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Rot and Decay

Organic Remains

Is there such a thing as **waste** in nature? Trees lose leaves, flowers drop petals, snakes shed skin, birds lose feathers, people brush out old hair. All animals poop. And eventually, all living things die. What happens to the parts, pieces, and **organic remains** living things leave behind? Why isn't our planet covered in piles of this stuff, growing higher and higher every day?

Word Connections

Organism means any living thing.

Organic is a way of describing a material that comes from a living or once-living thing.

What do you think **inorganic** means? (Hint: the prefix *in-* means "not.")

What Happens to Nature's Waste?

Word Connection

Break apart the word **biodegradable** to find its meaning:

- *bio-* is a prefix that means life.
- *degrade* means to decompose or break down.
- *-able* is a suffix that means able to be.

So biodegradable means able to be decomposed by living things.

Fortunately for us, and for all living things, organic remains **decompose**. They rot, decay, and break down into smaller pieces. How does this happen?

Organic remains decompose because other living things are feeding on them. Organic remains contain **nutrients**. Nutrients are substances like vitamins and minerals, which all living things need for growth and life.

Organisms that feed upon organic remains are "nature's recyclers." They break down and recycle the nutrients in dead plants and animals, and their waste. These nutrients end up being used again by living plants and animals.

Nature's waste does not get wasted at all. It gets reused. Nature's recyclers feed on the wood from this dead tree. They leave extra nutrients from the dead tree in the ground. After the tree is gone, other plants will grow in the same spot.

Organic remains, such as a dead tree, are described as **biodegradable**. Everything made by nature returns to nature.

Nature's waste does not get wasted.

What Happens to People's Waste?

Much of the waste from people truly does get wasted. One problem is that some of our trash is inorganic, which means that it is not made from living or once-living things. Nature's recyclers can't feed on inorganic remains. This waste is not biodegradable.

Another problem is that we make so much trash. And then we dump it in places where even organic remains can't be broken down. Many waste products that are naturally biodegradable—such as food waste and paper—will not decompose in a big, deep landfill dump, because nature's recyclers can't live there. There isn't enough soil, light, or water for nature's recyclers to survive.

People's waste does get wasted in a landfill.

People Doing Science

The Garbage Project

Word Connection

An **archaeological site** is a place where there is some evidence of past human activity. Archaeologists are the scientists who dig and sift through the remains at a site. They document and analyze what they find.

Scientists at the University of Arizona have studied our garbage by digging through landfills as if they were archaeological sites. They have sorted, weighed, and measured trash from over fifteen landfills located across North America, from the deserts of Arizona to the Everglades of Florida. What they have found has been a surprise.

The Garbage Project has found that almost half of the space in landfills is taken up by organic materials. Paper, grass clippings, and foods—things like carrots, grapes, corn cobs, and half-eaten bananas still in their peels—were buried deep in the landfills. Scientists could recognize some of these foods even though the items were more than 25 years old. They could read some newspapers that were over 40 years old.

In nature, these things would decompose. But they won't biodegrade in a landfill, where nature's recyclers can't do their work.

Think About It!

What do you see in this garbage? How long do you think it will take to decompose?

Nature's Recyclers Fact

Here's how long it takes some commonly used things to decompose, when they are scattered about as litter in nature:

Cotton rags	1 to 5 months
Paper	2 to 5 months
Natural fiber rope	3 to 14 months
Orange peels	6 months
Cigarette butts	1 to 12 years
Wax-coated paper milk cartons	5 years
Leather shoes	25 to 40 years
Aluminum cans	80 years
Tin cans	100 years
Plastic soda bottles	450 years
Glass bottles	500 years
Styrofoam	More than 1,000,000 years

Think About It!

Look at the list of products. Which are made of organic materials?

Environmental Stewardship

What should you do if you don't want to waste your garbage? You can compost organic materials, recycle paper, and reuse glass and plastic containers. Can you think of other things you can do?

Technology and Inventions

Biodegradable Plastics

The number of things we use that last forever is a big problem—for people and the environment. A plastic sandwich bag will still be around when the sandwich, and even the person who ate it, are long gone.

Scientists have come up with new biodegradable plastics made from wheat and cornstarch. Nature's recyclers will feed on them, because they are made from plants. That means they will decompose.

Right now biodegradable plastics cost a little more than plastics made from petroleum, so they aren't being used as much as they could be. But these new plastics could reduce the amount of plastic garbage in litter and landfills. Hopefully, in the future, these biodegradable plastics can replace most of the non-biodegradable plastics we use today.

This foam packaging is made from cornstarch. It will dissolve in water.

Biodegradable plastic will decompose within months when placed in a compost pile.