Household E-waste Management Of Malaysia

According to Household E-Waste Management of Malaysia, electronic waste or E-waste can be defined as broken, non working electrical or electronic appliances.These wastes are discardable and are meant to be reuse, resale, recycle or for disposal. In this rapid developing world, E-waste has been increasing day by day due to human actions and it is very concerning as it has adverse effects on human health as well as the environment. This matter should be an eye opener for many parties in the society to take initiative to curb this issue. The process of manufacturing electronic devices are complicated and it involves various heavy metals and elements which could bring harm to the environment once they are exposed in their state matter. More than 20 million tons of e-waste are produced every year. If this is left untreated, bio-accumulation could occur and there will be an interruption in food chain

The process of breaking down and discarding of e-waste leaves a huge impact on the environmental. This is because it releases toxics such as lead, mercury and cadmium into soil and water and also air. Lead can be found in e-waste such as television, PC monitors and LEDs screens and it disrupts the natural functions of water and soil systems. As for mercury that also exists in televisions and in refrigeration appliances, the element gets transferred easily into environment and it causes anaerobic breakdown which is a chemical reaction that does not involve oxygen. As a result, there is a high production of deadly methyl mercury. Cadmium degrades the soil at a high rate when it comes in contact with it.This interaction cause flow of negative effects to the ecosystem such as production of lethal gas to the air that could lead to air pollution.

Air pollution is the most common adverse effect when it comes to discarding e-waste. Some parties search for improper disposed electronics such as wires and blenders to earn income by recycling these wastes. These appliances contains copper which is very valuable but burning them in the open air releases hydrocarbons into the air. Hydrocarbons increases the percentage of carbon dioxide into the atmosphere and this will eventually leads to global warming. Discarding parts of air-conditioning appliances also releases high amount of carbon dioxide and carbon monoxide into the atmosphere which are very dangerous because it causes greenhouse effects. The toxic gases released into air will increase the temperature of the surrounding and reflect heat as well as harmful radiation back to the Earth’s surface. It leads to thinning of ozone layer and harmful radiation such as UV rays that are emitted from the sun to reach Earth’s easily. Ozone layer acts as Earth’s protective layer from any radiation that causes environmental issues.

The increase of temperature has an impact on the poles such as massive melting of the ice caps. This leads drastic rise of sea levels and could lead to flooding. Besides that, incinerating e-wastes that are made of plastics such as computers release toxic substances such as dioxins into the atmosphere. These toxic gas lead to acid rain after some time as the amount in the air increases. It will then damage trees and causing them to die, it also causes rapid decay of buildings, statues and sculptures.

Furthermore, e-wastes components such as gold plated compound that are broken down chemically by using nitric and hydrochloric acids with are both very strong acid along the

riverbanks and it has a huge impact on water. Other improperly disposed heavy metals can seep through soil and eventually reach the surfaces of water. These toxic substances acidify the water causes lack of oxygen supply in the water and it will lead to death of aquatic organisms as the water has become an unsuitable environment for them to leave it. Once aquatic organism starts to die, they are decomposed by bacterial action eventually the water will be saturated with bacteria.

E-waste also had a negative impact on soil. When these wastes are incinerated, it produces toxic heavy metals and harmful chemicals and then it enters soil-crop-food pathway. This is a pathway in which crops that grow in the soil and food is produced, so if the soil is contaminated then the crop and the food that it provides will be contaminated as well. These heavy metals and chemicals are non-biodegradable so the risk increases if it's present in the soil for a long period. For example, discarding cathode ray tubes by breaking and removing the copper yoke produces lead, barium that leach into soil and release toxic phosphor. This disturbs the ecosystem because polluted soil is highly toxic to the plants and it changes the salinity of the soil making it unfertilized for plantation thus it will be become barren. Besides, polluted soil will lead to increase in landfill sites that becomes a breeding ground pests that could carry deadly diseases.

All of the negative impacts towards the environment is due to development in technology, we are now living in a fast paced technological era where almost everyone in the society owns at least an electronic device per person. Due to that, the authorities must address the correct way to dispose all electronic appliances when they are not in use anymore. Some devices such as mobile phones, remote controls and many more only last for few years. The sales of electronic devices have increase drastically over the years in Malaysia. Besides, human mentality also play a role in contributing to improper disposal of e-waste. Lower class people may not have the knowledge on the management on e-waste and some upper class people will take their money power for granted as to dispose the wastes however they like. Unknowingly, they are polluting the environment with their ignorance. They will also tend to dispose more older products as they can afford newer ones and this act is actually producing more e-wastes. Next, it involves the theory of unitary method in which the more the population, the more the number of electronics devices owned. This would increase the amount of e-waste as many would discard their devices after some time.

Actions should be taken regarding this issue so the most common is to recycle and reuse the wastes. We can improvise the wastes such as old, unused television or PC screens to antique decorations or even aquariums. For example, Apple, Samsung, Panasonic allow customers to recycle their unused or spoilt electronics. This saves the environment by reducing usage of energy and the need for manufacturing new parts as some expensive parts from the appliances can be reused. Recycling of e-waste like batteries can also be done around us when there is a special bin for electronics provided.

We can also resell or donate our old electronics that are still in a good condition to those in needs or charities such as Community Recycle for Charity (CRC), T-Pot Electrical and Electronics in Malaysia, National Cristina Foundation, Reconnect which is a partnership between Dell and Goodwill and has their branches throughout US and Canada and US-based organization that is Hope Phones. At the same time, we will feel good about ourselves as we help conserve the environment and also help those people in need to better their quality of life. Huge companies like eBay, Craigslist are trustable platforms to resell our unwanted devices

which is very convenient and it is possible to get potential buyers easily.

One of the easiest ways to reduce e-waste is by having responsibility to take care and maintain the quality of our own electronic devices to increase its life span. As for laptops or phones, we should always clear unnecessary data in hard drive or SSD, this is to ensure the device runs smoothly for a long time. External features are also as equally important so it is clean. It is also important to not overcharge any of the rechargeable devices because it reduces the battery life span and damages it. It is best to put any screen protector on devices that has screens so that it will not get scratches or break when there is any impact on it. This way, the number of electronics in landfills can be reduced.

Other than that, the society should learn to think ahead and implement the practice of purchasing environmental friendly or energy star rated appliances in the household or personal use. These products such as televisions, desktops, light bulbs, washing machine, air conditioner and many more are certified by Electronic Product Environmental Assessment Tool (EPEAT). These products actually conserve less energy and avoid over-utilization so it protects environment by minimizing consumption of energy. Companies producing electronics appliances should replace hazardous materials with the non hazardous ones in their products such as biodegradable materials. They can also improve production techniques to reduce generation of waste.

We should re-evaluate before making any purchases on electronic appliances. This prevent consumers from buying beyond their needs that could ultimately lead to excessive e-waste disposal when the products are not in use. We can repurpose old appliances or devices that are no longer useful for their intended use. For example, an old mobile phone could be used as a GPS device or a backup device just in case anything happens. We should think wisely before purchasing or discard old electronic device. It is also recommended that we store our data online which we can get excess to anywhere around the world. This reduces the need to purchase any storage device thus reducing the need for producing the devices from electronics companies.

Next, we should educate ourselves on how to repair broken electronics at home so we can reuse the products instead of discarding them away immediately. This way we can reduce waste on our environment. Schools and authorities should implement subjects on management of e-waste and the materials used in electronic appliances to younger generations to educate them. This allow them to have better understanding and awareness on which material can destroy the environment. Having knowledge on correct management to dispose electronic is important to reduce waste that can harm and is toxic to the environment. For example, education on heavy metals and toxic material in most products so we can learn the correct way to dispose the unwanted products to ensure that the toxic materials will not be expose to the environment which includes air, water and soil. This creates awareness for the society to understanding the severity of toxic wastes in affecting the environment and the significance of proper management of disposal of e-waste so that it would be passed down to other generations.

Besides that, the government should implement stricter laws on improper disposal of e-waste and also improve on laws that has been implemented. Proper actions and punishment should be acted upon any parties that go against the law or is attempting to harm the environment. For example, on 26th August 2003, China has implemented “ Law on the prevention of

environmental pollution from solid waste” in order to strengthen environmental management and a law enforced since March 2007, that permits the use of hazardous material for ‘green’ appliances by using only recycling methods to prevent pollution. In the European Union, there is a regulation called Waste Electrical and Electronic Equipment (WEEE) that is effective since August 2004 that provide clear guidelines to production companies and also users on how to handle e-waste in a way that it gives the least environmental adverse effect. On the other hand, in July,1998 a legislation which is the Return, the Taking Back and the Disposal of Electrical and Electronic Appliances (ORDEA) was introduced in Switzerland that includes collection, transportation, recycling and disposal of e-waste. In 2006, The Electronic Product Recycling Law was approved by Washington State Legislature. This law offers free recycling services to their consumers from the manufacturers of the products. Furthermore, since January 1, 2010, Electronic Waste Recycling Act was implemented in the State of Hawaii. This law ensures production companies come up with their own management programs of electronic appliances. It only allow sales of electronic products that are certified with Hawaii Department of Health.Last but not least, in South Africa in 1997, National Waste Management Strategy (NWMS) of South Africa combined with the Polokwane Declaration 43 which focuses to minimize the production of environmental adverse effect of all forms of e-waste. The Integrated Pollution and Waste Management (IP & WM) to manage all the elements in the e-waste. These laws and regulations will aid in reducing e-wastes that could harm the environment because manufacturers will think twice before producing appliances which are not environmental friendly and they will not dispose unwanted waste improperly.

Based on the statistics in 2016, China has the highest e-waste production which is 7.2kg per capita, it could be due to its high population in the country making them to have more purchase and disposal at the same time, followed by United States with the value of 6.3kg per capita and Japan known as the cleanest and most discipline country has 2.kg per capita, followed by India, Germany, Brazil, Russia and France have almost the same amount of e-waste generation which is at 1.4kg per capita. , Indonesia and lastly Italy that has the least e-waste generated with the value of 1.2kg per capita. Each decrease of e-waste generation may be due to effective and safe disposal of the wastes.

To put everything in a nutshell, e-waste is a serious issue and it is toxic to humans and also environment if we do not take any actions to curb this matter. Although e-waste has both negative and positive impacts, it is our responsibility as human to mask out all the negative impacts. It is impossible to remove all e-waste from the surface of the Earth but a better and more modernized waste management program will be very helpful to reduce the waste and also to conserve energy consumption. Every parties play an important role in creating a better recycling and formation procedures so the waste management will be easier and more convenient for the consumers to reach. Help from the authorities should be obtained easily and most importantly, information on proper e-waste disposal should be limitless and can be obtained easily from either mass media and books. Sufficient knowledge regarding this matter will ensure maximum reduction of improper waste disposal. As we all know, most of the materials found in electronics are hazardous, it is best if all electronics devices are environmental friendly which includes being biodegradable so it could benefit the soil prior to disposal. We can come hand in hand to protect the environment so that we can improve our quality of life and make Earth a better place to live in without any environmental adverse effects that would disturb the ecosystem.