

**Forum:** Environmental Commission  
**Issue:** The question of ensuring safe management and disposal of chemicals and waste  
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## Introduction

In today's world of throwaway consumerism, companies produce single use digital video discs (DVDs) so that consumers don't need to deal with the "hassle" of renting and returning. Waste materials continue to grow in volume and toxicity as corporations continue to profit by producing unnecessary products that create unnecessary waste. Moreover, producers are not pressured to prioritize recycling, reusing or substituting toxic chemicals currently used during production with less toxic alternatives. Aside from the consequences of living in an industrialized world, various other factors also put the environment in danger.

Due to lax governmental regulations on the ever-growing chemical industry, products used and thrown away on a daily basis comprise chemicals that are more dangerous and health affecting than ever. More than 60,000 untested chemicals fill consumer products sitting in homes of consumers worldwide. And although implications of some chemicals such as Bisphenol A (BPA) are clear, they are still poorly regulated. Acts regarding this issue, such as the Protection of the Environment Operations Act (POEO Act) and the Environmentally Hazardous Chemicals Act (EHC Act), have been passed in previous times, however, an internationally clear and practical solution is yet to be made. The unprecedented level of toxicity within today's waste only worsens the matter.

Another major component of waste-related environmental issues is within the waste industry. The waste industry itself is a commercial business; corporations in this field benefit from operating landfills and incinerators. Since waste management facilities have become big businesses, the need to make a profit exceeds that of reducing waste or protecting the community's health and environment from destructive waste management practices.

Problems regarding the question of ensuring safe management of chemicals and waste continue to grow and cooperation among all nations is essential in resolving this crisis.

## Definition of Key Terms

### **Bisphenol A (BPA)**

BPA is employed to make certain plastics and epoxy resins. BPA-based plastics are clear and tough, and made into a variety of common consumer goods, such as water bottles, toys, sports equipment, compact discs (CDs), and DVDs. Epoxy resins containing BPA are used to line water pipes, coat the insides of many food and beverage cans, and make thermal paper. In 2011, an estimated amount of 10 billion pounds of BPA chemicals were produced during the manufacturing of polycarbonate plastic, making it one of the highest volumes of chemicals produced worldwide. BPA exhibits hormone-like properties that raise concern about its usage in some consumer products and food containers.

### **Organochlorines**

Organochlorine compounds such as polychlorinated biphenyls (PCB) dangerous chemicals. They were originally developed as cooling agents in electric equipment. Due to accidents, millions of gallons of oil leaked during the manufacturing and disposal of products containing PCBs. And although the manufacturing of organochlorines was halted in the United States of America (USA), they are still difficult to detect and nearly indestructible. As a result, large quantities still remain in existence and will continue to do so for a long period of time. Significant levels of these compounds have been found in marine species, especially in mammals and sea birds, decades after their production was discontinued. Organochlorines are carcinogenic and capable of damaging the liver, the nervous system and the reproductive system in animals.

### **Dioxins**

Dioxins are a class of super-toxic chemicals formed as a by-product of the manufacturing, molding or burning of organic chemicals and plastics that contain chlorine. They are the most toxic man-made organic chemicals currently known. Over the past 40 years, there has been a dramatic increase in the manufacture and use of chlorinated organic chemicals in plastics, insecticides and herbicides.

**Protection the Environment Operations Act (POEO Act)**

The objective of this Act is to achieve the protection, restoration, and enhancement of the quality of the environment. The Act repealed and consolidated a number of existing Acts to rationalize, simplify, and strengthen the regulatory framework for environmental protection.

**Landfill**

A landfill site is a site for disposal of waste materials by burial and is the oldest form of waste treatment. Historically, landfills have been the most common method of organizing waste disposal and remain so in many places around the world. The EPA (Environmental Protection Agency) claims that all landfills will eventually leak and make groundwater unsafe for consumption. In addition, landfills give off potentially harmful gases and odors that often permeate nearby neighborhoods. Some studies also show that birth defects increase in communities surrounding landfills.

**Landfill and Hazardous Waste**

The Resource Conservation and Recovery Act (RCRA) mostly regulates wastes that exhibit certain characteristics. According to the Act, waste is considered as something that is ignitable, corrosive or reactive. Waste may also be considered hazardous if it contains certain amounts of toxic chemicals. In addition to these characteristic wastes, EPA has also developed a list of over 500 specific hazardous wastes. Hazardous waste takes many physical forms and may be solid, semi-solid or even liquid. A hazardous waste landfill is built to specific regulations to allow for the disposal of waste designated by regulatory agencies as being hazardous. These regulations are far more stringent than for a Municipal Solid Waste (MSW) landfill.

**Incineration**

Incineration is a disposal method in which solid organic wastes are subjected to combustion so as to convert them into residue and gaseous products. This method is useful for disposal of residue of both solid waste management and solid residue from wastewater management. This process reduces the volumes of solid waste to 30 percent of the original volume. Incineration is carried out both on a small scale by individuals and on a larger scale in industries. It is used to dump or dispose solid, liquid and gaseous waste.

**Brownfield Development**

EPA defines a brownfield as an “abandoned, idled, or under-used industrial and commercial facility where expansion or redevelopment is complicated by real or perceived environmental contamination.” Such land may have been contaminated with hazardous waste or pollution or is feared to be so. Once cleaned up, such an area can become host to a business development such as a retail park.

## Background Information

### Waste Management

Throughout most of history, the amount of waste produced by humans was insignificant compared to the amounts of waste produced today. There were various factors to this situation but low population density and low societal levels of exploitation of natural resources are the main reasons. Wastes produced during pre-modern times were mainly ashes and human biodegradable waste, which were released back into the ground with minimum environmental impact. Tools made out of wood or metal were generally reused or passed down through generations.

Following the onset of industrialization and sustained urban growth of large populations, the buildup of waste in the cities caused a rapid drop in levels of sanitation. The streets became filled with filth due to the lack of waste clearance regulations. Calls for the establishment of a municipal authority with waste removal powers occurred as early as 1751, when Corbyn Morris in London proposed that the cleaning of London should be put under one uniform public management.

However, it was not until the mid-19<sup>th</sup> century, devastated by cholera outbreaks and the emergence of a public health debate, that the first legislation on the issue emerged. *The Sanitary Condition of the Laboring Population* was a report written in 1842 by a social reformer, Edwin Chadwick, in which he argued for the importance of adequate waste removal and management facilities to improve the health and wellbeing of the city's population. The report became highly influential in the new focus of waste management.

The Public Health Act 1875 made it compulsory for every household to deposit their weekly waste in “moveable receptacles” for disposal. This was the very first concept of a rubbish bin. The dramatic increase in waste for disposal led to the creation of incineration plants. However, people were against this idea as large amounts of ash were produced by incineration plants and ashes produced wafted

over neighboring areas. Similar municipal systems of waste disposal sprung up in the beginning of the 20<sup>th</sup> century in other large cities of Europe and North America.

### Chemical and Hazardous Industrial Waste

Industrial waste used to be routinely disposed in dumps at the sites where it was produced. However this uncontrolled disposal practice led to health and environmental hazards that were first addressed by the Washington State Legislature in 1976. The legislature had noticed the growing threat from the improper management of hazardous waste and passed the Hazardous Waste Management Act, Chapter 79.195 RCW. "Hazardous waste" as defined by this act includes those wastes determined to be either "dangerous" or "experimentally hazardous." "Dangerous wastes" were defined by the act as any discarded, useless, unwanted or abandoned non-radioactive substances, which were disposed in large quantities or concentrations, large enough to pose a substantial threat to human health, wildlife or the environment. This included wastes with properties that made them toxic, corrosive, explosive, flammable, or generate pressure through decomposition.

"Extremely hazardous wastes" were defined as those dangerous wastes which survive in hazardous forms for several years upon disposal and may be concentrated by living organisms through the food chain. In addition to declaring the dangers of these wastes, the Hazardous Waste Management Act also directed the department of Ecology to adopt minimum standards as well as regulations for the disposal of extremely hazardous wastes.

## Key Issues

### Amount of Waste Produced

According to The Atlantic, an estimated amount of 2.6 trillion pounds (1.2 trillion kilograms) of trash was globally produced. Of the waste produced, more than half (59%) was sent to landfills to be covered up while only 1% was recycled. Organization for Economic Co-operation and Development (OECD) countries were responsible for almost half the waste, with African and South Asian countries producing the least. The amount of waste shows a strong relationship with urbanization. The United States, produced around 4% of the global population, was held responsible for nearly 30% of the waste produced globally. The fact that such numbers were unprecedented describes the seriousness of this issue as new

solutions and acts must be passed in order to control and manage the massive amounts of waste produced globally.

### **Lifespan of Hazardous Waste**

With packaging being one of the most prominent reasons for rapidly growing rates of global waste, packaging that involves plastics accounts for the threat of chemical wastes. Plastic never biodegrades. Instead, it goes through a process called photodegradation, in which sunlight breaks it down into smaller and smaller pieces until only plastic dust remains. Furthermore, plastic does not disappear, even as dust it survives for centuries. With such a lifespan, the quantity of plastic waste produced globally is deeply concerning. Chemicals and substances other than plastic, such as dioxins and organochlorines, also impose a threat to the environment. Not only will such chemicals and waste threaten the safety of the environment but their toxicity will also climb up the food chain and eventually threaten food safety for humans.

### **Question of Effectiveness of Waste Incinerating Sites (Landfills)**

Hazardous waste is not only the concern as toxic chemicals are also often released during the process of waste incineration. Incinerating waste releases toxic chemicals, such as lead and mercury and even produces additional byproducts like dioxins and furans. Moreover, in the process of incinerating toxic chemicals and heavy metals, incinerators produce toxic ash. Incineration does not eliminate waste; it simply redistributes toxic chemicals into the air and produces another form of waste, such as ash, to be landfilled.

## **Major Parties Involved and Their Views**

### **Strategic Approach to International Chemicals Management (SAICM)**

The Strategic Approach to International Chemicals Management is a policy framework aimed to promote chemical safety around the world. SAICM's overall objective is to achieve sound management of chemicals throughout their life cycle so that, by 2020, chemicals are produced and used in ways that minimize significant adverse impacts on human health and the environment.

### **United Nations Environment Programme (UNEP)**

UNEP is the primary driving force in the United Nations (UN) system for international activities related to the sound management of chemicals. The aim is to promote chemical safety and provide countries with access to information on toxic chemicals. UNEP promotes chemical safety by providing policy advice, technical guidance and capacity building to developing countries and those with economies in transition, including activities on chemicals related to the implementation of SAICM.

### United States Environmental Protection Agency (EPA)

The United States Environmental States Environmental Protection Agency (EPA) is an agency of the United States (U.S.) federal government created for the purpose of protecting human health and the environment by writing and enforcing regulations based on laws passed by the U.S. Congress. Regarding hazardous waste, the Resource Conservation and Recovery Act (RCRA) regulations are contained in title 40 of the Code of Federal Regulations parts 239 to 282. Of those, hazardous wastes are recorded under parts 260 to 273. These regulations govern hazardous waste identification, classification, generation and management.

### Timeline of Relevant Resolution, Treaties, and Events

Date	Description of event
1842	A report published in England links filthy environment conditions to diseases and the “Age of Sanitation” commences.
1874	A new technology called “the Descruator” provided the first systematic incineration of refuse in Nottingham, England. Until this time, much the burning had been accidental.
1896	Waste Management in USA Waste reduction plants arrive in USA, but were closed later due to noxious emissions.
1920s	Landfills were becoming a popular way to reclaiming swampland while getting rid of trash.
1976	RCRA was created in USA, emphasizing recycling and hazardous waste management.

### Evaluation of Previous Attempts

In 1972, the UN established the UNEP with the objective to organize an UN-affiliated organization to deal with environmental issues. For decades, international

organizations and non-governmental organizations (NGOs) have drafted several resolutions and produced solutions at high quality. However, to this day, these alternatives are somewhat skewed and the progress made in order for this issue to be tackled is not analogous to that impressive number in aspects such as procedures, economic concerns, and the lack of authority and attention from diverse nations. The main problem lies in the fact that only a few countries, mainly developed countries, were truly committed to show their efforts to eliminate improper disposal of chemicals and wastes. It has been obvious that several governments are unwilling and undetermined to step out of their comfort zones by neglecting the potential risks chemicals and wastes might bring us in the future. Resolutions from now need to be stronger and nations need to take up more responsibilities in implementing their own policies.

## Possible Solutions

Regarding the actual substances that do great harm to the environment, finding an alternative to plastic would be one of the most effective solutions. However, since plastic is so commonly used for a wide range of purposes, the solution may not be very plausible. On the other hand, finding ways to reduce the use of disposable objects and unneeded packaging will drastically reduce the amount of unnecessary waste produce everyday. Moreover, strengthening the current regulations or perhaps passing new acts and implementing new methods regarding the management of chemicals and waste will prevent companies from violating the regulations. Also, making sure that the public is aware of how to manage waste individually is extremely important. Waste, especially if hazardous, must be disposed by undergoing a series of set regulations in order to prevent future accidents.



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