove any water in the methane, then compressed and piped 2.2 miles to Stouffers. The system collects about 3,300 scfm of landfill gas from the existing landfill. Nestle is saving money on their fuel bill since the price of landfill gas is less than natural gas.

Trash is tightly compacted in a landfill without air, light and moisture, so trash is being preserved rather than decomposing.

Landfill Layers & Protective Measures

1 **Composite Liner.** The liners are made of a clay layer and a synthetic layer, which offer different cracking resistant properties. Also, the liners prevent leachate from seeping into the groundwater.

Clay Layer: Recompacted clay creates a natural layer due to its ability to clump together and hold in liquid.

Plastic Liner: The liner is made from high density polyethylene (HDPE) or polyvinyl chloride.

2 **Leachate Collection Pipes.** Leachate pipes are placed on top of the plastic liner to collect leachate for treatment.

3 **Crushed Rock Layer.** Crushed rock is placed around leachate pipes to prevent clogging.

4 **Methane Gas Collection System.** Methane gas forms pockets at the center and bottom of the landfill, so pipes run throughout the landfill collecting the gas and sending it to a collection well.

5 **Trash Layer.** Trash is dumped and compacted into cells, which can be several acres in size.

6 **Soil Cover Layer.** At the end of the work day, the working face or where trash was dumped is covered with up to six inches of soil. The soil is used to minimize the odor, control litter and discourage animals and insects, thus, protecting public health.

7 **Final Cap.** When a landfill is full and regulations state that it cannot accept more trash, it must be closed. A final cap is installed over the landfill. The cap is made from a synthetic plastic followed by a four foot layer of dirt. Grass and shallow rooted plants are planted on top to prevent the erosion of the soil cap.

8 **Fencing** for litter control.

9 **Vegetation** for sound and dust control.

10 **Groundwater monitoring** to ensure protection of drinking water sources from leachate.

11 **Continued methane collection** and monitoring.

Cuyahoga County
SOLID WASTE DISTRICT
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