

Background Information for Teachers

The PowerPoint “**Solid Waste in Clark County**” is a tool to be used in the classroom, as well as in conjunction with **The Background Information for Teachers** as preparation for the lessons.

What is SOLID WASTE?

SOLID WASTE is also referred to as trash, rubbish, refuse, litter or garbage. It is a solid, not a liquid or a gas. And it comes from a household, business or institution (such as a school or hospital). It does not come from mining, agriculture (farming), silviculture (forestry) or demolition. “Waste” means something leftover or something not used wisely.

Our Current System of Waste Management

Our current system of solid waste management is relatively new. Only in the last 100 years have we considered waste to be a serious problem that affects public health and our environment. In Clark County we dump garbage in carefully designated landfill locations called ‘sanitary landfills.’

So, what did people do with solid waste earlier in history?

The ways to deal with solid waste have been known for thousands of years:

- 1) Dump it
 - 2) Burn it
 - 3) Convert it into something that can be used again
 - 4) And minimize the volume of future garbage before it is produced in the first place
- Of these four methods, dumping has been the most popular from pre-history to the present.

Some Interesting Facts about the History of Trash

In the Bronze Age, inhabitants of Troy (3000 to 1100 BCE) simply covered trash in their homes with layers of dirt and clay. Ultimately new cities were built on previous cities at a rate of 1.4 meters per century. Archeologists have discovered 9 distinct layers, or cities, on the site of Troy.

Even in Ancient Troy not all trash was kept inside. A great deal of trash was thrown into the streets. As more and more people began to live in cities the problem grew. By the Middle Ages streets and alleys were often filled with so much garbage that rain would turn the streets into open sewers where diseases could grow and spread.

For more information on the history of garbage visit

<http://www.eia.doe.gov/kids/energyfacts/saving/recycling/solidwaste/primer.html>



Solid Waste Today

Even now there are only still four ways of dealing with garbage: minimize the quantity we produce, convert it into something that can be used again, burn it or dump it. When we minimize the amount of waste we call this REDUCE. When we find another use for an item we call this REUSE. When we convert it into something that can be used again this is called RECYCLE. Recycling happens when modern technologies make old paper, glass, plastic, aluminum and steel into new products.

3 R's PLUS 1 of Waste Reduction

In waste reduction there are 3 R's REDUCE, REUSE, and RECYCLE. These are the three most important ways to reduce waste, conserve natural resources, and decrease our impacts on the natural world.

REDUCING is the most efficient way to CONSERVE resources. When we REDUCE we choose not to buy something in the first place, or choose a product that minimizes packaging and other waste.

REUSING is second in efficiency. This is when we find another use for an item. An example might be reusing a grocery bag or refilling a bottle, or even using plastic packaging for storage of craft items.

RECYCLING is important, but not as efficient as REDUCING or REUSING. Recycling occurs when an object is manufactured into something completely different. Recycling of course involves a CYCLE, in order to complete the cycle or “*close the loop*” we need to buy RECYCLED things.

Now there is a 4th R, **ROT**, and this is where you come in with the Save Organic Scraps (S.O.S.) program. Rotting, which we also call COMPOSTING, is nature's way of recycling ORGANIC waste.

A key concept to understand is that ORGANIC waste, or BIODEGRADABLE items, no longer DECOMPOSE in a modern landfill. Air is required for decomposition and a modern landfill is so carefully contained for seepage that it is virtually airtight. Archeologists who study garbage have found items 30 years or more old still intact.

Landfill ARCHEOLOGY

William Rathje is an ARCHEOLOGIST who studies garbage. He began his career studying the ancient Maya. “*What do we know about the ancient Americans anyway?*” he used to say. “*Our history of civilization is a history of broken pots and pans. All we know about is what they threw away.*”

Garbology (noun). Orig. U.S. W. Rathje's term for the scientific study of the refuse of a modern society; the investigation of material discarded by a society considered as an aspect of social science.



Rathje formed *The Garbage Project* to dig up and study what is in an American LANDFILL. He studied three landfills in Arizona, California, and Illinois. He and his team learned that it takes a lot longer for paper and other ORGANIC waste to DECOMPOSE than people previously thought. In fact, his team found newspapers from the late 1970's that were still readable. Other organic debris they found included grass clippings, a T-bone steak and five hot dogs! For some kinds of organic garbage BIODEGRADATION never gets under way at all. "*Well designed and well maintained landfills,*" says Rathje, ". . . are not vast composters; rather, they are vast **mummifiers.**"

What happens when our trash leaves the curb?

In Clark County residents pay to have their SOLID WASTE, or garbage, picked up from the curb and hauled "away." But where is "away?" Many students may have visited West Van Transfer Station, and often this station is mistakenly called "the dump." But nothing that is taken to a transfer station stays there.

Waste Connections, a hauling company, is contracted by with the City of Vancouver and Clark County to pick up and haul the curbside solid waste to one of their transfer stations. At the transfer stations garbage is compacted and loaded onto barges at the Port of Vancouver. These containers are barged 180 miles up the Columbia River to Morrow County, Oregon where they are unloaded at Boardman and trucked 12 miles to the Finley Buttes LANDFILL.

What happens after the Transfer Station?

Approximately 150 containers holding 30 tons (60,000 pounds) of municipal solid waste arrive weekly at Finley Buttes Landfill from Clark County (1998 figures from Clark County Solid Waste Management Plan 2000).

Landfill Information

Deciding where to put a landfill requires careful planning by skilled engineers and environmental consultants. New landfills are situated where clay deposits and other land features provide natural buffers between the LANDFILL and surrounding ENVIRONMENT. The bottom and sides of modern landfills are lined with layers of clay and/or plastic to keep liquid waste, called LEACHATE, from seeping into the soil and groundwater. Groundwater is the main source of drinking water here in Clark County.

Individual CELLS protect the ENVIRONMENT even more. Only a few cells are filled with trash at any one time, minimizing the exposure to wind and rain. At the end of each day workers spread a layer of earth, called the daily cover, over the waste to reduce odor and control vermin.

The GROUND WATER wells are monitored for many years after a LANDFILL is closed. Old landfills can be landscaped to blend in with the surrounding area, or developed into anything from parks to parking lots, golf courses to ski slopes. Building homes and businesses on these sites is generally not permitted.



It is important to stress to students the many layers involved in landfill containment and the impact the landfill can have on the surrounding environment. This link at How Stuff Works includes many photos of specific landfill components

<http://www.howstuffworks.com/landfill6.htm>.

Save Organic Scraps Program

The **Save Organic Scraps (S.O.S.) Program** in your cafeteria is a new way to divert ORGANIC materials out of the LANDFILL and into COMPOST. As we learned when reading about William Rathje and *The Garbage Project*, our ideas about biodegradation of organic matter have been proven wrong.

The leftover food and paper scraps from the cafeteria are taken to the Cedar Grove Composting facility in Maple Valley, Washington where the scraps are composted. Commercial COMPOSTING collection includes food scraps such as meat, poultry, eggs and dairy, in addition to the traditional fruit, vegetable, bread and paper products. Composting is a great soil amendment to use in your garden on plants and to grow food.

The Cedar Grove Facility

Cedar Grove handles ORGANIC scraps from institutions and businesses across the state. Cedar Grove uses a new technology; the efficient high tech system shortens the time required to produce finished compost. In about 90 days the finished compost is shipped and sold at local stores such as Fred Meyer, Lowe's and Home Depot. Today Cedar Grove sells about one half million bags of compost each year to CONSUMERS, in addition to providing compost to commercial and municipal accounts. To learn more about this facility visit <http://www.cedar-grove.com/>. An aerial view of the facility is available under the site link "Organics Collection" to share with your students.

Food is an amazing resource and by recycling it into COMPOST, you are diverting this from the landfill and creating a great resource. Collecting your food waste to compost it is one of the easiest ways to recycle and create NUTRIENT rich compost you grow food and plants. Participating in the Save Organic Scraps Program plays a valuable role in sustaining the ENVIRONMENT and "*closing the loop.*"

