Waste production in the philippines

Parts of the World, Asia

The waste generation in the Philippines is continuing to increase with the growth of population particularly in the highly industrialized and progressive areas. In 2016, the National Solid Waste Commission estimated that the nation’s waste generation increased from 37, 427. 46 tons per day which was in 2012, to 40, 087. 45 tons per day (Senate of the Philippines, 2017).

Regions 3, 4a, 6, 7 and NCR’s urban cities have had generated huge amounts of solid wastes due to their varying standard of living, economic progress and population growth (Galarpe, 2017).

In the Philippines, the production of solid waste could be likened to countries with low to medium revenue. On a daily basis, Filipinos both in rural and urban areas produce 0. 3 and 0. 5 kilograms (kg) of waste (Philippines environment monitor 2004: assessing progress (English), 2013).

The most commonly produced rubbishes are food/kitchen waste, bottles, tins and metals, plastics, and yard or garden wastes. People do not practice composting and burning instead they observe segregation and depend on the government’s trash collection. Nevertheless, there are still some who do not throw their garbage on the designated areas which could cause various disease-inflicting organisms (Bernardo, 2014)

Carbon-based constituents are what makes up most of the solid wastes in the Philippines. The discarded waste are composed of 52% biodegradable waste – yard and kitchen wastes, 28% recyclable wastes – plastics, glass, metals and textile wastes and 18% residual waste (Senate of the Philippines, 2017).

Pollution in the Philippines

The waste matter that are commonly released into and pollute various bodies of water are usually “ in the form of raw sewage, detergents, fertilizer, heavy metals, chemical products, oils, and even solid waste.” (Water Environment Partnerahip in Asia, n. d.)

According to Greenpeace Philippines (2015), the third contributor to the pollution of numerous bodies of water are the different developing industries here in the Philippines. Industrial contaminants comprised the 27% of the pollutants found in creeks and rivers. A lot of industries – food, paper, colorants and fabrics, glass and metal companies, and microelectronics businesses discharge significant quantities of wastewater in freshwater upwelling that in due course, pollutes groundwater as well.

Human Hair Wastes

Abundance of Human Hair Waste

Through the years, human hair has been deemed as functionless; hence it is mainly disposed of in solid waste streams in most parts of the world. As it remains in these disposal areas, it deteriorates at an extremely sluggish rate taking more than several years, thus causing it to amass which leads to the choking of drainages posing plenty of potential hurdles. According to Workman (2018), human hair waste is most rampant in the United States since it ranked first at the top human hair exporters particularly garnering 34. 3 million US$ (42. 3% of total human hair exports).

In an effort to dwindle the amount of the foregoing waste, it has been utilized in a multitude of ways such as in the fashion and cosmetic industry, agriculture, pharmaceutics, pollution control and remediation and many more. However despite of all these, countless are still suffering the negative effects of the abundance of this waste for as what had been mentioned, a huge proportion still do not recognize its usefulness. Hence, its quantity remains somewhat unvarying.

Degradation Process of Human Hair Waste

One of the most conspicuous properties of human hair is its slow degradation rate. According to Feughelman (2007), the degradation of human hair can be affected by distinct environmental settings. It has also been taken into account that there were established methods of deposition that allow hair fibers to sustain itself for a longer period of time (Ryder 1983). There are standard environments which are as follows: outdoor exposure, subaqueous, burial, and dry. All these serve as a way to discern how environmental contexts of diverse depositional methods influence the degradation process of human hair.

On a span of 7 months, there were evident signs of degradation among the samples which were deposited in the foregoing environments. All exhibited a loss of size and were significantly smaller than before deposition. A profusion of extra chemical bonds in this protein makes it unsusceptible to degradation by most standard proteases which are the enzymes that typically break down proteins. Human hair, like fingernails, is comprised of keratin and is much imperishable than skin and flesh. In some extraordinary scenarios for

instance, when remains have been conserved artificially, hair and fingernails may persist further than what is commonly expected. This can live on for tens to hundreds of years, although it calls for a profoundly aseptic surrounding and the assiduous perpetuation of the grave or mausoleum.

Effects of Human Hair Waste to the Society and Environment

Due to the slow degradation of human hair, it has spawned a multitude of obstacles not only in the environment but also to the society as a whole for it lingers in solid waste systems longer than it should. According to Gupta (2014), it is only a matter of time until leachate from these disposal areas elevates the nitrogen concentration in bodies of water, generating problems of eutrophication. In addition that, the incineration of human hair or the waste piles accommodating them, a conventional practice performed in most parts of the globe yields a foul odor along with toxic gases such as ammonia, carbonyl sulphides, hydrogen sulphides, sulphur dioxide, phenols, nitriles, pyrroles, and pyridines.

Furthermore, human hair wastes disposed in open landfills produces hair dusts that makes people feel discomfort. In worst case scenarios, if these dusts are inhaled in profuse amounts, it can lead to major respiratory problems. Additionally, if these hair wastes are contaminated with sweats, oils and other organic matter and decomposes as time goes by, it may lead to the production of unwanted odors and may be a potential breeding ground for the reproduction of pathogens.

Ironically, while hair is regarded as otiose in most places around the world, there are some kinds of high-quality human hair which are also merchandised worldwide at astonishing scales. In 2015, India alone exported 1 million kg of human hair and its products worth US $238 million, and total global imports amounted to US $1. 24 billion. This trade also has been a source of many of the percussive environmental and health problems. As a consequence of hair dust and festering hair, laborers of many hair-processing units in India have soaring cases of tuberculosis and respiratory tract infections. Improper disposal of hair and other processing waste has been a root of pollution and legal conflicts. For one, Jwalapuri market in New Delhi, India, the merchants used to put the waste hair to fire, hence led to protests and the relocation of processing units in the outlying districts of New Delhi. This example intelligibly conveys that despite of a humungous economy revolving around human hair, there seemed to be a deficiency in the systemic thinking with regards to the eco-friendly management of human hair waste (Gupta, 2014).

Potential Uses of Human Hair Wastes

Components of the Human Hair

According to Gupta (2014), the particular qualities of human hair such as its chemical composition, gradual degradation, high tensile strength, thermal insulation, elastic recovery, scaly surface and unique relation with oils and water, along with its sociocultural functions, have led to numerous distinct applications. These applications are dependent on a number of different hair

available varying in conditions of five factors: length, color, straightness or curliness, hair damage, and contamination.

Human hair proteins generally include 20 essential amino acids which can be educed through the process known as hydrolysis. Some of the amino acids attained from human hair are L- cysteine, L- isoleucine, L- leucine, and L- valine. L- cysteine is applied for permanent wave cottons and wound healing formulations. On the other hand, conditions such as chest congestion and acetaminophen poisoning can be treat through the N- acetyl L- cysteine (NAC), one of the byproducts of L- cysteine (Gupta, 2014).