

Breaking Down Trash:

What is trash and what is biodegradation?

What is trash? Where does it go when we throw it away?

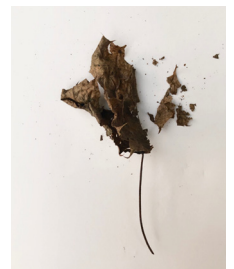
1. Trash is more important than many of us realize. In this article, we will explore what is meant by the word trash, the differences between natural and synthetic materials, and the properties that influence how trash changes over time.
2. How do you define the word “trash?” Many definitions of trash can be subjective or influenced by our own experiences and interpretations of information. The word “trash” is used to refer to items that we put into the garbage or recycling bin because we no longer want or need them. But what exactly is trash made up of? And if we are throwing trash away, where is “away?”

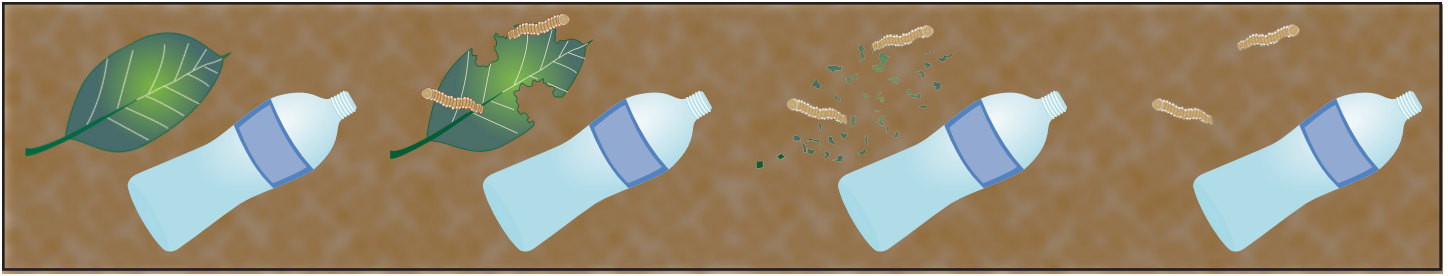
What types of materials make up trash?

3. Trash is all of the items that we discard. These items of trash are made of materials that originally came from nature, such as wood, minerals, coal, crude oil, and other fossil fuels. Although you may be able to observe an object and conclude that it came from nature (such as a wooden chair), there are many items that are made from materials that are difficult to identify through observation alone. A plastic bag, for example, is made from natural resources, but it isn’t easy to know from which ones just by looking.
4. Some items can look very different from the materials they come from because they are either made of many different types of materials or the natural resources that made them were changed. Materials that are changed actually have a different chemical composition and are called “synthetic” materials. This is in contrast to “natural” materials, which have the same chemical composition and look similar to the natural materials they are made of (like a wooden chair). Both natural and synthetic materials are made into the items that we use in everyday life and eventually discard as trash.

Where does our trash go when we throw it “away”?

5. Trash that is properly contained in bags or trash cans is collected by local waste management companies in garbage trucks and taken to landfills. Landfills are large areas of land specifically set aside to store trash. Landfill operators usually try to confine the trash that is deposited in a landfill to as small an area as possible and modern landfills bury or cover waste with layers of soil.
6. Items that have been put in the recycling bin are typically collected by recycling waste management companies that sort the items, separate them into different types of materials, and send them to manufacturers who make new products from the materials. If items have been contaminated with food or other materials, they may not be able to be recycled and are sent to a landfill.
7. Sometimes, trash is not discarded into containers where it can be taken to a landfill or to a recycling facility. Instead, it enters the natural environment where it becomes pollution. This can happen when people do not put their trash in cans or bins, or when dumpsters or trash cans are overfilled. It can also happen when garbage bags are ripped, or trash is not properly contained. In all of these cases, trash can be carried by wind or water across land and into waterways.





What happens to natural waste materials over time?

8. Whether trash is made from materials that were once living will determine what happens to it over time. Organic materials come from either the waste products of living things or their remains. Organic materials are biodegradable. This means that specialized organisms called decomposers (like bacteria, fungi, and earthworms) can feed on the material and break it into simple elements and nutrients. This process of decomposers breaking organic materials down into usable nutrients is called biodegradation.
9. Biodegradation is an important process in nature because it allows the elements and nutrients contained in one organism to be cycled back into the ecosystem for other organisms to utilize. One example found in nature is the cycle of trees losing their leaves in the autumn. Leaves are organic and therefore they biodegrade quickly and easily. When leaves fall off trees, decomposers break down the structure of the leaves as they digest them. Decomposers help to prevent materials from building up, or accumulating in the environment. Without decomposers to digest and break down the leaves that fall from trees, for example, there would eventually be piles of leaves taller than the trees themselves!
10. Some materials, like clay, stone, and minerals like aluminum and sodium, are found naturally in the environment, but they are not organic, meaning they have never been a part of materials that were once living. They are not broken down to be used as nutrients by decomposers.

What happens to synthetic materials over time?

11. Many of the items that we use in everyday life are not natural and are not organic. These items are made from synthetic, human-made materials such as fibers, medicines, and plastics. While some of the ingredients used to make these materials may have been natural or organic at one time, the process to turn them into the synthetic materials during manufacturing changes their structure, which can result in the materials being much more difficult to break down through biodegradation.
12. Plastic, for example, is a synthetic material that is made from natural materials like crude oil and natural gas. The manufacturing process changes the chemistry of these original liquid and gas materials to a solid that is very difficult for decomposers to break down in order to extract nutrients. This means that items made out of plastic (like plastic bags) may be broken up into smaller pieces over time, but not easily broken down through biodegradation. Scientists estimate that it will take considerable amounts of time (even hundreds of years) for plastics to be broken down into tiny pieces. Thus, pieces of synthetic materials like plastic remain and accumulate in ecosystems, where they can pollute the air, water and soil and cause harm to living things for years and years.

What can you do to help?

13. Humans are using more and more plastic items every day and enormous amounts of plastic trash are entering ecosystems. Think about the choices that you make when it comes to using items and discarding them as trash. Are there things you can do to help reduce the amount of trash and its harmful impacts in our natural environments?