**SUMMARY**

This report entails details of my Industrial Training (IT) that was done at Rivers State waste Management Agency (RIWAMA) from November 1st 2020 to April, 21st 2021. The activities carried out during the training include seminar and site visit of waste dump sites in Rivers State, basic training on waste management, types of waste, environmental hazards associated with improper waste management, health hazards associated with improper waste management etc. I was also trained on the purpose of waste management, environmental importance of

**INTRODUCTION**

The Student Industrial Work Experience Scheme (SIWES) is a Skill Training Program initiated in 1973 by the Industrial Training Fund (ITF), its objective is to provide students the opportunity to acquire practical exposure in their respective disciplines during the cause of their studies in the university. SIWES generally offers means of promoting industrialization and an avenue between the world of learning, industry and work in other to bridge the gap between the theoretical aspect of learning acquired in the class rooms and work after graduations. The program has helped students to face practical challenges outside the university environments and has brought about improved behavioral and professional attitudes of young graduates.

SIWES according to Igbinoba (2002) and Abraham-Ibe (2015), is a co-operative industrial internship program that involves institutions of higher learning, industries, the Federal Government of Nigeria, Industrial Training Fund (ITF), Nigeria Universities Commission (NUC), National Board for Technical Education (NBTE) and National Commission for Colleges of Education (NCCE) in Nigeria, aimed at developing the human resources of the nation and building the nation’s work force for economic development of the nation.

SIWES is a fully registered course in the National Open University as a practical oriented program (course) undertaken by level 200 and 300 Students of the Faculties of Science and Agriculture. During the period of my industrial training, I was attached to the Rivers State Waste Management Agency (RIWAMA). My industrial training exercise started on the 1st of November, 2020 and ended on the 21st of April, 2021. During this period, I was exposed to basic information about RIWAMA, waste management, types of wastes, environmental consequences of improper waste management, waste recycling, various waste management strategies, approaches in Rivers State etc.

2.0 Title: Student Industrial Work Experience Scheme (SIWES)

2.1 Esaria, Oniosoya Atiemie

2.2 Mat No: NOU181014700

2.3 Course and Year: ESM299/2020-2021

2.4 Location and Name of Firm of Training: Port Harcourt, Rivers State Waste Management Agency (RIWAMA)

**2.6 ACTIVITIES DURING THE SIWES PERIOD**

During the industrial training period, I was attached to various units of the agency for the duration of six months.

**2.6a: Skills and Practices Acquired**

**Rivers State Waste Management Agency (RIWAMA)**

Rivers State Waste Management Agency is a waste management agency established by law to provide for the collection, treatment and disposal of waste and other related matters in Rivers State. It was formerly known as Rivers State Environmental Sanitation Authority (RSESA), which was created in 1984 to be in charge of traffic management and tackle municipal waste and other related issues. In 2013, the Rivers State House of Assembly created the Rivers State Waste Management Agency and it was assented by the state governor in July 2014.

**Solid Waste Storage**

It is definite that refuse is generated from natural and anthropogenic activities, and all such generated refuse on any premise, for the purpose of sanity need to be properly stored in appropriate containers before collection to final treatment or disposal sites. Refuse generated from houses are stored in household storage facilities, which are small in capacity, leak-proof that has cover. Communal storages are used to temporally store refuse generated from a community with high density population due to industrialization and commercialization (Ovu, 2008).

**Solid Waste Storage Containers**

The owner or occupant of any premises where refuse may be present shall provide and keep on such premises sufficient containers for the storage of all refuse accumulating on the premises between collections. Refuse is extremely variable in

Composition, depending on the income and lifestyle of the generators. Each container shall have a close-fitting top. Containers shall be constructed of flame retardant materials; both the body of the container and the cover. The flame retardant materials make these containers resistant to destruction by flame except flames of very high temperatures.

Dumpsters shall be constructed of metal as shown by Figure 2a is indeed a handled container system, which is a less heavy container that serves as a primary refuse collector of households in a premises and a storage container for the premises before final collection for disposal. Containers on residential properties shall not be placed or maintained in such a way as to unreasonably interfere with the use of the adjoining property. Containers on non-residential properties shall be fully screened and kept in such a manner as not to permit entry of or harborage for animals, insects or other vermin. Containers on residential property shall be stored in such a manner as to be out of view from the street in front of the premises or in a garage located on the premises except so directed by public health officers. Moreover, waste generated by households, offices etc., needed to be properly packaged(i.e. refuse put in black polyethylene or plastic bags) before taken to the central storage container(s) of the premises to prevent littering in case of overflow and facilitate easy transfer of such during collection.

Occupants of single dwelling unit, double dwelling unit and townhouse properties may, but are not required to, place refuse containers adjacent to the street or alley adjoining the dwelling and off the travelled portion of the road but not earlier than 12 hours prior to the day scheduled for collection. Within 12 hours after the scheduled collection, the containers and any material not collected shall be returned by the resident of such dwelling to the same location designated for storage.

Storage facilities or storage containers or bins shall have easy to operate design for handling, transfer and transportation of waste. Figure 2b shows different colored containers designated for different kinds of refuse for segregation of wastes and promote recycling or reuse of segregated materials; containers for storage of bio-degradable wastes (garbage) shall be painted black, those for storage of recyclable wastes shall be painted red, blue and yellow, and those for storage of other non-recyclable wastes shall be painted white or as may be designated by the municipal authorities. Figure 2c is a similar refuse storage container with four wheels (US EPA. 1988a).

Moreover, Municipal authorities shall establish and maintain central storage facilities (which will serve as primary collection point for waste from households, offices and commercial premises) in such a manner as they do not create unhygienic and insanitary conditions around it. The following criteria shall be taken into account while establishing and maintaining storage facilities:

i. Storage facilities shall be created and established by taking into account quantities of waste generation in a given area and the population densities. A storage facility shall be so placed that it is accessible to users.



**Fig. 2a: Two wheels solid waste storage/collection container**

**(Akro Mils model) built for Tilt-trucks**



**Fig. 2b: Different colored storage/collection containers for different kinds of solid wastes to facilitate easy sorting of refuse for proper treatment, recycling and disposal (Adapted from Romania-insider.com)**



**Fig. 2c: Four wheels solid waste storage/collection containers built for tilt-trucks**

**Refuse Collection and Transportation**

The causes of littering and clandestine dumping in urban areas occur because of inadequate availability of litter bins along walkways, inadequate public awareness of their responsibilities as urban dwellers, and inadequate refuse collection service. Littering occurs everywhere and often into drains, while clandestine dumping is commonly on vacant plots, public spaces, or along waterways. Accumulated waste

may attract disease vectors, contribute to clogging of drainage (this is indeed the main cause of severe flooding in cities of most developing countries such as; Bangladesh, Colombia, Thailand, Philippine, Nigeria, Niger etc., and even in some developed countries; France, England, Australia etc.), and sewerage networks; make waste readily accessible to neighborhood animals and birds that may increase the

Chances of bioaccumulation of pollutants in such animals and pollute waterways (Alloway and Ayres, 1997).

There are three basic methods employed in the collection of refuse from both domestic and estate layout:

(a). **The Curb Collection Approach**; this is a strategy where owners or occupiers of residences bring out their waste bins outside their premises at designated points during collection days, especially for residences where the occupier may not be present during collection hours such that the collection or disposal agents on arrival easily carry and empty such refuse containers and leave them at the location they were taken. The owner later takes back the refuse container to its original place.

(b). The alley collection approach; this is a system operated in which refuse bins are located on a narrow path between building, which are later emptied by collection agents during collection hours.

This approach is operationally suitable in estates and houses enclosed in the same premises.

(c). The backyard collection approach; this is the system of collection of refuse from refuse bins or containers located at the back of building or premises; conceived upon the fact that refuse bins or containers with wastes contained therein may create unsightliness and other environmental health nuisances emanating there-from

(Ovu, 2008).

**Refuse collection is enhanced by different container systems:**

(a). the handled container systems; they are less heavy refuse storage collection containers that made emptying of refuse contained therein during collection hours by workmen much easier. These container systems as shown by Figures 2a, 2b and 2c are the preferred and suitable collection containers for residential and commercial premises.

(b). The stationary container systems; these are heavily built collection container with either plastic or metal that are mostly centrally located to collect larger volume of refuse before final transfer for disposal, Figure 3 shows good example of stationary container system. These container systems are mechanically operated and are suitable for communal or institutional collection or a densely populated neighborhood (Conrad *et al*, 1981; Ovu, 2008). The handled container system, the stationary container systems and the transfer stations are all secondary storage/collection facilities. The vehicles used to transfer refuse to the disposal sites are the tertiary and final collection facilities. Vehicles used for transportation of wastes shall be covered. Waste should not be visible to public, nor exposed to open environment preventing their scattering by wind.

Municipal refuse transfer and transportation planning for effective execution should be underpinned by:

(a) The population of the area

(b) The types of refuse generated and the generation capacity of the populace

(c) Availability of vehicles and logistics

(d) The distance between the collection point and the final disposal site

(e) Available funding

(f) Recycling and reuse purposes.

The storage facilities set up by municipal authorities shall be daily attended for clearing of wastes. The bins or containers wherever placed shall be cleaned before they start overflowing. Transportation vehicles shall be so designed that multiple handling of wastes prior to final disposal is avoided, and also to be able to access collection points. Therefore, different categories of vehicles are designated for different types of storage containers and collection routes (Ogbonna *et al.*, 2007). The following refuse vehicles are used for collection and final disposal: (a). The compactor truck; this is a tilt truck specially constructed for sanitary standard collection and disposal of refuse. Shown by Figure 4; the truck is covered, fitted with a lifting and a tipping system, sitting provision for the crew and provision for the keeping of other operational equipments used in the collection and proper positioning of refuse. It is mechanically operated to empty refuse in bins and compact same to accommodate more volume of refuse; it is mechanically operated also to tipping refuse at disposal sites. (b). The pulley-system truck; this is a truck specially design to mechanically haul and transfer/transport refuse in stationary collection containers as that shown by Figure 3 to major transfer stations or disposal site; this truck is suitable for short distance to disposal sites.

(c). Open trucks: these trucks in different sizes are employed in the collection and transportation of refuse to disposal sites, these trucks are sometimes fitted with mechanical tipping systems but are loaded by sanitary laborers and are covered with tarpaulin or wire nets when they are loaded to capacity to prevent scattering and littering of refuse by wind.



**Fig. 3b: Stationary Container System**

**Public Health Effects of Improper Solid Waste Management**

The effects of poor storage and collection of solid waste, and landfill (disposal site) below ideal design and performance standards on public health are overwhelming because life is dependent on water, soil and air. So if these life-supportive factors are contaminated and/or polluted by poor operation of these solid waste management phases; then one can imagine the magnitude of devastation that it could cause to the ecosystem especially man. Some of the associated public health concerns of poor solid waste management approaches are:

**Epidemiological effects**

Anosmia is the human health condition where people lose their sense of smell. This effect is an epidemiological aspect of long time constant exposure to offensive odor caused by diffusion into the atmosphere of hydrogen-sulphide and organo-sulphur compounds associated with improper storage of waste and landfill; that is the reason why refuse collectors and landfill employees cannot smell the odors and neighbors can. Another example of Anosmia often occurs with smokers. That is why when you get into a smoker’s car, you think it smells awful, but they cannot smell a thing.

Lee and Jones-Lee (2007b), well-establish the fact that airborne releases from hazardous chemical sites (including active and inactive landfills) can have a significant adverse impact on the population within the sphere of influence of the site. Hirshfeld *et al.*, (1992), also point out that the non-methane organic compounds in landfill gas contain toxic chemicals that could cause cancer.

According to the Agency for Toxic Substances and Disease Registry (ATSDR, 2006), “Many of the typical landfill gases, notably the alkyl benzenes and the sulphur compounds (both organo-sulphides and acid gases), may present an odor problem that can cause adverse health effects such as mucous membrane irritation, respiratory irritation, nausea, and stress.

If an individual has a pre-existing health condition (e.g., allergies, respiratory illness), these additional health impacts can be significant.” Elliott *et al*., (2001) reported that children born to mothers living near landfills in England tend to have a higher rate of birth defects than the general population.

Kouznetsova, *et al*., (2007**)**, relates residential proximity to hazardous waste sites to hospitalization associated with diabetes. A review of the various studies that have been conducted, however, reveals that the epidemiological approach for discerning health effects associated with populations living near landfills is not sufficiently sensitive to reliably determine whether releases from the landfill are at least in part responsible for the health effects. A complicating factor is that those living near landfills frequently are economically disadvantaged and of a different ethnic mix than the general population.

**Physical effects**

The physical impacts are related to ground and surface water pollution by leachate migration, atmospheric releases of offensive odors and landfill gas, and fires. Landfill gas is known to cause explosions resulting in loss of life and property, and damage to vegetation.

**Social effects**

The social impacts of improper solid waste management include:

along transport route and near landfill due to absence of fence and top cover are unsightly, and the emission of offensive odor around these facilities causes an innate human reactions of anxiety, depression and other negative psychological reactions. These reactions are vital to our existence and dictates how we live in harmony with others (Omubo-Pepple *et al.*, 2010).

**Vermin-Disease Vectors**

Vermin include animals such as rats and other rodents, and insects such as flies. In addition to being a nuisance, vermin can be vectors (carriers) of disease organisms and hazardous chemicals that posed danger to man and the ecosystem. Birds (gulls, crows, etc.) attracted by open dumps and landfills can be a significant problem, where large numbers will congregate and circle the sites, defecating on nearby properties, and constitute an uncontrollable nuisance in the vicinity.

**Breeding Ground for Disease Carrying Organisms**

Poor and unwholesome approach of solid waste management from the point of storage – collection – transportation – final disposal can create favorable conditions for the breeding of vectors or disease carrying agents such as: flies, mosquitoes, cockroaches, worms etc., which is dangerous to the wellbeing of man and the ecosystem.

**Human and Vehicular Traffic Jam**

Overflow of solid wastes from the storage facilities litters and scatters wastes materials. The indiscriminate roadside dumping of waste and the spread of waste of a landfill onto access roads undoubtedly prevents the free flow of human and vehicular traffic at such locations, there by unnecessarily waste man hour in a bit to bypass such nuisances.

**Flooding Menace**

Flooding had become a serious issue of concern of major cities world over, but more in the developing countries; which is seriously attributable to the insensitivity of proper solid waste management. Poor solid waste management had been labeled the major factor to clogging and blocking of existing drainages or water channels (where solid wastes are dumped right into water channels or drainages as shown by Figure 7), which have seriously contributed to severe flooding and associated disasters in the destruction of lives and properties.

**Solid waste**

This includes all solid waste substance which are composed wholly or partly of such materials as garbage, sweepings, cleanings, trash, rubbish, litter, industrial solid wastes or domestic solid wastes including organic wastes or residues of animals, meat, fruit, vegetables, animal excreta or carcasses of animals; including wood, leaves, vegetation, tree trimmings, dead trees and shrubs, branches, sawdust, shavings, grass, paper products, straw, rags, clothing and all other combustibles; waste matter composed of soil, clay, sand, earth, gravel, fill, stones, bricks, plaster, glass, glassware, crockery, ashes, cinders, shells, metal and other non-combustibles; waste debris resulting from the construction, demolition, repair, or alteration of structures or buildings; accumulated waste materials composed of cans, containers, tires, junk, vehicle parts or other substances which may become a nuisance. Solid waste or refuse management is sequential: storage of generated refuse, collection, transportation, treatment and final disposal of such refuse, which must be done in established standards to minimize the adverse effects of refuse on public health and the environment.

**Combustible and Non-combustible wastes**

Combustible wastes can be characterized by:

▪ Higher and lower heating value (HHV, LHV),

▪ Short or proximate analysis, i.e. a determination of their moisture, ash and

combustible content, further subdivided into volatile matter and fixed carbon.

▪ Ultimate analysis, i.e. element analysis of the combustible fraction and ash.

Other important properties are:

▪ Form and size, physical and bulk density, flammability and putrescence of solid waste.

▪ Vapor pressure, boiling point, density, viscosity, explosion limits, flash point, self-ignition temperature, corrosiveness, toxicity, and gas evolution or decomposition during preheating, possible auto-oxidation, polymerization or other incontrollable, exothermic or dangerous reactions of liquid waste.

▪ Density, explosion limits, toxicity and corrosiveness of off-gases.

Heating values determine whether waste is highly, moderately or almost not combustible. Heating values are required to establish the capacity and heat balance over the furnace, the combustion air requirements, and to decide whether heat recovery, combustion air preheating, or disposal in combination with other wastes are desirable (Buekens and Schoeters, 2006).

**Effects of Poor waste management**

According to*Environmental Management of Urban Solid Wastes in Developing Countries,* (2002), the effects of poor waste management include:

**1. Soil contamination**

Soil contamination is the No. 1 problem caused by improper waste removal and disposal. Some wastes that end up in landfills excrete hazardous chemicals that leak into the soil. Take the case of plastic bottles. When they eventually break down, they release DEHA, a carcinogen that affects our reproduction systems, causes liver dysfunction, and weight loss. Soil contamination does not only affect plant growth, it is also unhealthy to humans and animals feeding on those plants.

It is therefore important that every household takes recycling to heart. Plastics, metals, paper, and electronic wastes can be recycled at your local recycling centres. If everyone takes time to segregate and sort their recyclable wastes and bring them to recycling centers, the bulk of waste that will be removed from the landfills.

**2. Air contamination**

Waste that contains hazardous chemicals, such as bleach and acids, needs to be disposed of properly, and only in approved containers with correct labels.

Some papers and plastics are burned in landfills, emitting gas and chemicals that hurt the ozone layer. Waste that releases dioxins are also dangerous and pose a health risk when they diffuse into the air that we breathe. Add to that the methane gases that decomposing wastes release.

Finally, landfill gas produced by the decomposing wastes, can be explosive and can harm nearby communities

**3. Water contamination**

Hazardous wastes in the environment leech into the ground, and ultimately, into ground water. This water is used for many things, from watering the local fields to drinking. Toxic liquid chemicals from waste can also seep into water streams and bodies of water. Untreated sewage can threaten marine life that comes into contact with the contaminated water. It can destroy and suffocate marine habitats, such as corals. Contaminated water is also dangerous and harmful to humans who consume fish and other marine life.

**4. Bad impact on human health**

Improper disposal of waste can greatly affect the health of the population living nearby the polluted area or landfills. Waste disposal workers and other employees in these landfill facilities are at a greater risk. Exposure to improperly handled wastes can cause skin irritations, blood infections, respiratory problems, growth problems, and even reproductive issues.

**5. Impact on animals and marine life**

It cannot be stressed enough: our carelessness with our waste and garbage does not just affect us. Animals likewise suffer the effects of pollution caused by improperly disposed wastes and rubbish. Styrofoam and cigarette butts have been known to cause deaths in marine animals who consume them. Animals who consume grasses near contaminated areas or landfills are also at risk of poisoning due to the toxins that seep into the soil

### 6. Disease-carrying pests

Mosquitoes and rats are known to live and breed in sewage areas, and both are known to carry life-threatening diseases. Mosquitoes breed in cans and tires that collect water, and can carry diseases such as malaria and dengue. Rats find food and shelter in landfills and sewage, and they can carry diseases such as leptospirosis and salmonellosis. Moreover, moisture production from waste is a breeding ground for [mould](https://mouldremoval.net.au/mould-prevention/). It’s bacteria that has the ability to spread and grow given the appropriate conditions, such as moisture production from appliances and food scraps.

### 7. Adversely affect the local economy

Everyone wants to stay and live in a healthy, clean, fresh, and sanitary place. A city with poor waste management will certainly not attract tourists or investors. Landfill facilities that are mismanaged can cause the local economy to sink, which can then affect the livelihood of the locals.

**1.4 Hierarchy of waste Management**

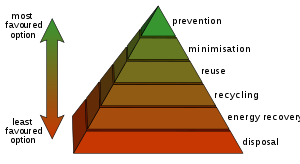
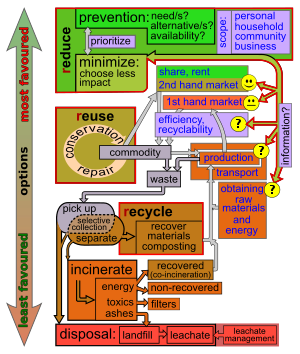
Waste hierarchy is a tool used in the evaluation of processes that [protect the environment](https://en.wikipedia.org/wiki/Environmental_protection) alongside [resource](https://en.wikipedia.org/wiki/Resource_consumption) and [energy consumption](https://en.wikipedia.org/wiki/Energy_consumption) from most favorable to least favorable actions. The hierarchy establishes preferred program priorities based on [sustainability](https://en.wikipedia.org/wiki/Sustainability). To be sustainable, waste management cannot be solved only with technical end-of-pipe solutions and an integrated approach is necessary (Environmental Protection Agency, 2013).

The waste management hierarchy indicates an order of preference for action to reduce and manage waste, and is usually presented diagrammatically in the form of a pyramid.  The hierarchy captures the progression of a material or product through successive stages of [waste management](https://en.wikipedia.org/wiki/Waste_management), and represents the latter part of the [life-cycle for each product](https://en.wikipedia.org/wiki/Product_lifecycle).

**Life Cycle Thinking**

All products and services have [environmental impacts](https://en.wikipedia.org/wiki/Environmental_impact), from the extraction of [raw materials](https://en.wikipedia.org/wiki/Raw_materials) for production to manufacture, distribution, use and disposal. Following the waste hierarchy will generally lead to the most [resource-efficient](https://en.wikipedia.org/wiki/Resource-efficient) and environmentally sound choice but in some cases refining decisions within the hierarchy or departing from it can lead to better environmental outcomes (United Nations Environmental Program, 2013).

[Life cycle](https://en.wikipedia.org/wiki/Product_lifecycle) thinking and assessment can be used to support decision-making in the area of [waste management](https://en.wikipedia.org/wiki/Waste_management) and to identify the best environmental options. It can help policy makers understand the benefits and trade-offs they have to face when making decisions on waste management strategies. [Life-cycle assessment](https://en.wikipedia.org/wiki/Life-cycle_assessment) provides an approach to ensure that the best outcome for the environment can be identified and put in place It involves looking at all stages of a product’s life to find where improvements can be made to reduce environmental impacts and improve the use or [reuse](https://en.wikipedia.org/wiki/Reuse) of resources. A key goal is to avoid actions that shift negative impacts from one stage to another. Life cycle thinking can be applied to the five stages of the waste management hierarchy (Hansen et al., 2002).

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**Plate 1: Hierarchy of waste management**

**Challenges confronting solid waste management in Nigeria**

Over the years, the effective management of refuse or solid waste has been a major

Problem in the city of Port Harcourt, capital of Rivers State in the Niger Delta region of Nigeria. This, according to Gobo (2002), may be due to several factors, including, a poorly managed and uncoordinated approach to waste management practices, unhealthy cultural attitudes and habits, urbanization patterns, population growth, non-mechanized waste disposal methods and poor financing of the sector. Gobo (2002) further observed that solid waste management system options that have been carried out without success to solve the problem of refuse disposal in Port Harcourt over the years include incineration, composting, transfer stations and landfilling.

In Port Harcourt, refuse is generated from domestic, commercial and industrial sources. The rate of generation has been steadily increasing and will likely continue to do so in future with the rapid increase of population in the city. Indiscriminate dumping of refuse in and around the city is now very common. Most of these wastes appear to come from domestic sources and are characterized mostly by household waste. These range from food waste, paper, polythene, textiles, wood, and glasses, tin and plastic. Heaps of these wastes are conspicuous on roads and public places, clogging drains and contaminating water sources close to dump sites. Residential premises, streets, fields, market places, industries, commercial centers, institutions and communities within the city are littered with refuse. In some cases, roads are completely blocked by indiscriminate, dumping of solid waste.

Efforts made by non-governmental agencies and organizations, the private sector, and state government to rid the environment of these wastes have proved abortive.

According to Ayotamuno and Gobo (2004), the obstacles to an effective municipal solid waste management in Port Harcourt include unskilled manpower, lack of finance and inadequate enlightenment of the public on the need to properly dispose of their waste and the attendant health implications of doing the contrary. Apart from these obvious hindrances, one of the part of the world is the ambiguity in the Nigerian environment law on the authority most important factors this study identified as affecting waste management in this (i.e. state government or local council) vested with the responsibility of collecting and disposing of wastes in the states. From the last section, it was obvious that the Rivers State government and not the Port Harcourt city council may have been vested with the authority.

Before this article examines this issue, it is important to stress that waste management all over the world, including Nigeria, is a serious issue and so should not be politicized. It is for this reason and in line with Agenda 21 document which

emphasizes the need for all countries to maintain the quality of the Earth’s environment and especially achieve environmentally-sound and sustainable development, that the Federal Government of Nigeria formulated the national policy on environment in 1989, which provides a general thrust for the management of the Nigerian environment for effective waste management in the country. The policy requires the following, among others:

The pyramid in Figure 4 gives detail of the model. The pyramid consists of persuasion, a warning letter, a civil penalty, a criminal penalty, license suspension, and license revocation.



**Problems Encountered**

During my SIWES training period, I encountered so many challenges and I things a lot can be done to address such issues for students undergoing the industrial training. A few of the problems are highlighted below and are classified into:Industrial challenges, Health and Safety problem, Lack of Finance,

* **Industrial challenges:** This was one of the major challenges I faced at the University’s Demonstration Farm during the period of my training. There was lack of sophisticated machineries which posed a great challenge as work that required the use of machines had to be done manually by students. For instance at IARD, bare hands were used in weeding of the grasses instead of hand gloves as a result I sustained several injuries on my palms.
* **Health and Safety problem:** No adequate measures were taken in regards to the safety of the students at farm. I also noticed that student who sustained injuries in course of work at the farm were allowed to treat themselves at their own.
* **Lack of Finance:** Students were not given any kind of financial support throughout the entire SIWES program as students had to bear the cost of their transportation throughout the training period and this posed a great challenge for me personally. Generally, we had to fend and provide totally for ourselves at our place of attachments.

**RELEVANCE OF SIWES PROGRAMME**

* It exposes to real life working experience outside classroom walls.
* It empowers students with technical skills.
* As a result of my training experiences throughout this period especially in the areas of establishment, management, production, processing and marketing of farm products I can do virtually anything that will serve as a source of income.

**2.7 CONCLUSION AND GENERAL APPRAISAL**

I will not fail to state the fact that the SIWES training program is indeed an entrepreneurial and practical course. The program helped me to acquire different skills required in my field of study. It has also exposed me to other things, such as handling of different farm equipment used in my field of study, interaction with technicians and personnel in my field of study.

I would like to encourage every student to take the SIWES program serious. However the industrial training should not be limited to their various area of specialization alone, but also dive into to other areas in other to broaden their knowledge and experience.

**2.8** **ACKNOWLEDGEMENT**

First I appreciate the almighty God for life, my daddy who despite all challenges here and there never relented nor abdicated from seeing me through my educational pursuit especially during the period of my industrial training experience. I will not fail to acknowledge the effort of my parents, Late. Mr. Esara Atimie Benjamin and Mrs. Anume David mother whom in all ramifications have proven to be the best parents anyone could ever hope for. I also thank my siblings Esara Onisobilemetu Atimie, and Bliss Esara Atimie for their assistance. I am also grateful to my boss and hersband, Mrs. Ufoma Harry and Mr. Harry Enewaji for their sponsorship during my programme. I Pray that God in heaven bless you all Amen.

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