Journal of Advances and Scholarly Researches in Allied Education
Vol. 19, Issue No. 4, July-2022, ISSN 2230-7540

Dumping Waste Alternatives

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Abstract - In terms of waste management practices, it was normal practice in the late 1800s to send barges loaded with municipal rubbish out to sea for open disposal. Regular waste disposal into the water suggests that there was little awareness of or concern for the effects on the ecosystem. The Fresno Sanitary Landfill was constructed in 1937 before there was a big change from open dumping. Reducing solid waste means less garbage ends up in landfills. The most popular ways to reduce landfill waste are to reduce, reuse, and recycle. Landfill waste is a major issue since it affects both the economy and the ecology, and also because it takes thousands of years for landfill material to decompose, rendering several acres of land that could have been used for new industrial or residential colonies essentially unusable.

Keywords - Recycling, Waste Disposal, Waste Management, Solid Waste

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INTRODUCTION

The only two constants in life are death & change, and everything else is just a waste of time and energy. These things will happen in our lives regardless of what we do. However, we can get ready if our management is improved. Our focus here is garbage and how to properly dispose of it. We should all be able to breathe easily, drink safely, and eat without fear of contamination. Keeping the surrounding area clean and safe is one way to ensure that people can exercise this right. Let's start with the basics: what exactly is trash? Waste refers to everything that isn't needed by the owner, producer, or processor. When a product reaches the end of its useful life, it is considered garbage and is typically thrown away in landfills. To most corporations, waste is "everything that does not create value" (BSR, 2010). All things that aren't sought or needed are seen as waste by the average person. However, from a scientific standpoint, there is no such thing as garbage. Almost every part of trash can be used again if it is converted or treated scientifically. Thus, we might define solid waste as "Organic or inorganic waste materials produced out of domestic or business operations, that have lost their worth in the perspective of the first owner but which may be of tremendous use to somebody else." Robinson, W.D. (1986). Every home, no matter how large or tiny, produces garbage. Humans have strayed from their natural habitats ever since the first days of civilization, and that trend has accelerated dramatically in the modern era. The types and amounts of trash that a community produces are direct indicators of the state of its residents. With efficient waste management, not only can we get rid of the garbage, but we can put it to good use and even make a profit from it. Cities in India, which are racing to catch up to the rest of the world in terms of economic development, have been unable to efficiently manage the enormous amount of garbage they produce. The population of India is spread out throughout 593 districts and some 5,000 cities. Approximately 278.2% of India's over 1 billion people call a city home as per the 2001 Census. By 2026, we expect the urban share of the population to reach 33.4%. Due to the country's growing population and economy, urban India is producing more garbage every day. With a CAGR of 4.25 percent between 1947 and 1997, the amount of solid trash produced by Indian cities went from 6 million tons per year to 48 million tons in 1997, and this number is projected to rise to 300 million tons by the year 2047. (CPCB, 1998). The growing output of solid wastes in both urban and rural areas can be attributed to the country's rising population and rising standards of living. Like many other fields in India, solid waste management in urban and rural areas is segmented differently. However, the divide is narrowing as a result of increased communication and trade between urban and rural communities and the widespread adoption of the "use and throw philosophy." Compared to urban garbage, which is more likely to contain nonbiodegradable materials like plastics and packaging, garbage from rural areas decomposes more easily. In spite of this, both industries share a repulsive perspective on the subject of solid waste and its handling. Garbage is typically hidden from view, which is a universally accepted practice.

Current Waste Management Practices

There is a significant gap between low-income and middle- and high-income countries in the present solid waste management practices used in the Asia-Pacific region. In the parts that follow, we'll examine

how far this advice can be taken and how beneficial it really is.

1. Municipal Solid Waste (MSW)

(a) Transfer & Collection

MSW is collected in a wide array of vessels across the region's cities, from discarded kerosene cans & rattan baskets to plastic drums and bins. Bagged and loose trash is collected from roadside dump sites that have been designated as neighborhood dumping locations in some cities. Cities in the region often spend the most on solid waste management on garbage collection (and, if necessary, garbage transportation). Several collection techniques, such as door-to-door collection & indirect collection, are used.Capital-intensive and highly mechanized, collection and transfer services in high-income industrialized countries like Australia, Japan, New Zealand, the Republic of Korea, and Singapore provide collection rates in the range of 90% &Collecting services are provided to urban & rural regions via standardized collection vehicles, compactors, and containers. Regulations are in place to ensure that recyclables are properly separated at the point of generation before being collected, and this process can be aided by the distribution of color-coded recycling containers and bags, as well as the construction of central recycling facilities. Despite the fact that many of these cities still handle certain aspects of rubbish collection themselves, many others have outsourced the task to private waste collection companies and businesses and industries. Collection and transportation of trash is a labor-intensive task in middle- & low-income countries of the region, thus municipalities typically hire their own employees to do the dirty work. Communal trash cans and residential disposal sites are serviced by handcarts and tractor-trailers equipped with compactors. Due to the lack of compactors in the collection vehicles and containers, the collection systems are extremely inefficient. This limits how much garbage can be collected at one time. Collection rates in numerous cities of low- and middle-income nations, like Dhaka, Calcutta, & Hanoi, are much below 50%, in contrast to rates that are significantly higher in Bangkok, Mumbai, Delhi, Jakarta, Kuala Lumpur, Manila, & Shanghai. Collection rates in Hong Kong, China, Seoul, Singapore, Sydney, & Tokyo are all greater than 90%. Apparently, disparities in gathering services among wealthy & poor districts, and in some regions, the destitute, particularly those residing in illegal squatter camps, are not given access to collection services.There has been success in increasing collection rates through decentralized pre-collection in various cities. The individual kampongs (villages) are officially responsible for first collection. The comparable procedures used in Delhi and Chennai have resulted in effective collection processes. The MSW collection and transportation system as a whole suffers from inefficiency due to the absence of adequate transfer facilities. Tokyo, Singapore, and Sydney are just a few examples of cities that employ transfer stations to collect trash from a specific area, compact it to reduce space requirements during transport, and then load it into larger haulage vehicles for final delivery to landfills. Furthermore, most transfer stations also serve as material recovery facilities, sorting recyclables for recycling. Few cities in poor countries have constructed effective transfer stations with the structures, tools, & vehicles needed to handle & process their waste. The trend toward privatizing collection services continues. Throughout the area, private waste collection companies are currently responsible for more than 20% of the collection services.

(b) Material Recovery, Reuse & Recycling

Rates of recycling from municipal solid waste (MSW) have increased in recent years in many Asian countries (Hara 1997). The area'sgenerally resource recovery risen from 10% of all MSW in 1988 to 30% in 1998, mostly due to rising rates of recovery of paper & paperboard, polymers, glasses, &metal.With paper and paperboard accounting for over 60% of all recovered tons, the value of recovery rates for other materials is sometimes lost in the noise. Although it accounts for a relatively small percentage (3%) of the overall tonnage of recovered materials, the economic value of aluminum recovered from cans and canisters much outweighs that of paper products. Japan has one of the maximum rates of recycling from the MSW stream among Asian &Pacific countries. Nearly half of Japan's paper scraps are collected for recycling, and the country's recovery rate has risen steadily from 48% in 1990 to 56% in 1997. In a similar vein, the percentage of recycled glass increased from forty-eight percent to fifty-seven percent between 1990 and 1997, while the percentage of recycled aluminum and steel cans rose from forty-five percent to seventy percent during the same time period (Hara 1997). Table 1 displays the groups of materials recycled in Singapore in 1997. (ENV 1997). Governments, non-governmental organizations (NGOs), and the private sector often aggressively encourage recycling at the household, commercial, and industrial levels (United Nations 1995). Despite the lack of official promotion or backing from the government, informal recycling networks have grown in some places, such as Viet Nam (World Bank 1995). An important part of developing-world garbage recycling is the casualretrieval of items by scavengers or refuse pickers. As much as 2% of the urban population in Asia and the Pacific is thought to make a living by sorting through trash for valuables to resell or salvage for personal use. An estimated 15,000 to 20,000 squatters in the Philippines rely on the Smoky Mountain municipal rubbish dump for their livelihood (Anonymous 1995); between 20,000 & 30,000 scavengers call Bangalore home (Hunt 1996); and between 15,000 & 20,000 waste pickers call Jakarta home (Anonymous 1995). (Wahyono and Sahwan 1998).

Table 1: Different Types of Materials recycled in Singapore in 1997 from MSW

Waste type	Estimated quantity in tonnes in 1997			Recycling rate (per cent)
	Total waste disposed	Total waste recycled	Total waste output	
Food waste	1 085 000	24 700	1 109 700	2.2
Paper/cardboard	576 000	324 000	900 000	36.0
Plastics	162 000	35 300	197 300	17.9
Construction debris	126 000	188 000	314 000	59.9
Wood/timber	249 000	34 800	283 800	12.3
Horticultural waste	75 400	67 600	143 000	47.3
Earth spoils	75 400	–	75 400	–
Ferrous metals	75 400	893 000	968 400	92.2
Non-ferrous metal	14 000	76 000	90 000	84.4
Used slag	120 000	135 000	255 000	52.9
Sludge (Industry/ PUB)	50 200	–	50 200	–
Glass	30 800	4 600	35 400	13.0
Textile/leather	25 200	–	25 200	–
Scrap tyres	5 600	5 700	11 300	50.4
Others	126 000	1 300	127 300	1.0
Total	2 976 000	1 790 000	4 586 000	39.0

(c) Dumping Methods for MSW

Table 2 lists the various techniques used to dump of MSW in a few of the region's countries and territories.

(i) Open Dumping

The vast majority of the region's garbage is disposed of via open dumping, which entails the disposal of trash without any kind of containment or management of the resulting leachate, dust, odor, landfill gas, or pests. It is common practice at dumps in several cities to burn trash in the open. It is common practice in many coastal towns to dump garbage along the coastline and into the water, as seen in Joyapura, Indonesia, or in wetlands and ravines along the coast and inland, as seen in Mumbai, Calcutta, Colombo, Dhaka, & Manila (UNEP/SPREP 1997). Due to a lack of suitable landfill space, garbage is being dumped at alarmingly high heights; in the Philippines' Quezon City, for example, the waste layer is at least 12 meters deep and likely much higher. Landfill gas (predominantly methane) accumulation is an additional risk in unregulated dumpsites that has been linked to both fires and negative health outcomes for nearby employees and residents (Perla 1997, Wahyono and Sahwan 1998). Solid waste management on the Small Island Due to the lack of available land, it has become ever more difficult for South Pacific countries to expand. Old cars & refrigerators are dumped into French Polynesia's lagoons., while in the Marshall Islands, city garbage is coiled into wire gabions and used to construct sea walls. In the latter situation, the garbage and leachate were able to flow freely through the gabions and into the ocean.

(ii) Landfilling

The disposal of solid waste at a partially designed or fully sanitary landfill has been embraced by cities in both high- and low-income countries in the Asia-Pacific region. A number of cities in Australia, the People's Republic of China, Japan, the Republic of Korea, Malaysia, & Thailand have used controlled tipping or sanitary soil filling for the treatment of solid waste, in contrast to Bandung, Singapore, Hong Kong, China, Seoul, Chennai, & Tokyo.Municipal solid trash is dumped at abandoned tin mines in Kuala Lumpur.

Table 2: Municipal Solid Waste Disposal Techniques in a Few Regional Countries

Country/ Territory	Disposal methods				
	Composting (per cent)	Open dumping (per cent)	Land filling (per cent)	Incineration (per cent)	Others* (per cent)
Australia	10	–	80	5	5
Bangladesh	–	95	–		5
PR China	10	50	30	2	8
Cook Islands	–	60	30	–	10
Fiji	–	90	–	–	10
Hong Kong, China	–	20	60	5	15
India	10	60	15	5	10
Indonesia	15	60	10	2	13
Japan	10	–	15	75	–
Kazakhstan	–	85	–	–	15
Rep. of Korea	5	20	60	5	10
Maldives	–	90	–	–	10
Malaysia	10	50	30	5	5
Mongolia	5	85	–	–	10
Myanmar	5	80	10	–	5
Nepal	5	70	10	–	15
New Zealand	5	–	85	–	10
Pakistan	5	80	5	–	10
Philippines	10	75	10	–	5
Papua New Guinea	–	80	–	5	15
Samoa	–	80	–	–	20
Singapore	–	–	30	70	–
Sri Lanka	5	85	–	–	10
Thailand	10	65	5	5	15
Viet Nam	10	70	–	–	20

Several local landfills have developed energy generation facilities to make good use of the landfill gas they produce. Ho Chi Minh City's landfill/biogas power generation complex is currently under construction, & similar projects are being proposed for Chennai or perhaps Colombo. In the region's densely populated urban areas, the availability of land for landfill siting is a considerable barrier. To provide high levels of operating & maintenance management that enable the development of suitable landfill options in coastal areas, offshore islands, & steep terrain, for example, severe land constraints in Hong Kong, China, & Singapore have requires the development of complex engineering infrastructure solutions. Two of Singapore's landfills are on the verge of reaching capacity, and work is nearly complete on a new, more expensive offshore dump on PulauSemakau. The landfill, which encloses 350 hectares of water with a 7-kilometer-long bund, is built to meet Singapore's waste disposal requirements till at least 2030. In cells, the trash is gathered and will eventually grow to a height of 15 meters above sea level (ST 1999).

(iii) Compost

Organic waste composting on a small scale is popular in the area, but initiatives to increase large-scale composting have had various degrees of success in terms of lowering the amount of municipal solid waste that must be disposed of or producing cash from the sale of compost. Most composting facilities in the area are either not running at full capacity or are not producing compost that is valuable commercially.Compost is more expensive than commercially available fertilizers due to high operating and maintenance expenses, and compost polluted with plastic, glass, and harmful residues is produced due to a lack of material segregation. Little of the compost made under these conditions would be useful in agricultural settings. As an illustration, consider Hanoi's forced-air composting facility. Composting services are provided by small private firms in CipinangBesar&Watam (East Jakarta) to estate gardens & golf courses; such programs have been running in Indonesia for more than ten years. While Bandung has a box-style windrow composting plant near to an active dumpsite, Ho Chi Minh City has two tiny composting facilities (Perla, 1997). (1995, World Bank). On a modest scale, vermicomposting is carried out in the People's Republic of China, India, Indonesia, & Philippines, where organic waste is processed in open bins or containers to produce compost that is rich in nutrients (Perla 1997). On a slightly bigger scale, Thailand, Australia, Bangladesh, the People's Republic of China, Australia, & Bangladesh are currently researching composting organic MSW with agricultural waste & waste disposal plant sludge. The lack of suitable land, high operating, maintenance, & transportation costs, as well as poor waste material segregation, are significant obstacles to the widespread utilisation co-composting, too.

(iv) Incineration

Burning MSW is an expensive & technically questionable waste disposal technique for much of the Asia & Pacific region. High capital, operating, and maintenance costs, as well as stricter air pollution control requirements, have impeded the expansion of trash incineration facilities (UNEP 1998). Low flammable content and high organic & moisture content are characteristics of the MSW produced in the region's low- and middle-income nations.For instance, Surabaya, Indonesia, only uses two-thirds of the incinerator's capacity since the waste must first be locally dried for 5 days before it can be burned. These countries include Australia, the People's Republic of China, Hong Kong, China, Indonesia, Japan, Singapore, and the Republic of Korea. More than 75% of the 6700 tonnes of MSW collected daily is incinerated in Singapore's three incinerators (ENV 1997), &4thincinerator with a capacity of 3000 tonnes per day is expected to develop operational during 2000. About 60 MW of electricity (250-300 kWh/tonne MSW burned) is now being produced by the existing facilities; some of this is utilized to power the incinerators themselves, while the rest is exported to the national electricity grid. At a cost of S$1 billion, the proposed new plant will create 80 MW of power, 20 MW of which will be used on-site and the other 60 MW would be sold to Singapore Power (ENV 1997). The Republic of Korea plans to expand the burned share of their MSW from 8.9% in 1998 to 20% by 2001, which is in comparison to Japan, 1900 garbage incinerators, whereby 1584 are run by local governments & remaining by private firms (Government of the Republic of Korea, 1999). (ASIAN WATER 1999). Cities including Beihai, Shenyang, Guangzhou, Beijing, and Shanghai in the People's Republic of China have all started building MSW incineration plants with the help of international donors. Due to inability to fulfill air pollution requirements, incinerators in Hong Kong, China were shut down, however the construction of additional units is being considered (Wan et al 1998).

2. Industrialized Solid Wastes

Open dumping, land filling (both sanitary & semi-engineered landfilling), and incineration are the most common ways to get rid of industrial solid waste, but there are other choices as well. Non-hazardous industrial solid waste can be dumped or buried in open dumps or landfills with municipal solid rubbish in a number of countries. These countries include Bangladesh, the People's Republic of China, India, Indonesia, Malaysia, the Philippines, & Thailand. In underdeveloped nations with insufficient waste treatment infrastructure, industrial waste is often dumped on private land or buried in dump pits near the original site of the industrial operation.

3. Agriculture Wastes& Residues

Table 8.9 lists the primary techniques of disposing of agricultural waste in a few chosen nations in the region.

Table 3Agriculture Waste & Residue Disposal Practices in Certain Countries in the Region

Country	Disposal methods of agricultural waste and residues						
	Land application	Fish farming	Composting	Biogas production	Utilization as		
					Fuel	Animal feed	Building materials
Australia	○	❐	●	○	❐	○	❐
Bangladesh	○	❐	❐	❐	●	○	●
Cambodia	○	○	○	○	●	○	●
PR China	●	●	●	●	●	●	●
India	●	○	●	●	●	●	●
Indonesia	●	●	●	○	●	●	○
Japan	○	○	●	○	○	○	○
Lao People's Democratic Republic	○	○	○	❐	●	●	●
Malaysia	○	○	●	○	●	●	○
Myanmar	○	○	○	○	○	○	●
Nepal	❐	❐	❐	❐	○	○	❐
New Zealand	○	❐	○	○	○	○	❐
Pakistan	❐	❐	○	○	○	○	❐
Philippines	○	○	●	●	●	●	●
Rep. of Korea	○	○	●	○	○	○	○
Sri Lanka	❐	❐	○	○	○	○	○
Thailand	●	●	●	●	●	●	●
Viet Nam	●	●	●	●	●	●	●

Source: ESCAP 1997

Legend: ● High ○ Moderate ❐ Low

Land application of raw or composted agriculture wastes is still the most common method of disposal in conventional, stationary agricultural systems, where wastes are recycled as fertilizers and organics. Communities that raise fish in Bangladesh, China, India, Indonesia, Malaysia, the Philippines,

Thailand, and Vietnam sometimes combine fish farming with other forms of agriculture, such as animal farming, vegetable and rice production, & fruit growing (Fauzia 1997, UNEP 1997). The production of biogas via anaerobic digestion from agricultural wastes is common in nations where the economy relies heavily on farming. Slurry from anaerobic digesters is utilized as liquid fertilizer, as a supplementary feed for cattle & pigs, substrated for soak seeds before germination. Biogas (approximately 60% methane) is utilized for directed cooking, heating, & lighting (Hendersen1997). (ASIAN WATER 1998, World Bank 1998). Many South Pacific island nations, including Bangladesh, the People's Republic of China, India, Mongolia, the Philippines, Pakistan, Sri Lanka, and many more, store especially toxic wastes in sealed containers or co-dispose hazardous and municipal solid wastes in open dumps (UNEP/SPREP 1997). Some countries, including Australia, Japan, Hong Kong, China, the Republic of Korea, & Singapore, have made progress toward developing methods for detoxifying toxic waste & immobilizing it through fabrication into bricks and other useful materials. Currently, a massive program for hazardous waste management is being implemented throughout the Eastern Seaboard of Thailand, where petrochemical, chemical, & non-ferrous industries generate between 250,000 - 300,000 tonnes of potentially valuable toxic industrial waste each year.The Map Ta Phut Industrial Estate is the nerve center of Thailand's petrochemical and chemical industries, and as such, the Industrial Estate Authority of Thailand has erected a hazardous waste treatment plant there. The JABOTABEK (Jakarta, Bogor, Tangeran, &Behasi) industrial area is served by a harmful waste treatment facility that is conveniently situated in West Java, Indonesia. The facility produced 29 metric tons of hazardous garbage between 1994 - 1997, a twofold increase. However, when industrial production dropped during the economic and political crises of 1998-1999, the facility processed just 16.6 metric tons of garbage that year, rising to 18.8 metric tons in 1999. Japan's industries generate 500 million tons of hazardous waste per year, yet the country has sophisticated methods for handling and disposing of this material. Special landfills have been built to house hazardous trash, or recycling and material recovery are promoted to lower the overall volume of wastes requiring treatment & disposal.Though, with over 3,800 harmful industrial waste incinerators dispersed across the nation, burning is the most often employed disposal option (ASIAN WATER 1999). A lot of these incinerators also feature energy recovery capabilities that can be used to generate heating or electricity. While few solid chemical wastes, containing asbestos, tannery off-cuts, or treatment residues, are co-disposed at landfills, the Chemical Waste Treatment Centre (CWTC) receives the majority of the hazardous wastes generated by enterprises in Hong Kong, China (Chua et al, 1999).

4. Biomedical Waste

Because of the region's expanding population, the number of hospitals and other medical facilities throughout Asia and the Pacific has been on the rise. While medical and health care facilities and services have been considered by city planners for quite some time, the wastes produced by these facilities, which may pose a threat to human health and the environment, have received little attention until recently. However, in recent years, Due to the improper management & management of biomedical and clinical waste, serious concerns have been raised concerning the potential for infection transmission & environmental pollution. Bangladesh, the People's Republic of China, India, Indonesia, Pakistan, & Philippines have not yet incorporated regulations & guidelines to manage waste from these institutions, while the majority of developed nations have (including Australia, Japan, New Zealand, & Singapore) (Ogawa 1993, WHO 1996, UNEP/SPREP 1997).State governments in Australia have also developed biomedical management guidelines comparable to those issued by the National Health and Medical Research Council. The Japanese Ministry of Health and Welfare has formed a task force to deal with medical waste and has developed regulations in this area. New Zealand Standards on Health Care-Waste Management were established by the Standards Association of New Zealand to standardize and recommend approaches to the handling of medical waste. In Singapore, the Ministry of the Environment drafted the "Hospital Waste Management Manual" in July 1988 to provide hospitals with a standard structure for drafting their written policies and procedures and comprehensive recommendations for the management and safe disposal of hospital wastes.

5. Radioactive Waste

There is a lack of complete data and few comprehensive country surveys on the topic of radioactive waste disposal. To temporarily store the low-level radioactive waste produced by Japan's 46 operational nuclear power reactors, 2 000 liter drums are filled with the material and stashed in on-site storage facilities. Eight barrels are bundled together in covered containers & transported by road and sea to the Rokkasho-mura Burial Center in the Aomori Prefecture (Tanaka 1993). Four Indonesian nuclear research institutions' low-level radioactive waste is encased in cement matrices and then transported to the Serpong RWMC (Radioactive Waste Management Center) for disposal (Suyanto1993).Permanent ground burial methods are used for the disposal of radioactive waste in several nations in the region, including India, Pakistan, & Republic of Korea (Greenpeace 1998).

6. Trans boundary Movement of Hazardous Waste

Due to domestic pressure on firms operating in industrialized nations to dispose of their hazardous

waste in a controlled, and hence expensive, manner, the Asian & Pacific Region is under considerable pressure as a preferred disposal place for hazardous waste. Toxic garbage up to 3.5 million metric tons was shipped from the industrialized world to Asia and the Pacific between 1994 and 1997. It wasn't until September 1994 that customs officials in the People's Republic of China uncovered evidence of such imports; by the end of the first quarter of 1995, they had uncovered 22 occurrences containing more than 3,000 tonnes of foreign hazardous garbage.Chinese customs officers found an average of one case of incorrectly labeled hazardous waste per week between 1995 -1996, the majority of which came from the U.S., the Republic of Korea, or Japan (Greenpeace 1997). The 640 tons of California waste that were found dumped in a Beijing suburb in June 1998 included toxic sludge, filthy syringes, & decaying animal remains. (1997, Greenpeace). The dumping of hazardous waste into India from developed countries increased at the same time (Anjello 1996, Agarwal 1998).Despite a New Delhi court decision prohibiting the import of dangerous materials, thousands of tons of toxic trash are being illegally brought to India for recycling or dumping. More than 1,450 metric tons of hazardous trash, such as scrap lead batteries, zinc and copper ash, were shipped from Australia to India in 1995, and between October 1996 and January 1997, 569 metric tons of lead battery waste entered India via the principal seaport of Mumbai (Greenpeace 1998). Box 8.2 shows that despite international agreements, a significant amount of PVC trash is still shipped to Asia (Greenpeace 1998). The Pacific Islands have not been utilized as dump locations for hazardous waste since the sub regional Waigani Convention on trans border transportation of hazardous & radioactive wastes was negotiated.

CONCLUSION

Several more cutting-edge methods of trash disposal are in the works at the moment. By heating organic trash at high temperatures, pyrolysis reduces it to tiny pieces that are easier to dispose of. When organic matter is subjected to plasma arc gasification, it is converted into synthetic gases & slag, a solid waste product. Biological waste, such as spoiled food, can be decomposed in an environment called a compost bin. In response to the ever-increasing size of landfills, this method is now being used on an industrial scale, and it has a very low environmental impact. Using composting, organic waste can be quickly transformed into a useful fertilizer for agriculture. Panda can help you set up a composting option to supplement your regular trash pickup because of their expertise in organic waste recycling. In anaerobic digestion, microbes and bacteria decompose organic waste in the absence of oxygen and air. Because it converts garbage into useful fuel (methane), it's considered a renewable energy source. This methane can be refined into natural gas or utilized to fuel a variety of engines. The use of anaerobic digestion to manage trash and generate electricity is a relatively recent development. Industry solid wastes generation rates differ from nation to nation, dependent on the types of enterprises that are in operation. The most common methods for getting rid of industrial solid waste include open dumping, land filling, and incineration.

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