

Garbage through the Ages

PREHISTORIC TIMES

Early humans were often nomadic, living in small groups for a period in one area and then moving to a new location. The trash they left behind was mostly biodegradable and would rot away or would be removed by scavengers. The trash that was not biodegradable, mostly stone tools, bones, and weapons, would not build up to troublesome levels before the families moved on. Some villages created garbage pits near the village where trash could be dumped (Cessna et al., 1994, A). Small populations of indigenous cultures continue to live such a lifestyle in increasingly fewer parts of the world. As early humans began to create more permanent settlements, they began to deal with the accumulation of trash.

ANCIENT CIVILIZATIONS

For a long time, early civilizations had no systematic method for getting rid of waste. Garbage was sometimes left on the floors of houses, and much of it ended up in the roadways. When the smell became overpowering, a fresh load of dirt or clay would be spread over the garbage, which had the result of increasing the heights of floors and roadways. In Troy, the accumulation of trash on the floor and subsequent additions of clay over the trash made it necessary to raise roofs and change doorway openings (Rathje and Murphy, 1992, A). One archaeologist estimated that the rate of garbage accumulation in inhabited areas totaled 4.7 feet per century, reaching 13 feet per century in some areas (Eblen and Eblen, 1994, A). Some people would wade through the discards searching for items of use, and in many countries around the world, this practice continues today.

In Egypt, wastes, mainly from the wealthy, were collected and dumped in the Nile River. The first "town dump" was a product of the ancient Greeks. Around 500 B.C.E, the Greeks organized municipal dumps, established compost pits, and established laws that required wastes to be dumped 1 mile from the city walls. About the same time in Athens, the first known law against throwing trash into the streets was issued (Eblen and Eblen, 1994, A). By the second century B.C.E., the Chinese had established a workforce that gathered garbage in the major cities of China. Ancient Mayans had dumps for organic wastes and actually reused materials such as broken pottery and other household debris as fill for buildings. The greatest challenges to waste disposal occurred in Rome. Because of Rome's large size and population, the trash collection system was not able to deal with the amount of trash produced and was not enforced in many areas. Wealthy Romans used slaves to remove their trash, but much of the trash remained in the streets.

After the fall of the Roman Empire, many towns were small enough and more rural so that enough land was available for waste disposal. As cities began to build up again, waste disposal problems increased.

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MIDDLE AGES

In urban areas during the Middle Ages, waste was still discarded in the streets, creating extremely filthy conditions in densely populated areas. Hogs, geese, ducks, and other farm animals ran through the streets, scavenging garbage. People walking in the streets were in danger of being bombarded by garbage tossed out of windows and doorways. Not only was this practice unsightly and smelly, but also it was unhealthy. People weren't aware of the connections at the time, but the trash and filthy conditions contributed to the rampant spread of the Black Death, or bubonic plague, that devastated the European population. The trash attracted a large population of rats with fleas and lice that transmitted the plague from rats to people, spreading it through the cities. Toward the end of the Middle Ages, sanitary conditions began to improve because of the development of paved roads and street-cleaning in cities.

INDUSTRIAL REVOLUTION

With the advent of the Industrial Revolution, sanitation practices declined as city populations increased. Throughout the 1700s and 1800s, European and American city streets were still clogged with waste. With massive numbers of people moving to urban centers, housing and food were difficult to find, resulting in densely populated slums and increased trash production. Animal wastes, as well as the waste from burning fuel in home and industrial furnaces, added to the amount of trash. Many horses were used for transportation in cities, and their excrement added to the filthy conditions. Pigs ran through the streets rooting through trash, and actually they helped control some of the mess by eating garbage. Disease epidemics increased during this time, and many people believed that miasmas, the foul odors from the filth, were responsible. The threat of disease finally led to changes in sanitation practices and to the collection of garbage.

During the late 1700s in Philadelphia, Benjamin Franklin was the first to implement sanitation services in the form of street-cleaning and some trash removal. Also "rag pickers" retrieved bits of cloth that would be sold and used to make paper. Around this time, many American households began digging refuse pits instead of throwing trash out windows. In New York City, trash was dumped into the East River from dumping platforms. The trash often washed onto the shores of Long Island and New Jersey instead of out to sea. In 1872, this practice was changed; garbage was taken to barges and dumped into the ocean (Alexander, 1993, A). The first garbage incinerator was used in England in 1874, and in 1885, incinerators were in use in America (Rathje and Murphy, 1992, A). However, problems with incompletely burning trash and difficulty in burning wet trash, which needed the addition of coal to burn, made the process more expensive and its use declined. Incinerator use was replaced by reduction, a process that "stewed" wet garbage and carcasses in vats, creating a liquid that was used as fertilizer or for making other industrial products such as soap. The reduction process eventually declined in use because of the associated smell.

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EARLY 1900s

Near the turn of the 20th century, Western civilization began to realize that disease-causing germs came from filthy garbage and not from the smells. To respond to the problem, cities began the first public health system. Regular trash collection and street-cleaning were established and were conducted by uniformed public health officials, who were charged with promoting a clean, healthy environment. During this time, the composition of garbage changed, but people in the United States were creating more garbage than ever. For example, in 1912, New York City produced enough garbage to equal the volume of 140 Washington Monuments (Eblen and Eblen, 1994, A). The amount of manure, ash, and carcasses in trash declined and was replaced by food wastes, packaging material such as detergent boxes, and disposable products such as paper cups and paper-back books. Collected waste was usually carried to open dumps, dumped in water, used to fill ravines, or burned in open pits. All of these methods continued to create problems.

MID-1900s

New methods of waste disposal were tried during this period. Waste began to be covered in specially constructed "sanitary" landfills—an improvement over open dumps. Combustion of trash again came into use because it greatly reduced the amount of trash. However, it didn't take long before people began to realize that, although burning trash reduced the volume, it also affected air quality. Both dumps and landfills were filling up faster as lifestyles changed toward the use of more convenience-oriented products, disposable items, and increased product packaging. People no longer reused materials as they had in the past, because such materials were easily replaced. More of the items that ended up in garbage were dangerous to the environment because of an increase in the use of chemicals and other hazardous materials.

LATE 1900s & EARLY 2000s

As we enter the 21st century, citizens play an important role in waste management by using and turning in recyclables, by composting organic waste, and by reducing the amount of waste they generate in the first place. Environmental awareness continues to increase, but so does the amount of waste generated.

Environmental regulations have been developed to protect people and the environment from pollution generated from waste disposal. Landfills are filling up quickly, and it is becoming more difficult to site new ones. Waste combustion is once again an alternative, though an expensive one because it is important to have pollution control devices for handling fumes and ash. Another option is the use of energy produced from the combustion of trash in waste-to-energy plants. Additionally, recycling centers have become more common, and more items are accepted for recycling.

? After considering this historical overview, what do you predict will happen with municipal solid waste in the future?

