OCCUPATIONAL ANALYSIS

ENVIRONMENTAL MANAGEMENT AND POLLUTION CONTROL

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ABSTRACT

An Occupational Analysis (OA) is the process of identifying the work scope of the occupational area in terms of competencies. It is used to analyse skilled human resource competency requirement for the industry. The development of the Occupational Structure is a preliminary process in developing relevant National Occupational Skills Standard (NOSS). The NOSS in turn will be developed to be used as the basis to conduct skills training and certification of competent personnel. In order to complete the Occupational Analysis on the Environmental Management and Pollution Control job areas, all the information related to the job area was gathered through literature survey and interviews with the experts from the public and private sectors. A workshop was held in an attempt to get a better understanding of the organisational structure, job titles, hierarchy objectives and primary activities of the job titles. This document is divided into several chapters, the first being an industry overview highlighting the definition and scope of the industry, the current analysis of the local industry and its skilled worker requirements, Government bodies and development plans supporting the growth of the industry, then the next chapter will explain the methodology of the Occupational Analysis development. The final chapters will present the findings of the Occupational Analysis that is translated into the Occupational Structures, levels of competencies and critical areas. These findings will in turn be the basis of reference for the development of the National Occupational Skills Standard (NOSS) document. The NOSS will serve not only as a reference of skills standards for certification but also as a guide to develop the skills training curriculum. In order to conduct the Occupational Analysis on the Environmental Pollution job areas, all the information related to the aforesaid industry was gathered through literature survey and further discussed in workshop sessions with experts from the industry. During the development workshops, the panel members had identified five sub sectors, 18 job areas and a total of 106 job titles that reflect the main category of Environmental Management and Pollution Control in Malaysia. The five Green Technology sub sectors are Compliance Management, Sustainable Practice,

Infrastructure, Environmental Pollution Research & Development (R&D) and Environmental Crisis Management. Environmental Management and Pollution Control focus in area where business activities give high impact to the environment and require strict control and monitoring to mitigate the impacts. In Malaysia, this sector has great employment opportunities. Furthermore, with strong support from the government and private sectors, these areas could expand further in the future.

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LIST OF ABBREVIATIONS

DESCUM	Development of Standard and Curriculum
DSD	Department of Skill Development
DRG	Diagnosis Related Group
ETP	Economic Transformation Programme
OA	Occupational Analysis
OAA	Occupational Area Analysis
OD	Occupational Description
OS	Occupational Structure
OAS	Occupational Area Structure
MOSQF	Malaysian Occupational Skills Qualification Framework
MQA	Malaysia Qualification Agency
MSC	Malaysian Skills Certificate
NOSS	National Occupational Skills Standard
SHE	Safety, Health & Environmental (SHE)
GHG	Green House Gas
GPP	Green Public or Private Procurement
MSW	Municipal Solid Waste
PCD	Pollution Control Department
EECD	Energy Efficiency & Conservation Department
WRMD	Waste & Resource Management Department
CRPNS	Centre for Radiation Protection and Nuclear Science
DOE	Department of Environment
SPAN	National Water Service Commission
PPSPPA	Solid Waste Management & Public Cleansing Corporation
AELB	Atomic Energy Licensing Board
NOSCP	National Oil Contingency Plan
NOSCC	National Oil Spill Control Committee
MARDEP	Marine Department of Malaysia

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1. INTRODUCTION

1.1 Introduction

This chapter will explain the objectives, scope and problem statement of the Occupational Analysis for the Environmental Management and Pollution Control Industry. The background of Occupational Analysis and its function in skills training and curriculum development is also elaborated in this chapter.

1.1.1 Introduction To Occupational Analysis Development

An Occupational Analysis (OA) is the process of identifying the sectors, sub-sectors, job areas and job titles for a particular industry in the form of Occupational Structure (OS). The Occupational Analysis (OA) will also look at other elements such as common job titles and levels of competency for skilled personnel in the industry, job functions, industry overview, skills demand and individual job descriptions. Job scopes of each job title will be detailed out in the Occupational Description (OD). Every job title will be identified according to its level defined in the Malaysian Occupational Skills Qualification Framework (MOSQF) level descriptor (refer to Annex 1). It must be highlighted that the occupational structure should not reflect the Organisational Structure but rather the competency levels and possible career path for personnel under a particular sector in the industry.

The OA requires input from all parties especially industry players, statutory bodies, training institutions among others. The identified job titles obtained during the OA will be used as reference during National Occupational Skills Standard (NOSS) development. By developing the NOSS, personnel in the industry can be deemed certified by undergoing three methods of skills training certification. The first of the three methods are certification through full time

training where the candidate will undergo training from a minimum of 3 months for entry level certificates (Malaysia Skills Certificate 1, 2 and 3) or up until over a year for Malaysian Skills Diploma or Malaysian Skills Advanced Diploma. The second method is via the apprenticeship scheme which is called the National Dual Training System (NDTS) where the candidate can undergo training for a certain block of time then be attached to a company in the related industry as approved by the Department of Skills Development, Ministry of Human Resources. The third method is via Accreditation of Prior Experience where the candidates that possess working experience may be able to be certified based on duration of experience and proof of work. Therefore, it can be said that with the development of the OA and subsequently the relevant NOSS will provide wider opportunities for personnel to be trained and certified. Figure 1.0 shows the significance of the Occupational Analysis (OA) for policy and NOSS development used in Malaysian skills training.

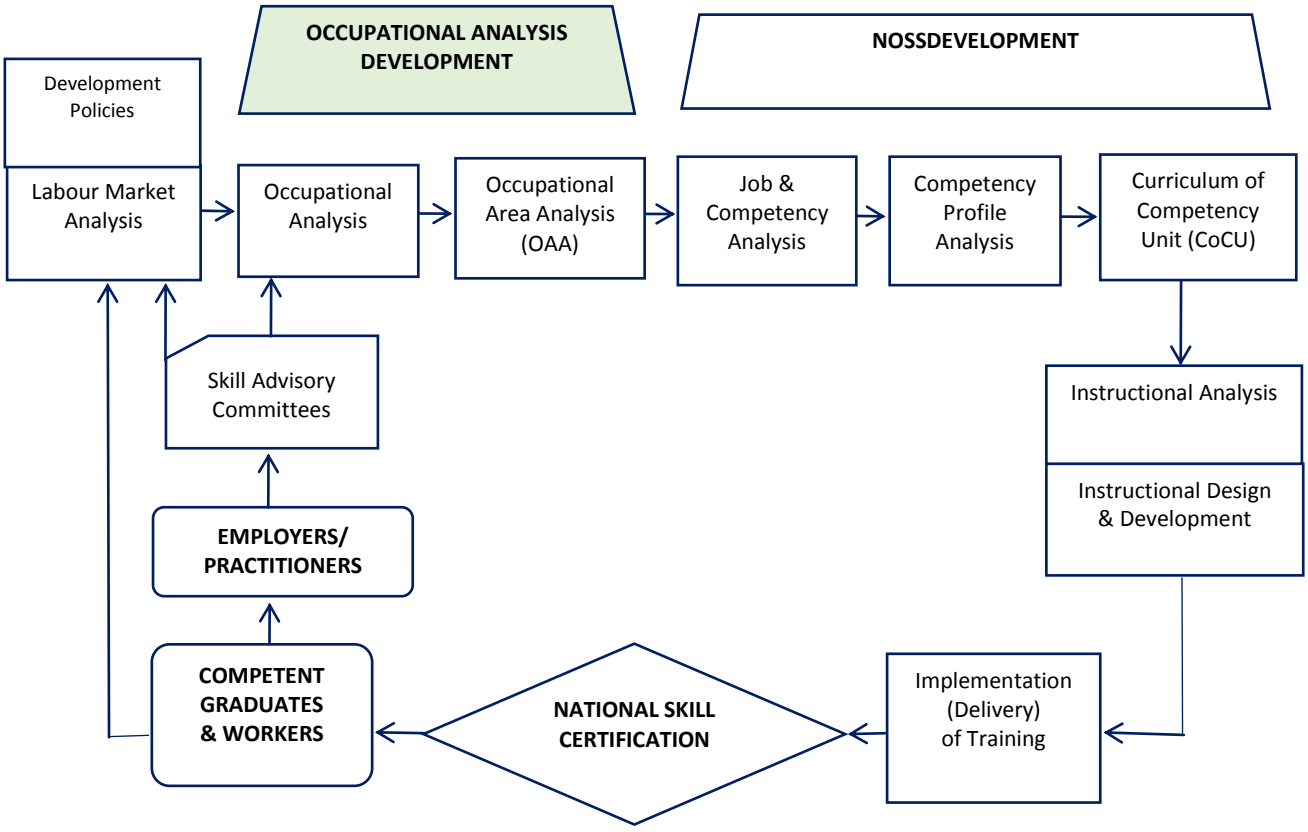

Figure 1.0: A Competency-Based Model for Skills Training in Malaysia

1.1.2 Malaysian Occupational Skills Qualification Framework (MOSQF)

The development of the OA is ensured to comply with the MOSQF. MOSQF is a framework that describes all skills qualifications awarded under the Malaysian Skills Certification System. It is an 8-tier framework that consists of 8 levels which reflect skills competencies in an occupational area (refer to Annex 1). However, for training purposes, only the first 5 levels are being offered with skills qualifications namely Malaysian Skills Certificate (MSC) Level 1, MSC Level 2, MSC Level 3, MSD Level 4 (Malaysian Skills Diploma) and MSAD Level 5 (Malaysian Skills Advance Diploma).

MOSQF will serve as an instrument that develops and classifies skills qualifications based on a set of criteria guided by the National Skills Development Act 2006 (Act 652). It was benchmarked against international good practices in defining its level description and was developed in line with the Malaysian Qualifications Framework (MQF). It is aspired to become the national skills framework for all parties of interest such as individuals, skills training providers, the Government, associations, professional bodies, the industry sectors and the Malaysian communities.

1.2 Objectives

The objectives of this Occupational Analysis are as below:

i. To identify the Occupational Structure and job titles available in the Environmental Management and Pollution Control industry;
ii. To identify the levels of competency required beginning at the entry levels until the highest level of competency;

iii. To identify the job scope, job area and role of each job title identified including the possibility of multi skilling between different areas as to increase employability; and

iv. To identify the specific job titles that are considered critical and require immediate development of Standards & Curriculum.

1.3 Scopes

The scope of this particular OA is focused on the Environmental Management and Pollution Control job areas and all areas that are defined to be under the Environmental Management and Pollution Control job areas. These areas include compliance management, sustainable practice, infrastructure, environmental pollution research & development and environmental pollution crisis management under the Environmental Management and Pollution Control job areas. However, due to the wide scope, it can only be done in another analysis as to be identified and suggested later in this report.

The Occupational Analysis on the Environmental Management and Pollution Control job areas will cover the scope of:

i. Occupational Structures;
ii. Occupational Area Analysis; and
iii. Occupational Descriptions

1.4 Problem Statements, Issues and Challengers

There have been various National Occupational Skills Standard (NOSS) documents developed for the Environmental Management and Pollution Control Industry since the year 2000. However, a complete analysis on the Occupational Structure of the Environmental Management and Pollution Control job areas has not been undertaken before. Therefore, this occupational analysis is carried out

in order to identify the overall structure and available career paths for the Environmental Management and Pollution Control job areas.

1.5 Conclusion

This chapter has discussed the background of the study, problem statement, objectives, research methodology and scope of the analysis. The demand for sufficient skilled personnel in environmental pollution has increased where the development of skilled manpower is timely. With the Occupational Structure clearly defined, the industry stakeholders will be able to identify areas that will require more intensive efforts in human capital development. The Occupational Structure that will be the outcome of this analysis shall be utilised as a 'blueprint' of the manpower planning for this industry. The next chapter will discuss the literature review of the industry.

2. LITERATURE REVIEW

2.1 Introduction

Malaysia is historically one of the environmentally rich and abundant in natural resources and high biodiversity countries in the world consists of renewable and non-renewable resources that may include in every sectors of the country including the mineral resources, forestry, fisheries, agriculture, marine, poultry etc. But this rich environment along with natural resource with the heritage and traditions have been facing numerous problems such as climate change, biodiversity degradation, increasing scarcity unwise use of natural resources and hazardous waste management.

Pollution is the result of exponential growth and development in the nation. By all means it is hampering the quality of human life and creating an imbalance in the ecology. Pollution is the result of progression and development that is occurring on a regular basis. With the growth of technology more and more development is taking place in order to improve the quality of human life. This series is certainly giving high level of comfort and a rich lifestyle to all humans but is sadly diminishing the worth of human health; the need to have a good and healthy environment is ignored.

2.1.1 Overview of Environmental Pollution

Environmental management is a mixture of science, policy, and socioeconomic applications. It focuses on the solution of the practical problems that humans encounter in cohabitation with nature, exploitation of resources, and production of waste. In a purely anthropocentric sense, the central problem is how to permit technology to evolve continuously while limiting the degree to which this process alters natural ecosystems. Environmental management is thus intimately

intertwined with questions regarding economic growth, equitable distribution of consumable goods, and conserving resources for future generations.

Here are some of the most common types of environmental pollution that are gradually bringing people to a morbid stage:

(i) Noise Pollution

Any kind of noise that is unpleasant to human ears is considered as noise pollution. Loud and hard sounds coming from factories, machinery, automobiles, trains, fire crackers, and explosives are also contributing to noise pollution. It is also caused by some natural calamities like harsh winds and volcanic eruptions. Both natural and artificial factors contributing to noise or sound pollution have their impact on human health. This kind causes irritation, hearing issues, and headache. However these are not major issues but extremely unpleasant sounds can be very harmful as they can cause an increase in the cholesterol, constrict arteries, an increase in the flow of adrenaline, and also forces the heart to function at a faster pace. All these can be life threatening as these factors can lead to heart attacks and strokes.

Noise pollution refers to undesirable levels of noises caused by human activity that disrupt the standard of living in the affected area. Noise pollution can come from:

- Traffic
- Airports
- Railroads
- Manufacturing plants
- Construction or demolition

(ii) Water Pollution

Any kind of harmful components or contaminants entering the water bodies like river, oceans, lakes, ponds, and streams cause water pollution. Many human activities like washing cleaning, and dumping waste significantly contribute to water pollution. The soaps and detergents used these days are also made of harmful chemicals and synthetic materials that produce more contaminants in water. Furthermore, dumping waste like cans, bottles, and plastic materials also pose danger. It not only destroys marine life but is also hazardous to human life. This kind of polluted water is not safe for drinking, agriculture or even industrial use. Causes of water pollution include:

- increased sediment from soil erosion;
- improper waste disposal and littering;
- leaching of soil pollution into water supplies; and
- organic material decay in water supplies.

(iii) Air Pollution

Air pollution is caused by discharge of harmful substances in the air. One of the key contributing factors is automotive pollution. With the growing technology, the number of vehicles on road is dramatically increasing which is eventually giving a pushing up the level of air pollution. Apart from this, industries indulged into thermal power plant, cement, steel, mines, petro-chemicals, and steel also generate harmful substances that are released into the atmosphere. This kind of pollution has caused harm to the protective ozone layer in the atmosphere. This layer protects the earth from the harmful effects of ultra-violet rays but thinning of this layer is causing a danger to human life. Air pollution comes from a wide variety of sources. Some of the most excessive sources include:

- Vehicle or manufacturing exhaust;
- Forest fires, volcanic eruptions, dry soil erosion, and other natural sources; and
- Building construction or demolition.

(iv) Radioactive Pollution

Radioactive pollution is a rare kind but is detrimental. It is caused by accidents in the nuclear power plant, improper disposal of nuclear waste, and operations of uranium mining. Radioactive pollution causes cancer, various kinds of birth defects, and many other serious health issues. Sources of radioactive contamination include:

- nuclear power plant accidents or leakage;
- improper nuclear waste disposal; and
- uranium mining operations.

(v) Soil Pollution

Soil pollution, also known as land pollution, is defined as the contamination of soil. These days many artificial substances and synthetic pesticides are used for agriculture. Such substances release contaminants that create an imbalance in the soil and also prevent natural growth of the plants cultivated on polluted land. Key factors contributing to soil pollution are sewage pills, hazardous waste, non-sustainable agriculture practice, use of inorganic pesticides, deforestation, strip mining, and certain human activities like dumping and littering. Soil pollution sources include:

- hazardous waste and sewage spills;
- non-sustainable farming practices, such as the heavy use of inorganic pesticides;
- strip mining, deforestation, and other destructive practices; and
- household dumping and littering.

(vi) Scheduled Waste Pollution

A formal definition of "scheduled waste" is: a material or article containing a chemical, or mixture of chemicals, exceeding the threshold concentration and threshold quantity, which include:

- organic in nature;
- resistant to degradation by chemical, physical or biological means;
- toxic to humans, animals, vegetation or aquatic life; and
- bioaccumulative in humans, flora and fauna.

(vii) Odour Pollution

An odour is the organoleptic attribute perceptible by the olfactory organ on sniffing certain volatile substances. It is a property of odorous substances that make them perceptible to our sense of smell. The term odour refers to the stimuli from a chemical compound that is volatilised in air. Odour is our perception of that sensation and we interpret what the odour means. Odours may be perceived as pleasant or unpleasant. The main concern with odour is its ability to cause a response in individuals that is considered to be objectionable or offensive.

(viii) Marine Pollution

Marine pollution occurs when harmful effects, or potentially harmful effects, can result from the entry into the ocean of chemicals, particles, industrial, agricultural and residential waste, noise, or the spread of invasive organisms. Most sources of marine pollution are land based. The pollution often comes from non-point sources such as agricultural runoff and wind-blown debris.

Oil spill is a type of marine pollution. An oil spill is the release of a liquid petroleum hydrocarbon into the environment, especially marine areas, due to human activity, and is a form of pollution. The term is usually applied to marine oil spills, where oil is released into the ocean or coastal waters, but spills may also occur on land. Oil spills may be due to releases of crude oil from tankers, offshore platforms, drilling rigs and wells, as well as spills of refined petroleum products (such as gasoline, diesel) and their by-products, heavier fuels used by large ships such as bunker fuel, or the spill of any oily refuse or waste oil.

(ix) Industrial Effluent Discharge

Industrial effluent is the materials generally discarded from industrial operations or derived from manufacturing processes.

(x) Domestic Effluent Discharge

Domestic effluent is all the discharges from households, commercial facilities, hotels, septage and any other entity whose discharge includes the following;

a) Toilet flushing (black water)
b) Discharges from showers, wash basins, kitchens and laundries (grey water)
c) Discharges from small industries, provided their composition and quantity are compatible with treatment in a domestic wastewater system

2.1.2 Overview of Carbon Footprint

The term 'carbon footprint' has become tremendously popular over the last few years and is now in widespread use across the media. With climate change high up on the political and corporate agenda, carbon footprint calculations are in strong demand. Numerous approaches have been proposed to provide estimates, ranging from basic online calculators to sophisticated life-cycleanalysis or input-output-based methods and tools. Despite its ubiquitous use however, there is an apparent lack of academic definitions of what exactly a 'carbon footprint' is meant to be

"The carbon footprint is a measure of the exclusive total amount of carbon dioxide emissions *that is directly and indirectly caused by an activity or is accumulated over the life stages of a product."*

This includes activities of individuals, populations, governments, companies, organisations, processes, industry sectors etc. Products include goods and services. In any case, all direct (on-site, internal) and indirect emissions (off-site, external, embodied, upstream, downstream) need to be taken into account.

(*http://www.censa.org.uk/docs/ISA-UK_Report_07-01_carbon_footprint.pdf)*

Date assessed : 20th June 2013

An individual's, nations, or organization's carbon footprint can be measured by undertaking a Greenhouse Gas (GHG) emissions assessment or other calculative activities denoted as carbon accounting. Once the size of a carbon footprint is known, a strategy can be devised to reduce it, for example by technological developments, better process and product management, changed Green Public or Private Procurement (GPP), carbon capture, consumption strategies, and others.

Malaysia's pledge to reduce carbon dioxide emissions by up to 40% by 2020, compared to 2005 levels, demonstrates the seriousness the Malaysian government on managing environmental issues.

2.1.2 Overview of Incineration Technology

Incineration or "mass burning" is the common Municipal Solid Waste (MSW) disposal method globally after landfill. It is one of the most expensive waste treatment facilities especially when equipped with energy recovery and advanced emission control technology. Besides incineration, other thermal treatment technology such as pyrolysis and gasification are typically operated in small scale plants. Incineration can reduce the mass of MSW to less than 10% and hence increase the lifespan of landfills. Compared to landfill, the advantages of incinerator (with energy recovery) are typically the environmental benefits such as lower carbon emission, avoidance of land contamination, higher energy recovery per ton, outputs of ashes in inert form, (chemically stable without odor) and requires a minimum area of land. Economically, the benefits are the location which can be near to city and land value with less depreciation unlike landfill. For a sanitary landfill, post-closure of at least 30 years is required after the operational phases. After that, the land can only be used as low value purposes such as recreational area or golf course as the soil structure is not suitable for building construction, especially high rise.

However, the drawbacks of the financial economic of incinerator is much higher that its benefits. The capital and operational cost of incinerator is much higher than a sanitary landfill. The CapEx of an incinerator with same capacity with a sanitary landfill is at least 3 times more expensive while the OpEx is 10 times higher.

2.2 Existing National Occupational Skills Standard (NOSS)

In order to analyse the environmental pollution sectors, the existing National Occupational Skills Standard (NOSS) and Occupational Structure documents were referred. At this current moment, there is no analysis being done under the Environmental Management and Pollution Control job area

2.3 Current Analysis, Industrial Demand and Statistics

Over the last five decades, Malaysia has undergone rapid economic, social and environmental change, a process which is still continuing. The pursuit of socio-economic progress has been accompanied by an unprecedented rate of change in the natural environment. In parallel to this development, governmental responses have also adapted over time to address emerging environmental situations.

Environmental pollution problems in Malaysia have a long history. River pollution by mine wastewater and sludge began with the rapid development of tin mining, a traditional industry that started at the turn of the century about 100 years ago. In later years, other traditional industries such as natural rubber and palm oil production began in earnest, and wastewater from the factories caused further pollution of rivers and seas. From the late 1960s, Malaysia pursued rapid industrialization supported by foreign investment, but the result of industrialization was a raft of pollution problems, caused by industrial wastewater and other wastes, which became very apparent from the 1970s. In recent years, air pollution caused by the tremendous increase in road traffic that has accompanied economic development and water pollution from household wastewater, have become obvious problems that particularly affect urban areas.

Another recent problem is haze (smoke and fog caused by particulate matter), which occurred on a large scale for several months in 1997 and caused respiratory complaints and other health problems in the community. In this incident, the haze was caused by the huge forest fires on Kalimantan Island and in other parts of Indonesia, across the sea from Malaysia. It is therefore a unique environmental problem that will not be easy to solve. Other problems noted in Malaysia are oil pollution of the sea and deforestation due to regional development of various kinds.

Although Malaysia has a host of environmental problems that demand solution, including those associated with scheduled wastes, the government is implementing more effective pollution controls than other Southeast Asian nations. It is also committing resources to construction of environmental infrastructures, such as sewerage systems to deal with household wastewater. Given these positive moves, environmental problems in Malaysia do not appear to be as grave as in the Philippines, Indonesia and Thailand.

2.4 International Benchmarking

A "benchmark" is a comparative measurement. It is a standard or point of reference used in measuring and judging quality or value. "Benchmarking" is the process of comparison. The process of continuously comparing and measuring an organization against business leaders anywhere in the world to gain information that will help the organization take action to improve its performance. In practice it is the *process* of undertaking benchmarking that generates most benefits because it challenges current norms. Benchmarking data can be obtained from international, regional, and national sources. International organisations are one source of benchmarking data, and increasingly make information available for online access through the Internet.

In order to develop a skilled and efficient environmental pollution workforce, a benchmark of the occupational structure with other countries must be done in order to measure whether the occupational structure of Malaysia's environmental pollution industry is at par with other developing and advanced countries.

The findings for this section were obtained via a combination of analysis done by job matching organisations and observation of job openings offered in each country's job agency portals.

Therefore, the development of Malaysia's environmental pollution occupational framework is done with these international benchmarks in mind, but is specifically guided by the local environmental pollution area of occupation and government human capital development plans.

2.4.1 Japan Environmental Pollution Overview

Japan's environmental policy has reflected a tenuous balance between economic development and environmental protection. As the world's leading importer of both exhaustible and renewable natural resources and one of the largest consumers of fossil fuels, the Japanese government takes international responsibility to conserve and protect the environment.

Environmental pollution in Japan has accompanied industrialization since the Meiji period. One of the earliest cases was the copper poisoning caused by drainage from the Ashio Copper Mine inTochigi prefecture, beginning as early as 1878. Repeated floods occurred in the Watarase River basin, and 1,600 hectares of farmland and towns and villages in Tochigi and Gunma prefectures were damaged by the floodwater, which contained excessive inorganic copper compounds from the Ashio mine. The local farmers led by Shozo Tanaka, a member of the Lower House from Tochigi appealed to the prefecture and the

government to call a halt to the mining operations. Although the mining company paid compensatory money and the government engaged in the embankment works of the Watarase River, no fundamental solution of the problem was achieved. The pollution had decreased since the early 20th centuries.

In the 1990s, Japan's environmental legislation was further tightened. In 1993 the government reorganized the environment law system and legislated the Basic Environment Law and related laws. The law includes restriction of industrial emissions, restriction of products, restriction of wastes, improvement of energy conservation, promotion of recycling, restriction of land utilization, arrangement of environmental pollution control programs, relief of victims and provision for sanctions. The Environment Agency was promoted to full-fledged Ministry of the Environment in 2001, to deal with the deteriorating international environmental problems.

In a 1984 the Environmental Agency had issued its first white paper. In the 1989 study, citizens thought environmental problems had improved compared with the past, nearly 1.7% thought things had improved, 31% thought that they had stayed the same, and nearly 21% thought that they had worsened. Some 75% of those surveyed expressed concern about endangered species, shrinkage of rain forests, expansion of deserts, destruction of the ozone layer, acid rain, and increased water and air pollution in developing countries. Most believed that Japan, alone or in cooperation with other industrialized countries, had the responsibility to solve environmental problems. In the 2007 opinion poll, 31.8% of the people answered environmental conservation activity leads to more economic development, 22.0% answered the environmental activity does not always obstruct the economic, 23.3% answered environmental conservation should be given preference even if it may obstruct the economic and 3.2% answered economic development should place priority than environmental conservation.

The OECD's first Environmental Performance Review of Japan was published in 1994, which applauded the nation for decoupling its economic development from air pollution, as the nation's air quality improved while the economy thrived. However, it received poorer marks for water quality, as its rivers, lakes and coastal waters did not meet quality standards. Another report in 2002 said that the mix of instruments used to implement environmental policy is highly effective and regulations are strict, well enforced and based on strong monitoring capacities.

In the 2006 environment annual report, the Ministry of Environment reported that current major issues are global warming and preservation of the ozone layer, conservation of the atmospheric environment, water and soil, waste management and recycling, measures for chemical substances, conservation of the natural environment and the participation in the international cooperation.

Japan has of recent taken a much more proactive approach to waste management. In particular, Japanese city and prefectural authorities have focused on the reduction of solid waste going into landfills. This of course is in response to the lack of affordable space available for landfill sites. Their approach relies heavily on four major factors: 1) technological advancements in incineration, 2) technological advancements in plastics recycling, 3) Comprehensive production-side recycle stream package labelling, and 4) wide consumer-side/household participation in recycling and waste material separation.

As a signatory of the Kyoto Protocol, and host of the 1997 conference which created it, Japan is under treaty obligations to reduce its carbon dioxide emissions level by 6% less than the level in 1990, and to take other steps related to curbing climate change. Japan is the world's fifth biggest emission emitter. The Cool Biz campaign introduced under former Prime

Minister of JapanJunichiro Koizumi was targeted at reducing energy use through the reduction of air conditioning use in government offices.

Japan maintains one third of its electric production from nuclear power plants. While a majority of Japanese citizens generally supported the use of existing nuclear reactors, since the nuclear accident at the Fukushima Dai Ichi power plant on 11th March 2011, this support seems to have shifted to a majority wanting Japan to phase out nuclear power. Former Prime Minister Naoto Kan was the first leading politician to openly voice his opposition to Japan's dependence upon nuclear energy and suggested a phasing out of nuclear energy sources towards other sources of renewable energy.

(http://www.reuters.com/article/2011/04/08/japan-nuclear-debate-idUSL3E7F70K320110408)

Date accessed : 15th June 2013

An objection against the plan to construct further plants has grown as well since the 11th March 2011 earthquake and tsunami which triggered the nuclear meltdown of three reactors at the Fukushima dai ichi plant in Eastern Japan.

The treatment of radioactive wastes also became a subject of discussion in Japan. New spent nuclear fuel reprocessing plant was constructed in Rokkasho in 2008, the site of the underground nuclear-waste repository for the HLW and LLW has not yet been decided. Some local cities announced a plan to conduct an environmental study at the disposal site, but citizens' groups oppose strongly against the plan.

Two laws have come in effect in Japan to alleviate the landfill and electronic waste problems. The first law was most recently revised in 2001, called the Law for the Promotion of Effective Utilization of Resources (LPUR). This law encourages manufacturers to voluntarily help recycle goods and reduce the generation of the waste. The second law became effective on 1st April 2009,

called the Law for the Recycling of Specified Kinds of Home Appliances (LRHA). This law imposes more requirements on the recycling efforts of both consumers and manufacturers of home appliances. In October, 2003, taxes were imposed on any computer purchased after that date. If a computer was purchased before that date, those wanting to recycle their computer would pay a nominal fee to keep up with recycling costs.

The utilization of electronic waste resources is around 50% currently and is growing. The LRHA states that consumers are responsible for the cost of recycling most home appliances. This includes transportation costs and recycling fees. The consumers pay the retailers to pick up the waste. They then recycle it and the consumers pay the related fees. In order to make the system more balanced, if a consumer asks a retailer to take the used home appliance for any reason (most likely because they purchased a new appliance), the retailer is obligated to pick it up. The retailers usually take it back to the manufacturer. The manufacturer is required to have a system in place to recycle the electronic waste, and this system must also maintain a certain percentage of utilization from these resources. Part of this process is not regulated by the government, and that is the process of acquiring a recycling facility and/or how the recycling is currently done. Manufacturers can hire anyone they want to build the facility and they can also recycle electronic waste in any way they deem fit. The only thing it must maintain is the amount of utilization from each material that comes into the facility. The manufacturers often want to recycle the products in the cheapest way possible and this leaves a lot of room for improvement.

(*http://www.iaea.org/Publications/Reports/gponi_report2005.pdf)*

Date accessed : 15th June 2013

2.4.2 Australia Environmental Management Overview

The Australian environment ranges from virtually pristine Antarctic territory and rainforests to degraded industrial areas of major cities. 40 distinct Eco have been identified across the Australian mainland and islands.

Central Australia is very dry due to a dry climate. The interior has a number of deserts while most of the coastal areas are populated. Northern Australia experiences tropical cyclones while much of the country is prone to periodic drought.

Agriculture and mining are the predominate land uses which affect the Australian environment. The management of the impact on the Australian environment from the mining industry, the protection of the Great Barrier Reef, forests and native animals are recurring issues of conservation.

Major environmental issues in Australia include whaling, logging of old growth forest, irrigation and its impact on the Murray River, Darling River and Macquarie Marshes, acid sulphate soils, soil salinity, land clearing, soil erosion, uranium mining and nuclear waste, creation of marine reserves, air quality in major cities and around polluting industries and infrastructure, pesticide and herbicide impacts and growing of genetically modified food.

Increased coal mining in Australia is contentious because of the effects of global warming on Australia, emissions to air from coal burning power stations, dust, subsidence, impact on rivers like the Hunter River and other water users, failure to adequately restore mined areas, and lack of sustainability. As an example, in 1999 Australia's energy consumption of coal and coal products were 47,364 (measured in thousand metric tons oil equivalent), compared to that of the world's energy consumption of coal and coal products which totalled 2,278,524 (also measured in thousand metric tons oil equivalent).

Climate change has become a major issue in Australia due to drastic climate events since the turn of the 21st century that have focused government and public attention. Rainfall in Australia has increased slightly over the past century, although there is little or no trend in rainfall in the Western Plateau and the Central Lowlands of Australia.

(Regional Rainfall Trends |Commonwealth of Australia Bureau of Meteorology

Date accessed : 7 June 2013

Water sources in the south eastern areas of Australia have depleted due to increasing population in urban areas (rising demand) coupled with climate change factors such as persistent prolonged drought (diminishing supply). At the same time, Australia continues to have the highest per capita greenhouse gas emissions. The federal government and all state governments New South Wales, Victoria, Queensland, South Australia, Western Australia, Tasmania, Northern Territories and Australian Capital Territory have explicitly recognised that climate change is being caused by greenhouse gas emissions, in conformity with the scientific opinion on climate change. Sectors of the population are actively campaigning against new coal mines and coal fired power stations because of their concern about the effects of global warming on Australia. There is expected to be a net benefit to Australia of stabilising greenhouse gases in the atmosphere at 450ppm CO^2 eq.

(*http://www.dec.wa.gov.au/our-environment/climate-change/)*

Date Accessed : 15th June 2013

2.4.3 Singapore Environmental Management Overview

Singapore is a city-island-nation that is made up of one main island and some sixty small ones situated 137 kilometres north of the equator and whose total land area equals 646 square kilometres. The country has a population of approximately three million. Since becoming a fully independent country upon its separation from Malaysia in 1965, Singapore has become a cosmopolitan

nation with millions of tourist arrivals each year, boasting a gross domestic product of S$105,313.2 million.

Singapore also has a modem environmental infrastructure that efficiently deals with its sewage," and efficiently disposes of its solid waste. An efficient and comprehensive planning system utilizing the concepts of zoning and plot ratio density ensures that sufficient areas are set aside for "green lungs" and that polluting industries are sited away from residential and commercial areas. Singapore's Ministry of the Environment monitors air quality through fifteen remote air monitoring stations linked to a central control system,'" and inland and coastal waters at over fifty water monitoring points. Singapore's air quality is usually within the standards for good air quality established by the United States Environmental Protection Agency and the World Health Organization." Singapore is separated from peninsular Malaysia by the Straits of Johor and from the islands of Indonesia by the Straits of Singapore. This equatorial country has a relatively constant temperature, accompanied by abundant rainfall and high humidity. Singapore is made up of three geographical regions: a central hilly region of igneous rock, a western region of sedimentary rock which forms a succession of northwest trending hills and valleys, and a flat eastern region of sand and gravel deposits.

Today a variety of environmental groups, such as the Singapore Environment Council and The Nature Society of Singapore, work to protect environmental interests in Singapore. In addition, stories about environmental issues regularly appear in the country's newspapers, a television channel regularly shows programs dealing with the environment, and various environmental conferences, exhibits, and activities occur regularly. In Singapore, the Ministry of the Environment is the primary governmental agency that deals with environmental matters. The Ministry published its green plan, which states that its goal is to evolve the city-nation into a "Model Green City," with "high standards of public health and a quality environment." Singapore's

environmental consciousness, however, is not a recent phenomenon. Singapore subsequently enacted its Clean Air Act in 1971, and its Water Pollution Control and Drainage Act in 1975. The government set up aft Anti-Pollution Unit under the Prime Minister's Office in 1970, and subsequently established the Ministry of the Environment in 1972. Eleven years later in 1983, the Anti-Pollution Unit was merged with the Ministry to ensure unified direction of environmental protection. This unit has been renamed the Pollution Control Department, and has responsibility for air and water pollution, hazardous materials, and toxic wastes.

(Singapore's Environmental Management System: Strengths and Weaknesses and Recommendations for the Years Ahead) http://scholarship.law.wm.edu/cgir)

Date Accessed : 15 June 2013

Singapore is a small country in which the government exercises legislative and economic control. Exerting this legislative power, Singapore's parliament has passed various legislative acts and enacted subsidiary legislation under these acts, to safeguard the environment. In the past twenty-five years or so, parliament has enacted laws concerning inland and marine water, air, solid wastes, and hazardous wastes.

As Singapore continues to develop and urbanise, more development and construction projects would inevitably be sited within highly built-up areas and near to residents. In recognition of the higher expectations of the public for some peace and quiet on weekends, the National Environment Agency (NEA) introduced the no-work rule on Sundays and Public Holidays in two phases as follows:

i) New construction sites commencing work on or after 1 September 2010 are not allowed to carry out construction work from 10pm on Saturday to 10am on Sunday, and from 10pm on the eve of a Public Holiday to 10am on a Public Holiday

ii) New construction sites commencing work on or after 1 September 2011 are not allowed to carry out construction work for the whole day on Sundays and Public Holidays. Under the platform of Malaysia-Singapore Joint Committee on the Environment (MSJCE), Singapore and Malaysia conducted the 8th emergency exercise, codenamed “Chembridge 8”, on 28 July 2011. This exercise simulated the spillage of hazardous chemicals on both land and sea at the Tuas Second Crossing. The objectives of conducting such emergency response exercises were to determine the operational effectiveness of the emergency response plan jointly developed by NEA and Department of Environment (DOE, Johor) and the preparedness of the various agencies from Malaysia and Singapore during an emergency. The close cooperation of all agencies involved ensured the smooth running of the exercise. The exercise drew the highest participation since inception with a total of 257 officers from 16 Malaysia agencies and 200 officers from 7 Singapore agencies as well as personnel from 5 private companies involved.

The Energy Efficiency National Partnership (EENP) is an industry outreach programme launched by NEA, Energy Market Authority (EMA) and Economic Development Board (EDB) in April 2010, to help companies prepare for the Energy Conservation Act (ECA), which will come into effect in 2013. As of December 2011, there were 102 partners from sectors such as the electronics, wafer fabrication, refinery/petrochemicals, and pharmaceuticals.

Singapore developed its industrial base and achieved high economic growth within a short span of three decades. In tandem with Singapore's rapid economic growth and industrialisation, programmes were also implemented, at a very early stage, to protect the environment. To ensure that rapid economic growth and industrialisation could be achieved without compromising the environment, the Anti-Pollution Unit (APU) and the Ministry of the Environment (ENV) were formed in 1970 and 1972 respectively to protect the

environment. APU was subsequently merged with ENV in 1986. ENV was renamed as the Ministry of the Environment and Water Resources (MEWR) in September 2004 and its operational functions were taken over by its two statutory boards viz. the NEA and the Public Utilities Board (PUB). The two statutory boards safeguarded the environment and environmental health by planning, developing and operating sewerage, drainage and solid waste disposal facilities, controlling air and water pollution, hazardous chemicals and toxic wastes, and providing environmental public health services and public health education.

The Environmental Protection Division (EPD) of NEA is responsible for protecting the physical environment in Singapore. EPD comprises the following departments:-

i) Pollution Control Department (PCD)
ii) Energy Efficiency and Conservation Department (EECD)
iii) Waste and Resource Management Department (WRMD)
iv) Centre for Radiation Protection and Nuclear Science (CRPNS)

2.5 Statutory and Regulatory Bodies

i) Department of Environment (DOE)

Department of Environment (DOE) was originally created as Environment Division under the Ministry of Local Government and Environment on 15 April 1975. Environment Division was then placed under the Ministry of Science, Technology and Environment in March 1976. Based on the importance of environmental protection and conservation, on 1 September 1983, the Environment Division has been upgraded to a Department known as the Department of Environment. On March 2004, DOE was then placed under the Ministry of Natural Resources and Environment. The establishment of Department of Environment is based on the Environmental

Quality Act, 1974 which was enacted in March 1974 and came into force on 15 April 1975.

DOE became one of the government agencies charged with implementing the principles listed under the National Environmental Policy (DASN). DASN been established to pursue economic, social and cultural as well as improving the quality of life of Malaysians through environmentally sound and sustainable development. DASN purpose is to create a clean environment, safe, healthy and productive for generations present and future. Conservation of cultural and natural heritage is unique and different with the effective participation of all sectors of society. Way of life, patterns of sustainable consumption and production.

In addition, DASN aims to integrate environmental considerations into development activities and related decision-making processes, foster economic growth and long-term human development, and to protect and improve the environment. It complements and adds dimension environment contained in other national policies, such as forestry and industrial policy, and also take note of the international conventions on universal significance. Malaysia, as high dense resourceful country, is suffering from various environmental problems such as pollution, land degradation, deforestation, biodiversity degradation, depletion of environmental resources, wetland degradation, urban solid waste management, etc. The government of Malaysia has enacted different laws in different period for conserving and developing the environments.

ii) National Water Services Commission (SPAN)

In a special sitting in January 2005, Parliament approved the amendments to the Ninth Schedule of the Federal Constitution to transfer matters related to water supplies and services from the State List to the Concurrent List (except

for Sabah and Sarawak). The amendments were gazette on 10th February 2005 and the enforcement date was 21st March 2005.

With the amendments, the Federal Government will regulate the water services industry in terms of licensing and regulating water services operators. The State Government also retains the power to declare and regulate water resources, water catchment areas and river basins.

In mid-2006, the Malaysian Parliament approved two landmark legislations that transformed the way Malaysia manages its water services, i.e. the Suruhanjaya Perkhidmatan Air Negara Act (Act 654) or SPAN Act and the Water Services Industry Act (Act 655) or WSIA. The former outlines the roles, functions and scope of work to be undertaken by the National Water Services Commission or SPAN, while the latter has provisions to cover economic, technical and social regulations as well as protection of consumer interests.

The Commission shall have all the function imposed on it under the water supply and sewerage services laws and shall also have the following functions to:

- advise the Minister on all matters in relation to the national policy objectives of the water supply and sewerage services laws and to implement and promote the national policy objectives;
- implement and enforce the water supply and sewerage services laws and to consider and recommend reforms to the water supply and sewerage services laws;
- ensure the productivity of the water supply and sewerage services industry and the monitoring of operator compliance with stipulated

services standards, contractual obligations and relevant laws and guidelines;

- increase concerted efforts towards improving the operational efficiency of the industry and in particular the reduction of non-revenue water through short-term, medium-term and long-term programmes;
- advise the Minister on a fair and efficient mechanism for the determination of tariffs that is fair to both consumers and licensees and to implement tariffs that have been establish through appropriate mechanism and tools;
- ensure the national development goals pertaining to coverage, supply and access to water supply and sewerage services are achieved;
- ensure long-term sustainability of quality of water and sewerage services through continued capital works development;
- formulate and implement a plan so that all reasonable demands for sewerage services are satisfied and in consultation with the relevant authorities, prepare a sewerage catchment plan formulating the policy and general proposals in respect of the development of any new sewerage system and measures for improvement of any existing sewerage system;
- carry out any function conferred upon it under any other law; and
- advise Minister generally on matters relating to water supply services and sewerage services.

iii) Ministry of Energy, Green Technology and Water

The Ministry of Energy, Green Technology and Water (*Kementerian Tenaga, Teknologi Hijau dan Air - KeTTHA*) was established on 27th March 2004 following Malaysia's new cabinet line-up, hence replacing the Ministry of Energy, Communications and Multimedia. The Ministry's role is to

administer and manage the nation's energy, communications (infrastructure), postal services and water functions.

The role of the Ministry has shifted from being a service provider to a policy formulator and service regulator for the Energy, Water and Communications sectors. The Ministry's main thrust is therefore to facilitate and regulate the growth of industries in these sectors to ensure the availability of high quality, efficient and safe services at a reasonable price to consumers throughout the country. The regulatory function of the Ministry is undertaken through its regulatory bodies, namely, the Energy Commission and the Communications and Multimedia Commission. The ministry's objective is to:

- minimise growth of energy consumption while enhancing economic development;
- facilitate the growth of the Green Technology Industry and enhance its contribution to the national economy;
- increase national capability and capacity for innovation in Green Technology development and enhance Malaysia's competitiveness in Green Technology in the global arena;
- ensure sustainable development and conserve the environment for future generations; and
- enhance public education and awareness on Green Technology and encourage its widespread use.

iv) Solid Waste Management and Public Cleansing Corporation (PPSPPA)

The Solid Waste Management and Public Cleansing Corporation (PPSPPA) were established to complement and ensure the successful implementation

of the National Solid Waste Management Policy. In general, the policy aims to provide a comprehensive, integrated, cost-effective, and sustainable solid waste management system in line with society's demand for environmental conservation and public well-being.

The Corporation was established under the Solid Waste Management and Public Cleansing Corporation Act 2007 (Act 673). The Corporation commenced operation on 1st June 2008 under the purview of the Ministry of Housing and Local Government (MHLG).

It has the power to administer and enforce solid waste and public cleansing management laws and matters related thereto. The role of the Corporation is to ensure that solid waste and public cleansing management services will be more efficient and integrated, as well as meeting consumers' expectations.

v) Atomic Energy Licensing Board - AELB *(Agensi Pelesenan Tenaga Atom)*

The Atomic Energy Licensing Board (AELB) was established under the Prime Minister's Department on 1 February 1985. The AELB acts as an enforcement body for the implementation of the Act. However on 27 October 1990 the Board was place under the Ministry of Science, Technology and Innovation.
The objective of AELB establishment is to:

- ensure radiation and nuclear technology does not affect national and societal well-being by not significantly affecting the public, environment and workers negatively;
- acquire, disseminate and generate knowledge to enhance radiation and nuclear safety, security and where appropriate safeguards; and

- create wealth by providing a conducive environment and international confidence through a credible and competent national regulatory framework to facilitate the introduction of modern industries and acquisition of sensitive state-of-art technologies to the nation.

2.6 Related Policies, Acts, Regulations and Standards for Industry

(i) The Environmental Quality Act 1974

In Malaysia, the Environmental Quality Act 1974 is considered to be the most comprehensive piece of legislation promulgated to deal with environmental protection and pollution control. The Act also forms the basic instrument for achieving environmental policy objectives. As a developing country that strives for economic growth, Malaysia's rapid development activities especially since the early 1980s have unveiled new dimensions to environmental concerns. Since its introduction more than 30 years ago, the scope and strategies of this Act have been constantly amended, altered or improved in the pursuit of environmental policy objectives. Thus, in the context of environmental protection, the Environmental Quality Act 1974 needs to be pro-active and flexible enough to accommodate new measures for facing challenging environmental problems. These changes provide an indication of the increasing complexities of environmental issues facing Malaysia. This paper examines the development of environmental strategies that has taken place within the framework of the Act, based on Malaysia's environmental policy directives particularly on sustainable development.

(ii) Government Master Plan Related to Environmental Management and Pollution Control

The National Policy on the Environment which integrates the three elements of sustainable development: economic, social and cultural development and environmental conservation was formulated and approved in 2002. The Policy aims at continued economic, social and cultural progress and enhancement of the quality of life of Malaysians through environmentally sound and sustainable development. It is based in eight (8) inter-related and mutually supporting principles set to harmonize economic development goals with environmental imperatives:-

a) Stewardship of the Environment
b) Conservation of the Nature's Vitality and Diversity
c) Continuous Improvement in the Quality of the Environment
d) Sustainable Use of Natural Resources
e) Integrated Decision-making
f) Role of the Private Sector
g) Commitment and Accountability
h) Active Participation in the International Community

(iii) Green Technology and the Tenth Malaysia Plan

The Tenth Malaysia Plan spanning from 2011 to 2015 will focus on 12 National Key Economic Areas or NKEAs which have potential to generate high income. For economic sectors not listed as NKEAs, such as green technology, automotive, aerospace and logistics, the development of these sectors will continue to be driven by relevant ministries, agencies and councils. Therefore, under the national goals namely the Tenth Malaysia Plan, there are short term goals that are hoped to be achieved within the duration of the Tenth Malaysia Plan such as below:

- increased public awareness and commitment for the adoption and application of Green Technology through advocacy programmes;
- widespread availability and recognition of Green Technology in terms of products, appliances, equipment and systems in the local market through standards, rating and labelling programmes;
- increased foreign and domestic direct investments (FDIs and DDIs) in Green Technology manufacturing and services sectors; and
- expansion of local research institutes and institutions of higher learning to expand Research, Development and Innovation activities on Green Technology towards commercialisation through appropriate mechanisms.

(iv) The National Green Technology Policy

The national goals of the Green Technology Policy is to provide direction and motivation for Malaysians to continuously enjoy good quality living and a healthy environment. According to the policy, Green Technology shall be a driver to accelerate the national economy and promote sustainable development. Below are the Four Pillars of the National Green Technology Policy:

i) Energy
ii) Environment
iii) Economy
iv) Social

(v) National Oil Spill Contingency Plan (NOSCP)

NOSCP is administered by the National Oil Spill Control Committee (NOSCC) consisting of 18 member departments and agencies, chaired by the Department of Environment Malaysia (DOE) and assisted by the Marine

Department of Malaysia (MARDEP). Apart from the establishment of adequate Oil Spill Response Equipment (OSRE) bases that are strategically positioned throughout the Eastern and Western Coast of the nation, DOE places equal emphasis on scheduled and periodical training activities for personnel involved in Oil Spill Response (OSR).

The Oil Spills Response training is aimed at relevant agencies in combating oil spill. Which include DOE, Marine Department, Department of Fisheries Malaysia, Marine Police and Local Authorities. Resolution 7 of the International Convention on Oil Spill Preparedness and Response (OPRC) 1990 provides for an International Commitment to training and preparedness. This preparedness and training requirement has been incorporated into NOSCP response system (*Department of Environment, 2010*).

(vi) Asian Environmental Compliance and Enforcement Network (AECEN)

The Asian Environmental Compliance and Enforcement Network (AECEN) is an agreement between 16 Asian countries dedicated to improving cooperation with environmental laws in Asia. These countries include Cambodia, China, Indonesia, India, Maldives, Japan, Korea, Malaysia, Nepal, Philippines, Pakistan, Singapore, Sri Lanka, Thailand, Vietnam and Laos.

(vii) List of Related Act on Environmental Management and Pollution Control

- Environmental Quality (Clean Air) Regulations 1978
- Environmental Quality (Control of Emission from Diesel Engines) Regulations 1996

- Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 1987
- Environmental Quality (Scheduled Wastes) Regulations 2005
- Environmental Quality (Sewage) 2009
- Environmental Quality (Industrial Effluent) 2009
- Environmental Quality (Control Of Pollution From Solid Waste Transfer Station And Landfill) Regulation 2009
- Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 1987
- Environmental Quality (Control of Emission from Petrol Engines) Regulations 1996
- Environmental Quality Act (EQA 1974 Local Government Act 1976)
- Water Service Industrial Act 2008
- Pesticides (Highly Toxic Pesticides) Regulations 1996
- Environmental Quality (*Perbadanan Putrajaya*) (Water Pollution Control) Regulations 1998
- Pesticide (Pest Control Operator) Rules 2004
- Earthwork By-law 1996
- Street, Drainage & Building Act, 1974
- Act 172 Town & Country Planning 1976
- Occupational Safety and Health Act 1994;
- Companies Act 1965 (Amendment 1975);
- Local Government Act 1976;
- Solid Waste Management Act and Public Cleansing Management Act 2007;
- Petroleum Mining Act 1966.(amendment 1972); and
- Akta Perlesenan Tenaga Atom 1984 (Akta 304).

2.7 Conclusion

This chapter discusses the literature review of industry overview, relevant act, policies, standards, list of regulatory and statutory body and also benchmarking of the industry at international level. It can be summarised that there are several problems faced by enforcers in pollution control. The main problems identified are the ignorance and lack of awareness on course of pollution and pollution control requirements. Most industry or even community members have no real understanding on the importance of environmental care and how their daily routine or business operation contributed to pollution. By looking at the example of benchmark countries such as Singgapore, Japan and Australia, there are a lot of initiaves and improvement required to enhanced environmental quality level in Malaysia. Further Chapter 3 will focus on the analysis of findings.

3. OCCUPATIONAL ANALYSIS METHODOLOGY

3.1 Introduction

This chapter describes the methodology of the overall Occupational Analysis process that was conducted throughout the Insurance Industry Occupational Analysis.

3.2 Occupational Analysis Process

Below are the techniques used throughout the research conducted on the Insurance Industry:

(i) Preliminary information gathering

(a) Literature survey

A literature survey is carried out to get some insight on the scope, policies, programs and activities in the context of the Malaysian scenario. The scope covered under this survey includes descriptions, current analysis of the sectors/Sub-Sectors, current status of the respective industry, skilled workers requirement in the local sector and the industrial competition at international level.

(b) Survey/Questionnaire

The purpose of the survey is to collect the data and feedback from the industries on the supply and demand on skilled workforce, job scope, nature of work, occupational description, occupational structure, career path, current and future trend of the industries.

(c) Interview

Interviews are one of the methods to reinforce the information gathered from the survey. The Interview focuses on the main industry players and stakeholders to seek their opinions and/or impressions.

(d) Identifying industrial experts

Industrial experts who represent small, medium and large scale industries are identified and short listed for further communication and contact. Normally these experts are from Human Resources or managerial levels that have an overall view of the skilled workforce in the industry. They should have sufficient experience and substantial knowledge on industry growth.

(e) Brainstorming session

The Developing a Curriculum (DACUM) technique is commonly used in OA. The session is attended by industrial experts where they will discuss exhaustively on the Sub-Sectors and areas involved. The facts obtained during the literature survey will be discussed and presented to the industry experts.

(f) Analysing the information

Based on the activities done above, substantial data and information will then be collected. The data and information will then be discussed and analysed in development workshops attended by selected key persons or experts from the public and private sector.

The presence of the key persons or experts ensures that the development of the Occupational Analysis is current and relevant.

During this session, the respective industry is analysed using the DACUM/DESCUM and brainstorming methodology to identify the following:

(a) Scope of the Industry and its Sub-Sector ;
(b) Main areas;
(c) Occupational groups of the sector;
(d) Job title;
(e) Critical job title;
(f) Hierarchy structure (Level 1 – 8); and
(g) Occupational Description.

(ii) Development Workshop and interviews with development panel members

Workshops and interviews were conducted during the development of the Entertainment Industry Occupational Analysis. Follow up discussions with the expert panel members were done in smaller groups to verify the findings of the Occupational Analysis. The details of the workshop are as below:

Table 1.0: List of Occupational Analysis Development Session

Date	Venue	Activity
20th till 21st April 2013	Hang Tuah Heritage Hotel, Melaka	Occupational Structure Development Workshop
25th till 26th May 2013	Hang Tuah City Hotel, Melaka	Occupational Description Development Workshop

(iii) Finalising OA Documentation

Follow up discussions with the industrial experts and proofreader in a small group is vital to ensure all the findings of the occupational analysis are valid, reliable and sufficient.

The final report of OA must be well presented with discussion, conclusion and recommendations in order to guide the general readers and interested parties to comprehend about the skilled workforce scenario in the industries.

Details of the process flow in developing the OA is as shown in Figure 2.0.

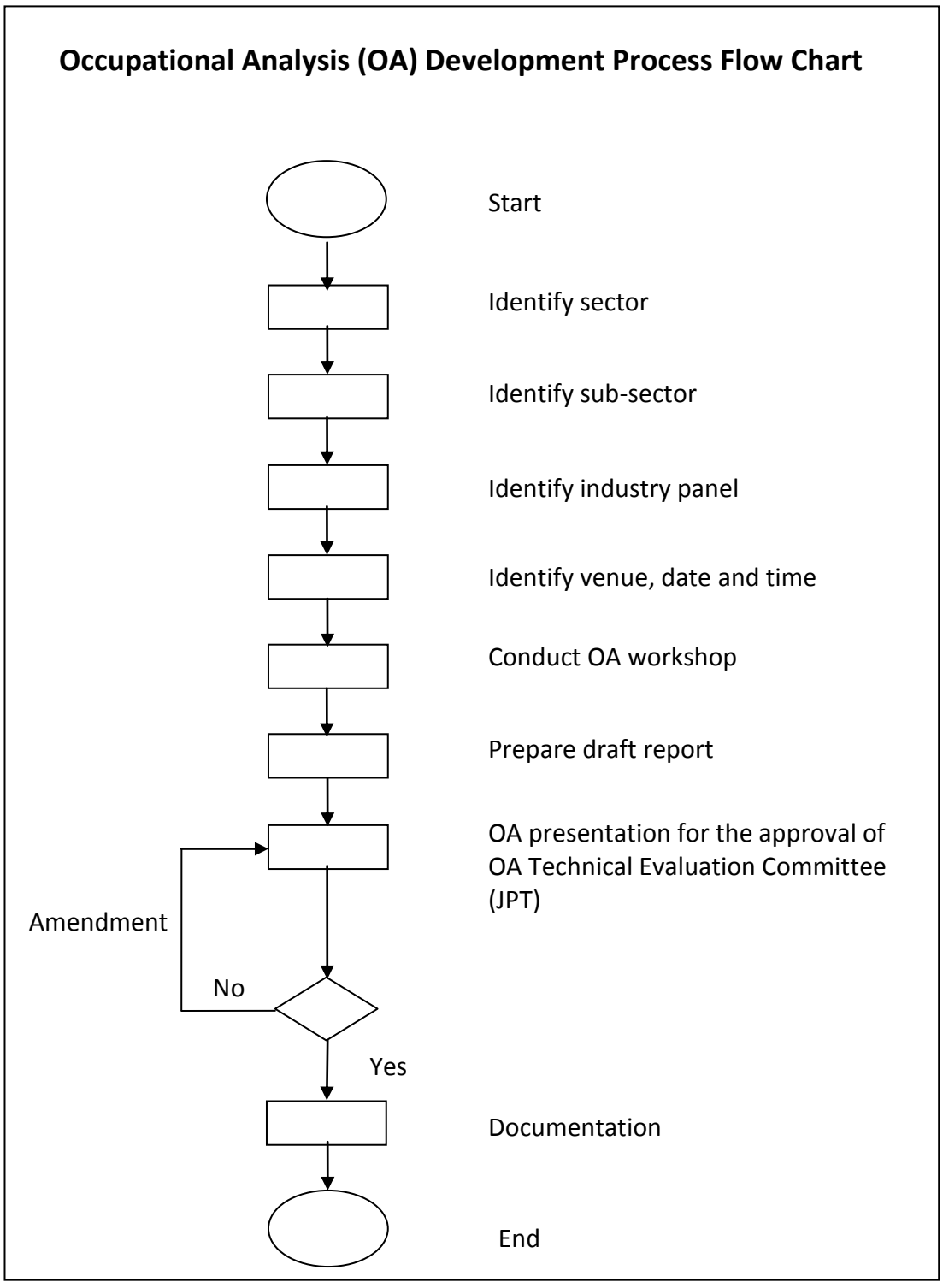

Figure 2.0: Occupational Analysis Development Process Flow Chart

3.3 Occupational Description Development

The Occupational Description (OD) is the detailed description of the main job scope of the job title. Below are the main steps in producing an OD for the respective job titles:

(i) determine the main sub-sectors and areas in the sector;
(ii) identify the job titles; and
(iii) identify the job scope.

To describe the Occupational Description clearly, the statement must consist of a ***Verb, Object*** and ***Qualifier***. The rationale of determining the description attributes is to facilitate NOSS development especially in job and competency analysis.

a) Object

The object is determined first before the verb and qualifier. It is the main determinant to distinguish one job to another. The objects are acquired from the industrial experts during a brainstorming session and written on DACUM cards so that all the experts can see the objects identified. Objects of those in the related area or sub-sector are determined as in the example below.

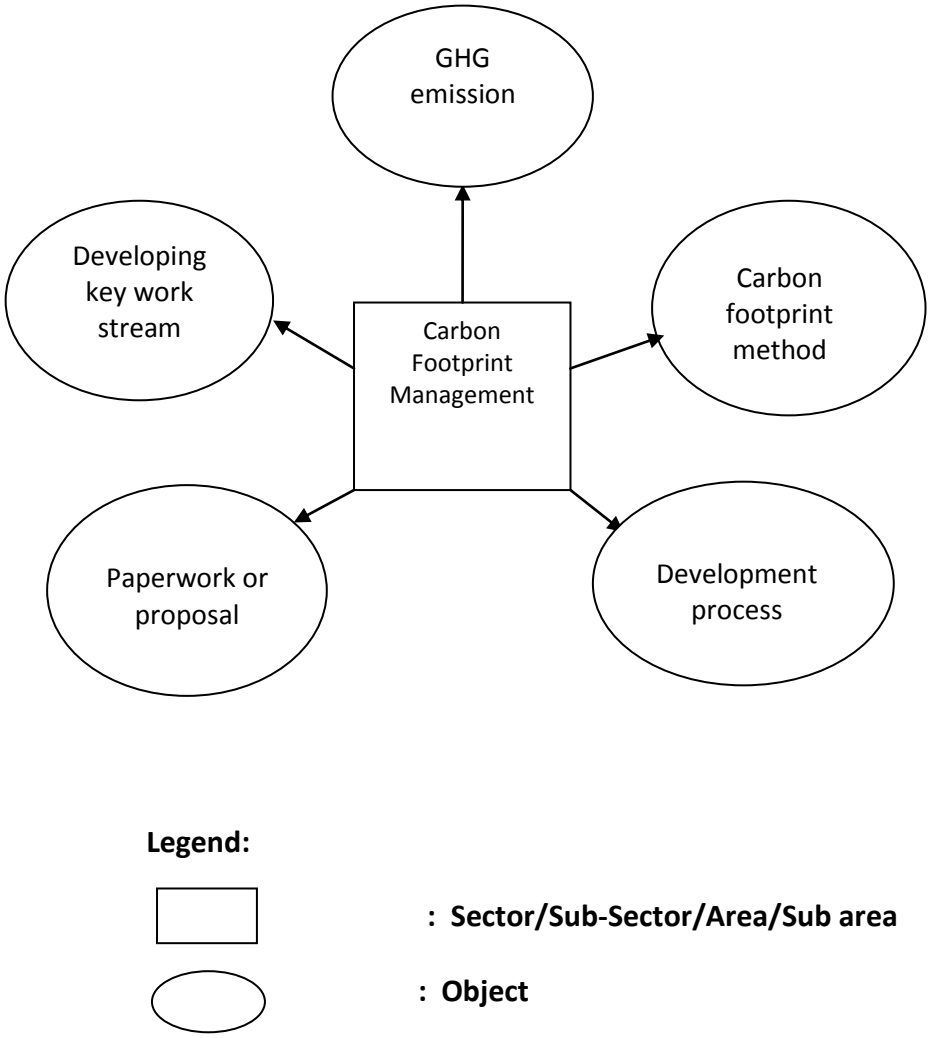

Figure 3.0: Example of Identifying Objects

b) Verb

The verb is then determined based on the level of difficulty of the identified job titles, such as below:

- *Object :* ***GHG emission data***
- *Verb for Level 3 :* ***Calculate and analyse***
- *Verb for Level 4 :* ***Verify***
- *Verb for Level 5 :* ***Endorse***

Hence, the contents of the job definitions will be as below:

- Carbon Footprint Lead Auditor (Level 5)
  - ✓ ***Endorse GHG emission data*** *+ (qualifier)*
- Carbon Footprint Auditor (Level 4)
  - ✓ ***Verify GHG emission data*** *+ (qualifier)*
- Carbon Footprint Data Collector (Level 3)
  - ✓ ***Calculate and analyse GHG emission data*** *+ (qualifier)*

c) Qualifier

Based on the example above, the statement is not clear as there is no qualifier for the object, therefore a qualifier must be added to further clarify it. Below is an example:

- ***Calculate and analyse GHG emission data according to determined standard***

3.4 Conclusion

These chapters have elaborated on the methodology used in the study which is through literature review, brainstorming sessions and DESCUM (Development of Standard and Curriculum). The development of the Occupational Structure and Occupational Description obtained via brainstorming sessions will be presented in the next chapter, Chapter 4, Findings.

4. FINDINGS

4.1 Introduction

The findings from the research of the Environmental Management and Pollution Control Occupational Analysis are represented in the following sections. Firstly, the newly identified sectors will be elaborated and each sub sectors will be presented in the Occupational Structure. Then, there will be a section on supporting industries pertaining to the Environmental Management and Pollution Control job areas.

4.2 Occupational Structure (OS) and Occupational Area Structure (OAS)

Based on the discussions held during development workshops and approval sessions, the development and approval panel members had identified that the main sectors under Environmental Management and Pollution Control were to be divided into 5 different sub sectors which are Compliance Management, Sustainable Practice, Infrastructure Environmental Pollution research & Development (R&D) and Environmental Crisis Management.

The Occupational Structures for these sub sectors are included in this section, firstly the sub sectors and relevant areas are shown, then following them will be the Occupational Structures that show the common job titles in the industry and are presented under each relevant sub-sector and area.

Following each Occupational Structure framework is an Occupational Area Structure that depicts the common job scope for each of the areas as defined in their respective occupational structures. In the Occupational Area Analysis, job titles under the same area may be combined if the job scope is similar. This is to show the common competencies of the personnel regardless of job title, as job titles may vary between different institutions and organizations.

It must be noted that the Occupational Structures are developed according to the profession and not by programme. It is developed in such a way because in this industry, personnel such as inspectors, engineers, technician and other respective personnel may appear in more than one area or sub areas if it was to be structured by program.

The Occupational Structure in Table 2.0 till Table 6.0 shows the overall structure for the Environmental Management and Pollution Control job area. The Environmental Management and Pollution Control occupational structure is further divided into 5 main areas which are;

i) Compliance Management
ii) Sustainable Practice
iii) Infrastructure
iv) Environmental Pollution Research & Development (R&D)
v) Environmental Crisis Management

Below are the descriptions of each of the different areas;

i) Compliance Management

Compliance management is an area where the enforcement of policy, rules and regulation to all related including governments bodies, businesses and industry are implemented and carried. Compliance management helps organizations or individuals meet their obligations under environmental laws and regulations. Enforcement takes legal action against an organization or industry when they do not comply with the law.

ii) Sustainable Practice

Sustainable practice is an act of maintenance factors and practice that contribute to quality of environment on a long term basis. This pillar emphasize on developing skilled worker for Carbon Footprint auditing and also creating a National Competency Standard (NCS) for Environmental Pollution Control Compliance.

iii) Infrastructure

Environmental infrastructure is the infrastructure that provides cities and towns with water supply, waste disposaland pollution control services. They include extensive networks of transportation, laboratory, treatment and waste disposal facilities. These facilities serve two important purposes which is to protect human health and safeguard environmental quality.

iv) Environmental Pollution Research & Development

Environmental Pollution Research & Development is the science of improvement of the environment to provide healthy air, water, soil and other resources, enabling a better quality of life for mankind. There are several facets to the study of Environmental Pollution Research & Development which include pollution control, recycling, waste management (including solid, liquid and hazardous) public health, contamination and even regulatory laws and practices.

v) Environmental Crisis Management

Environmental crisis management is the act of handling incidentor threats environment and finding the suitable methods used by the response team to deal with various kind of threats. Due to the unpredictability of global

environmental issues, response team must be able to cope with the potential of environmental crisis often requires decisions to be made within a short time frame, and often after an event has already taken place.

Table 2.0 : Environmental Management and Pollution Control Occupational Structure for Compliance Management Sub Sector

Sector	**Environmental Management and Pollution Control**							
Sub Sector	**Compliance Management**							
Job Area / **Sub Area/Level**	**Odour Pollution**	**Noise Pollution**	**Air Pollution**	**Water Pollution**	**Marine Pollution**	**Soil Pollution**	**Scheduled Waste Pollution**	**Radioactive Pollution**
8	*No Level*							
7	Compliance Management Specialist							
6	Compliance Management Manager							
5	Odour Pollution Technologist*	Noise Pollution Technologist*	Air Pollution Technologist*	Water Pollution Technologist*	Marine Pollution Technologist*	Soil Pollution Technologist*	Scheduled Waste Pollution Technologist*	Radioactive Pollution Technologist*
4	Odour Pollution Inspector*	Noise Pollution Inspector*	Air Pollution Inspector*	Water Pollution Inspector*	Marine Pollution Inspector*	Soil Pollution Inspector*	Scheduled Waste Pollution Inspector*	Radioactive Pollution Inspector*
3	*No Level*							
2	*No Level*							
1	*No Level*							

** Critical Job Title*

Table 3.0 : Environmental Management and Pollution Control Occupational Structure for Sustainable Practice Sub Sector

Sector	**Environmental Management and Pollution Control**					
Sub Sector	**Sustainable Practice**					
Job Area	**Carbon Footprint Management**					**Environmental Pollution Control Compliance**
Sub Area/Level	**Transportation**	**Building**	**Waste & Water**	**Energy**	**Land Use**	
8	*No Level*					**National Competency Standard (NCS) for** Environmental Pollution Control*
7	Carbon Footprint Specialist (Transportation)*	Carbon Footprint Specialist (Building)*	Carbon Footprint Specialist (Waste & Water)*	Carbon Footprint Specialist (Energy)*	Carbon Footprint Specialist (Land Use)*	
6	Carbon Footprint Auditing Manager*					
5	Carbon Footprint Lead Auditor*					
4	Carbon Footprint Auditor*					
3	Carbon Footprint Data Collector*					
2	*No Level*					
1	*No Level*					

** Critical Job Title*

Table 4.0 : Environmental Management and Pollution Control Occupational Structure for Infrastructure Sub Sector

Sector	**Environmental Management and Pollution Control**				
Sub Sector	**Infrastructure**				
Job Area	**Laboratory**	**Waste Management**			
Sub Area/ Level		**Waste Water Treatment**	**Industrial Effluent Treatment**	**Solid Waste Treatment**	**Scheduled Waste Treatment**
8	*No Level*	*No Level*			
7	*No Level*	Waste Treatment Specialist			
6	*No Level*	Waste Water Treatment Plant Manager	Industrial Effluent Treatment Plant Manager	Solid Waste Treatment Plant Manager	Scheduled Waste Treatment Manager
5	Environmental Pollution Analyst	Waste Water Treatment Plant Technologist*	Industrial Effluent Treatment Plant Technologist*	Solid Waste Treatment Plant Technologist	Scheduled Waste Treatment Technologist*
4	Environmental Pollution Assistant Analyst	Waste Water Treatment Plant Assistant Technologist*	Industrial Effluent Treatment Plant Assistant Technologist*	Solid Waste Treatment Plant Assistant Technologist	Scheduled Waste Treatment Assistant Technologist*
3	*No Level*	Waste Water Treatment Plant Senior Technician	Industrial Effluent Treatment Plant Senior Technician	Solid Waste Treatment Plant Senior Technician*	Scheduled Waste Treatment Senior Technician*
2	*No Level*	Waste Water Treatment Plant Technician	Industrial Effluent Treatment Plant Technician	Solid Waste Treatment Plant Technician*	Scheduled Waste Treatment Technician*
1	*No Level*	*No Level*	*No Level*	Solid Waste Treatment Plant Operator*	Scheduled Waste Treatment Operator*

** Critical Job Title*

Table 4.0 : Environmental Management and Pollution Control Occupational Structure for Infrastructure Sub Sector (Continued)

Sector	**Environmental Management and Pollution Control**							
Sub Sector	**Infrastructure**							
Job Area	**Plant Operation Radioactive Waste Monitoring**	**Plant Operation Pollution Control**			**Final Disposal**			
Sub Area/ Level		**Scheduled Waste**	**Air**	**Noise**	**Solid Waste Landfill**	**Carbon Capture & Storage (CCS)**	**Secure Landfill**	**Repository**
8	*No Level*	*No Level*			*No Level*			
7	*No Level*	Plant Operation Pollution Control Specialist			Final Disposal Specialist			
6	*No Level*	Plant Operation Pollution Control Manager			Solid Waste Landfill Manager	Carbon Capture & Storage (CCS) Manager	Secure Landfill Manager	Repository Manager
5	Radioactive Waste Technologist	Scheduled Waste Manager*	Air Pollution Control Technologist*	Noise Pollution Control Technologist*	Solid Waste Landfill Technologist	Carbon Capture & Storage (CCS) Technologist*	Secure Landfill Technologist	Repository Technologist
4	Radioactive Waste Assistant Technologist	Plant Operation Pollution Control Assistant Technologist			Solid Waste Landfill Assistant Technologist	Carbon Capture & Storage (CCS) Assistant Technologist*	Secure Landfill Assistant Technologist	Repository Assistant Technologist
3	Radioactive Waste Technician	Plant Operation Pollution Control Technician			Solid Waste Landfill Supervisor	Carbon Capture & Storage (CCS) Supervisor*	Secure Landfill Supervisor	Repository Supervisor
2	*No Level*	*No Level*	*No Level*	*No Level*	Solid Waste Landfill Technician	Carbon Capture & Storage (CCS) Technician*	Secure Landfill Technician	Repository Technician
1	*No Level*	*No Level*	*No Level*	*No Level*	Solid Waste Landfill Operator	Carbon Capture & Storage (CCS) Operator*	Secure Landfill Operator	Repository Operator

** Critical Job Title*

Table 5.0 : Environmental Management and Pollution Control Occupational Structure for Environmental Pollution Research & Development (R&D) Sub Sector

Sector	**Environmental Management and Pollution Control**
Sub Sector	**Environmental Pollution Research & Development (R&D)**
Job Area	
Sub Area/ Level	
8	*No Level*
7	Environmental Pollution R&D Specialist
6	Environmental Pollution R&D Manager
5	Environmental Pollution R&D Researcher
4	Environmental Pollution R&D Assistant Researcher
3	Environmental Pollution R&D Technician
2	*No Level*
1	*No Level*

Table 6.0 : Environmental Management and Pollution Control Occupational Structure for Environmental Pollution Crisis Management Sub Sector

Sector	**Environmental Management and Pollution Control**			
Sub Sector	**Environmental Pollution Crisis Management**			
Job Area	**Pollution Emergency Response Operation**			**Environmental Pollution Forensic**
Sub Area/ Level	**Oil & Gas**	**Hazardous Material**	**Radioactive**	
8	*No Level*	*No Level*	*No Level*	*No Level*
7	*No Level*	*No Level*	*No Level*	Environmental Pollution Forensic Specialist
6	*No Level*	*No Level*	*No Level*	Environmental Pollution Forensic Manager
5	Oil & Gas Emergency Response Incident Commander*	Hazardous Material Emergency Response Incident Commander*	Radioactive Emergency Response Incident Commander*	Environmental Pollution Forensic Researcher
4	Oil & Gas Emergency Response Team Supervisor*	Hazardous Material Emergency Response Team Supervisor*	Radioactive Emergency Response Team Supervisor*	Environmental Pollution Forensic Assistant Researcher
3	Oil & Gas Emergency Response Technician*	Hazardous Material Emergency Response Technician*	Radioactive Emergency Response Technician*	*No Level*
2	*No Level*	*No Level*	*No Level*	*No Level*
1	*No Level*	*No Level*	*No Level*	*No Level*

** Critical Job Title*

Table 7.0 : Environmental Management and Pollution Control Occupational Area Structure for Compliance Management Sub Sector

Sector	**Environmental Management And Pollution Control**							
Sub Sector	**Compliance Management**							
Job Area / **Sub Area/ Level**	**Odour Pollution**	**Noise Pollution**	**Air Pollution**	**Marine Pollution**	**Water Pollution**	**Soil Pollution**	**Scheduled Waste Pollution**	**Radioactive Pollution**
8	*No Level*							
7	Environmental Compliance Consultation							
6	Environmental Compliance Management							
5	Air Pollution Analysis And Evaluation			Water Pollution Analysis And Evaluation		Soil Pollution Analysis And Evaluation	Scheduled Waste Pollution Analysis And Evaluation	Radioactive Pollution Analysis And Evaluation
4	Air Pollution Inspection			Water Pollution Inspection		Soil Pollution Inspection	Scheduled Waste Pollution Inspection	Radioactive Pollution Inspection
3	*No Level*							
2	*No Level*							
1	*No Level*							

Table 8.0 : Environmental Management and Pollution Control Occupational Area Structure for Sustainable Practice Sub Sector

Sector	**Environmental Management and Pollution Control**					
Sub Sector	**Sustainable Practice**					
Job Area	**Carbon Footprint**					**Environmental Pollution Control Compliance (NCS)**
Sub Area/Level	**Transportation**	**Building**	**Waste & Water**	**Energy**	**Land Used**	
8	*No Level*					Environmental Pollution Control
7	Carbon Footprint Consultation (Transportation)	Carbon Footprint Consultation (Building)	Carbon Footprint Consultation (Waste & Water)	Carbon Footprint Consultation (Energy)	Carbon Footprint Consultation (Land Used)	
6	Carbon Footprint Audit Management					
5	Carbon Footprint Auditing And Evaluation					
4	Carbon Footprint Auditing					
3	Carbon Footprint Data Collection					
2	*No Level*					
1	*No Level*					

Table 9.0 : Environmental Management and Pollution Control Occupational Area Structure for Infrastructure Sub Sector

Sector	**Environmental Management and Pollution Control**				
Sub Sector	**Infrastructure**				
Job Area	**Laboratory**	**Waste Treatment**			
Sub Area/ Level		**Waste Water Treatment**	**Solid Waste Treatment**	**Scheduled Waste Treatment**	**Industrial Effluent Treatment**
8	*No Level*	*No Level*			
7	*No Level*	Waste Treatment Consultation			
6	*No Level*	Waste Water Treatment Plant Management	Solid Waste Treatment Plant Management	Scheduled Waste Treatment Plant Management	Industrial Effluent Treatment Plant Management
5	Environmental Pollution Verification And Endorsement	Waste Water Treatment Plant Supervision & Control	Solid Waste Treatment Plant Supervision & Control	Scheduled Waste Treatment Plant Supervision & Control	Industrial Effluent Treatment Plant Supervision & Control
4	Environmental Pollution Analysis	Waste Water Treatment Plant Monitoring	Solid Waste Treatment Plant Monitoring	Scheduled Waste Treatment Plant Monitoring	Industrial Effluent Treatment Plant Monitoring
3	*No Level*	Waste Water Treatment Plant Operation	Solid Waste Treatment Plant Operation	Scheduled Waste Treatment Plant Operation	Industrial Effluent Treatment Plant Operation
2	*No Level*	*No Level*	*No Level*	*No Level*	*No Level*
1	*No Level*	*No Level*	*No Level*	*No Level*	*No Level*

Table 9.0 : Environmental Management and Pollution Control Occupational Area Structure for Infrastructure Sub Sector (Continued)

Sector	**Environmental Management and Pollution Control**						
Sub Sector	**Infrastructure**						
Job Area / **Sub Area/ Level**	**Plant Operation Radioactive Waste Monitoring**	**Plant Operation**		**Final Disposal**			
				Sanitary Landfill	**Carbon Capture & Storage (CCS)**	**Secure Landfill**	**Repository**
8	*No Level*	*No Level*		*No Level*			
7	*No Level*	*No Level*		Final Disposal Consultation			
6	*No Level*	*No Level*		Sanitary Landfill Management	Carbon Capture & Storage (CCS) Management	Secure Landfill Management	Repository Management
5	Radioactive Waste Supervision & Control	Air Pollution Supervision & Control	Sanitary Landfill Supervision & Control	Carbon Capture & Storage (CCS) Supervision & Control	Secured Landfill Supervision & Control	Repository Supervision & Control	Repository Technologist
4	Radioactive Waste Assistant Operation Monitoring	*No Level*		Sanitary Landfill Operation Monitoring	Carbon Capture & Storage (CCS) Operation Monitoring	Secured Landfill Operation Monitoring	Repository Operation Monitoring
3	Radioactive Waste Operation	*No Level*		Sanitary Landfill Operation	Carbon Capture & Storage (CCS) Operation	Secured Landfill Operation	Repository Operation
2	*No Level*	*No Level*					
1	*No Level*	*No Level*					

Table 10.0 : Environmental Management and Pollution Control Occupational Area Structure for Environmental Pollution Research & Development (R&D) Sub Sector

Sector	**Environmental Management and Pollution Control**
Sub Sector	**Environmental Pollution Research & Development (R&D)**
Job Area	
Sub Area/ Level	
8	*No Level*
7	Environmental Pollution R&D Consultation
6	Environmental Pollution R&D Management
5	Environmental Pollution R&D Modelling And Design
4	Environmental Pollution Research & Development
3	Environmental Pollution R&D Operation
2	*No Level*
1	*No Level*

Table 11.0 : Environmental Management and Pollution Control Occupational Area Structure for Environmental Pollution Crisis Management Sub Sector

Sector	**Environmental Management and Pollution Control**			
Sub Sector	**Environmental Pollution Crisis Management**			
Job Area	**Pollution Emergency Response Operation**			**Environmental Pollution Forensic**
Sub Area/Level	**Oil & Gas**	**Hazardous Material**	**Radioactive**	
8	*No Level*	*No Level*	*No Level*	*No Level*
7	Oil & Gas Emergency Response Crisis Consultation	Hazardous Material Responsive Consultation	Radioactive Emergency Response Consultation	Forensic Environmental Pollution Consultation
6	Oil & Gas Emergency Response Management	Hazardous Material Response Management	Radioactive Emergency Response Management	Forensic Environmental Pollution Management
5	Oil & Gas Emergency Response Team Supervision & Control	Hazardous Material Response Team Supervision & Control	Radioactive Emergency Response Team Supervision & Control	Forensic Environmental Pollution Investigation
4	Emergency Response Operation Monitoring			Forensic Environmental Pollution Investigation Operation
3	Emergency Response Operation			*No Level*
2	*No Level*	*No Level*		*No Level*
1	*No Level*	*No Level*		*No Level*

4.3 Critical Job Titles

This section will highlight the skilled personnel requirement in the Environmental Management and Pollution Control job areas which are in demand currently and in the near future.

There were job titles identified during the brainstorming session with the panel members that they had categorised as critical. The job titles which were not considered as critical were because the current numbers of personnel under these categories were sufficient. Based on input from the expert panel members, the following table is the list of the critical job titles planned to be implemented in the short term (1 to 3 years) or medium term (4 to 5 years).

Table 12.0: List of Critical Job Titles within Short Term and Medium Term

Item	Critical job Title	Short Term (1-3 years) (√)	Medium Term (4-5 years) (√)	Page
1.	Odour Pollution Inspector	√		79
2.	Odour Pollution Technologist	√		80
3.	Noise Pollution Inspector	√		81
4.	Noise Pollution Technologist	√		82
5.	Air Pollution Inspector	√		83
6.	Air Pollution Technologist	√		84
7.	Water Pollution Inspector	√		85
8.	Water Pollution Technologist	√		86
9.	Marine Pollution Inspector	√		87
10.	Marine Pollution Technologist	√		88
11.	Soil Pollution Inspector	√		89
12.	Soil Pollution Technologist	√		90
13.	Scheduled Waste Pollution Inspector	√		91

Table 12.0: List of Critical Job Titles within Short Term and Medium Term (Continued)

Item	Critical job Title	Short Term (1-3 years) (√)	Medium Term (4-5 years) (√)	Page
14.	Scheduled Waste Pollution Technologist	√		92
15.	Radioactive Pollution Inspector	√		93
16.	Radioactive Pollution Technologist	√		94
17.	Carbon Footprint Data Collector	√		98
18.	Carbon Footprint Auditor	√		99
19.	Carbon Footprint Lead Auditor	√		100
20.	Carbon Footprint Auditing Manager	√		101
21.	Carbon Footprint Specialist (Transportation)	√		102
22.	Carbon Footprint Specialist (Building)	√		103
23.	Carbon Footprint Specialist (Waste &Water)	√		104
24.	Carbon Footprint Specialist (Energy)	√		105
25.	Carbon Footprint Specialist (Land Use)	√		106
26.	Environmental Pollution Control	√		107
27.	Waste Water Treatment Plant Assistant Technologist	√		113
28.	Waste Water Treatment Plant Technologist	√		114
29.	Industrial Effluent Treatment Plant Assistant Technologist	√		118
30.	Industrial Effluent Treatment Plant Technologist	√		119
31.	Solid Waste Treatment Plant Operator	√		121
32.	Solid Waste Treatment Plant Technician	√		122
33.	Solid Waste Treatment Plant Senior Technician	√		123
34.	Scheduled Waste Treatment Operator	√		127
35.	Scheduled Waste Treatment Technician	√		128

Table 12.0: List of Critical Job Titles within Short Term and Medium Term (Continued)

Item	Critical job Title	Short Term (1-3 years) (√)	Medium Term (4-5 years) (√)	Page
36.	Scheduled Waste Treatment Senior Technician	√		129
37.	Scheduled Waste Treatment Assistant Technologist	√		130
38.	Scheduled Waste Treatment Technologist	√		131
39.	Air Pollution Control Technologist	√		140
40.	Noise Pollution Control Technologist	√		141
41.	Carbon Capture & Storage (CCS) Operator	√		150
42.	Carbon Capture & Storage (CCS) Technician	√		151
43.	Carbon Capture & Storage (CCS) Supervisor	√		152
44.	Carbon Capture & Storage (CCS) Assistant Technologist	√		153
45.	Carbon Capture & Storage (CCS) Technologist	√		154
46.	Oil & Gas Emergency Response Technician	√		176
47.	Oil & Gas Emergency Response Team Supervisor	√		177
48.	Oil & Gas Emergency Response Incident Commander	√		178
49.	Hazardous Material Emergency Response Technician	√		179
50.	Hazardous Material Emergency Response Team Supervisor	√		180
51.	Hazardous Material Emergency Response Incident Commander	√		181
52.	Radioactive Emergency Response Technician	√		182
53.	Radioactive Emergency Response Team Supervisor	√		183
54.	Radioactive Emergency Response Incident Commander	√		184

Table 13.0: Summary of Critical Job Titles According to Sub Sectors

SECTOR	SUB-SECTOR	LEVEL									TOTAL
		NCS	1	2	3	4	5	6	7	8	
Environmental Management & Pollution Control	Compliance Management	-	-	-	-	8	8	-	-	-	**16**
	Sustainable Practice	1	-	-	1	1	1	1	5	-	**10**
	Infrastructure	-	3	3	3	4	7	-	-	-	**20**
	Environmental Pollution R&D	-	-	-	-	-	-	-	-	-	**0**
	Environmental Crisis Management	-	-	-	3	3	3	-	-	-	**9**
TOTAL CRITICAL JOB TITTLES		**1**	**3**	**3**	**7**	**16**	**19**	**1**	**5**	**-**	**54**
TOTAL JOB TITLES IDENTIFIED		**1**	**6**	**8**	**15**	**25**	**27**	**13**	**11**	**0**	**106**

4.4 Occupational Description (OD)

The Occupational Description describes the occupations under the Occupational Structure in terms of competencies and duties that they are designated to carry out as competent personnel. These Occupational Descriptions can be used as reference for employees, employers, practitioners, trainers and academicians alike. The Occupational Descriptions in this chapter are organised according to sector, area and hierarchy of levels.

4.5 Conclusion

This chapter reported the results of study conducted through literature survey and Focus Group Discussion (FGD). Outcome of the discussions were translated through Occupational Structure (OS), Occupational Area Structure (OAS) and the Occupational Description (OD). Based on this chapter, the sub sectors that have been identified reflect the different job areas in Environmental Pollution. The visual representations of the Occupational Structures and Occupational Area Structures will enable for the industry to be interpreted at a glance in terms of levels of competency and available career paths.

5. CONCLUSION, DISCUSSION & RECOMMENDATION

5.1 Introduction

This chapter will discuss the findings and further study the proposals to increase the level of awareness in environmental management and pollution control.

5.2 Conclusion

The Environmental Management And Pollution Control Occupational Analysis was conducted together with expert panel members from various cleaning sub sectors and organizations, a total of 106 job titles, 18 job areas and 5 sub sectors have been identified.

There are several problems faced by enforcers in pollution control. The main problems identified are the ignorance and lack of awareness on the cause of pollution and pollution control requirements. Most industry or even community members have no real understanding on the importance of environmental care and how their daily routine or business operation contributes to pollution.

5.3 Discussion & Recommendation

To ensure the industry is well equipped with the knowledge on environmental care, the industry and also overall community requires government support through various initiatives and campaigns. This includes providing skills training in environmental management and pollution control and providing financial facilities to industry. In addition, monitoring and supervision on the industry need to be enhanced by the government on an ongoing basis. To ensure the element of environmental care is a part of standard operating procedure, the government has to facilitate the industry to increase internal efficiency through synergies and integration of waste management and pollution control. Furthermore reliability

and viability schemes need to be established in order to acquire the industry to contribute to a better performance of environmental management and pollution control.

Based on the findings, it is recommended that the skills training for the sector to be conducted immediately. Endowed with strong government support and a substantial human resource, this industry could expand by close cooperation between government, NGO's and the public.

The government can play a key role in sustainable development as a city, and involvement in the wider international environment issues. However, the government needs the help of the public and all stakeholders to power positive environmental changes. This can only be effectively maintained for future generations by engaging and empowering everyone to take ownership of the environment.

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ANNEX 1 : MALAYSIAN OCCUPATIONAL SKILLS QUALIFICATION FRAMEWORK (MOSQF) LEVEL DESCRIPTOR

MALAYSIAN OCCUPATIONAL SKILLS QUALIFICATION FRAMEWORK (MOSQF) LEVEL DESCRIPTOR

Level	Level Description
1	Achievement at this level reflects the ability to use relevant knowledge, skills and procedures to **complete routine and predictable tasks** that include responsibility for completing tasks and procedures subject to **direction or guidance**
2	Achievement at this level reflects the ability to select and use relevant knowledge, **ideas**, skills and procedures to **complete well-defined tasks and address straightforward problem**. It includes **taking responsibility** for completing tasks and procedures, **and exercising autonomy** and **judgement** subject to overall direction or guidance
3	Achievement at this level reflects the ability to **identify and use relevant understanding,** methods and skills to **complete task** and address problems that are well defined with a **measure of complexity.** It includes taking responsibility for initiating and completing tasks and procedures as well as exercising autonomy and judgments **within limited parameter.** It also reflects awareness of different perspectives or approaches within an area of study or work
4	Achievement at this level reflects the ability to identify and use relevant understanding, methods and skills to address problems that are well defined but **complex and non-routine**. It includes taking responsibility for overall courses of action as well as exercising autonomy and **judgment within fairly broad** parameters. It also reflects **under-standing of different** perspective or approaches within an area of study or work
5	Achievement at this level reflects the ability to identify and use relevant understanding, methods and skills to address **broadly-defined, complex problem**s. It includes taking responsibility for **planning and developing courses** of action as well as exercising autonomy and judgment within broad parameters. It also reflects **understanding of different perspectives, approaches or schools of thought and the reasoning behind them**
6	Achievement at this level reflects the ability to **refine** and use relevant understanding, methods and skills to address **complex problems that have limited definition**. It includes taking responsibility for planning and developing courses of action **that are able to underpin substantial change or development, as well as exercising broad autonomy and judgment.** It also reflects an understanding of different perspectives, **approaches of schools of thought and the theories that underpin them**

Level	Level Description
7	Achievement at this level reflects the ability to **reformulate** and use relevant understanding, methodologies and approaches to address **problematic situations** that involve many interacting factors. It includes taking responsibility for **planning and developing** courses of action that initiate or underpin substantial change or development, as well as exercising broad autonomy and judgment. It also reflects an understanding **of theoretical and relevant methodological perspectives, and how they affect their area of study or work**
8	Achievement at this level reflects the **ability to develop original understanding** and extend an area of knowledge or professional practice. It reflects the ability to address problematic situations that involve many complexes, interacting factors through initiating, designing and undertaking research, development or strategic activities. It involves the exercise of broad autonomy, judgement and leadership in sharing responsibility for the development of a field of work or knowledge, or for creating substantial professional or organisational change. It also reflects a critical understanding of relevant theoretical and methodological perspectives and how they affect the field of knowledge or work.

ANNEX 2 : LIST OF PANEL OF EXPERTS AND FACILITATORS FOR THE DEVELOPMENT OF THE ENVIRONMENTAL MANAGEMENT & POLLUTION CONTROL INDUSTRY'S OCCUPATIONAL ANALYSIS

LIST OF PANEL OF EXPERTS FOR THE DEVELOPMENT OF THE ENVIRONMENTAL MANAGEMENT AND POLLUTION CONTROL INDUSTRY'S OCCUPATIONAL ANALYSIS

NO	NAME	POSITION	EXPERTISE	ORGANISATION
1	EN. RAMLI BIN ABD. RAHMAN	CHIEF ASSISTANT DIRECTOR,	ENVIRONMENTAL POLLUTION	DEPARTMENT OF ENVIRONMENT
2	EN. ISMAIL ABDULLAH	CHAIRMAN	GREEN TECHNOLOGY	GREEN DEPOT TECHNOLOGY, SDN. BHD.
3	IR. AHMAD FAUZI BIN YAHYA	PRINCIPAL	ENVIRONMENTAL POLLUTION ON COSTRUCTION INDUSTRY	AFY ENGINEERNG CONSULTATION SDN. BHD.
4	EN. KHAIRUL AINOL. BIN JAMAL	RESEARCH OFFICER	SUSTAINABLE PRACTICE	MALAYSIAN GREEN TECHNOLOGY CORPORATION
5	EN. SIVAPALAN A/L SIVARAPALE	RESEARCH OFFICER	ENVIRONMENTAL POLLUTION	MALAYSIAN NUCLEAR AGENCY
6	DR. UZIR BIN ABD. MALIK	EXECUTIVE DIRECTOR	WASTE MANAGEMENT	SOUTHERN WASTE MANAGEMENT
7	CIK SITI RAIHANA BINTI ABU YAZAID	RESEARCH OFFICER	DEPARTMENT OF ENVIRONMENT	DEPARTMENT OF ENVIRONMENT
8	PN. LIZA BINTI RAMLI	LEAD ENVIRONMENT QHSE	ENVIRONMENTAL POLLUTION	MALAYSIAN MARINE HEAVY ENGINEERING
9	PN. SARIFAH YAACOB	R&D DEPUTY GENERAL MANAGER R&D	WASTE MANAGEMENT	ALAM FLORA SDN. BHD
10.	CIK PUVANESWARI A/P RAMASAMY	PRINCIPAL ANALYST/SENIOR	ENVIRONMENTAL POLLUTION	MIGHT

LIST OF FACILITATORS FOR THE DEVELOPMENT OF THE ENVIRONMENTAL MANAGEMENT AND POLLUTION CONTROL OCCUPATIONAL ANALYSIS

MR. FAHISZAM SAAD

FACILITATOR

PRITEC ACADEMY

MS. NORFADILAH ITHNIN

CO-FACILITATOR

PRITEC ACADEMY

MR. MOHAMED ZOLHELMY ZOLKEPLY

SECRETARIAT

PRITEC ACADEMY

ANNEX 3 : OCCUPATIONAL DESCRIPTIONS (OD) FOR THE ENVIRONMENTAL MANAGEMENT AND POLLUTION CONTROL

SECTOR : ENVIRONMENTAL MANAGEMENT AND POLLUTION CONTROL

SUB-SECTOR : COMPLIANCE MANAGEMENT

Sector Environmental Management and Pollution Control

Sub-sector Compliance Management

Job Area Odour Pollution

Sub Area N/A

Job Title Odour Pollution Inspector*

Level 4

Job Definition :

An odour pollution inspector is designated to perform immediate rectification work based on complaint record, check odour pollution severity level and perform safety immediate action with relevant parties.

Job Description :

1. Inspect inspection equipment and Personal Protective Equipment (PPE) function ability.
2. Check work procedures.
3. Check odour pollution complaint record.
4. Identify source and factors of odour pollution.
5. Determine odour pollution severity level.
6. Carry out odour pollution immediate rectification work.
7. Communicate immediate action (safety / operation) with relevant parties.
8. Prepare odour pollution report.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Compliance Management
Job Area	Odour Pollution
Sub Area	N/A
Job Title	Odour Pollution Technologist*
Level	5

Job Definition :

An odour pollution technologist is designated to verify, coordinate, analyse odour pollution activities and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Verify inspection equipment and Personal Protective Equipment (PPE) function ability.
2. Review & update work procedures.
3. Verify odour pollution complaint record.
4. Verify source and factors of odour pollution.
5. Verify odour pollution severity level.
6. Endorse immediate corrective measures odour pollution.
7. Coordinate immediate action (safety / operation) with relevant parties.
8. Analyse & propose corrective action and preventive measures report.
9. Prepare authority compliance report.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Compliance Management
Job Area	Noise Pollution
Sub Area	N/A
Job Title	Noise Pollution Inspector*
Level	4

Job Definition :

A noise pollution inspector (noise pollution) is designated to perform immediate rectification work based on complaint record, check noise pollution severity level and perform safety immediate action with relevant parties.

Job Description :

1. Inspect noise monitoring equipment and Personal Protective Equipment (PPE) function ability.
2. Collect noise level reading based on schedule and specification.
3. Check noise pollution complaint record / data.
4. Identify source and factors of noise pollution.
5. Determine noise pollution severity level.
6. Carry out noise pollution immediate corrective measures.
7. Communicate immediate action (safety / operation) with relevant parties.
8. Prepare noise pollution report.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Compliance Management
Job Area	Noise Pollution
Sub Area	N/A
Job Title	Noise Pollution Technologist*
Level	5

Job Definition :

A noise pollution technologist is designated to verify, coordinate, analyse noise pollution activities and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Review & update work procedures.
2. Verify noise monitoring equipment and Personal Protective Equipment (PPE) function ability.
3. Verify collected noise level reading based on specification.
4. Verify noise pollution complaint record.
5. Verify source and factors of noise pollution.
6. Verify noise pollution severity level.
7. Endorse noise pollution immediate corrective measures.
8. Coordinate immediate action (safety / operation) with relevant parties.
9. Analyse & propose corrective action and preventive measures report.
10. Prepare authority compliance report.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Compliance Management
Job Area	Air Pollution
Sub Area	N/A
Job Title	Air Pollution Inspector*
Level	4

Job Definition :

An air pollution inspector is designated to perform immediate rectification work based on complaint record, check air pollution severity level and perform safety immediate action with relevant parties.

Job Description :

1. Inspect air quality monitoring and sampling equipment and Personal Protective Equipment (PPE) function ability.
2. Collect air quality data and sample based on schedule and specification.
3. Check air pollution complaint record / data.
4. Identify source and factors of air pollution.
5. Determine air pollution severity level.
6. Carry out air pollution immediate corrective measures.
7. Communicate immediate action (safety / operation) with relevant parties.
8. Prepare air pollution report.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Compliance Management
Job Area	Air Pollution
Sub Area	N/A
Job Title	Air Pollution Technologist*
Level	5

Job Definition :

An air pollution technologist (air pollution) is designated to verify, coordinate, analyse air pollution activities and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Review & update work procedures
2. Verify air monitoring and sampling equipment and Personal Protective Equipment (PPE) function ability.
3. Verify collected air quality data and sample based on specification.
4. Verify air pollution complaint record.
5. Verify source and factors of air pollution.
6. Verify air pollution severity level.
7. Endorse air pollution immediate corrective measures.
8. Coordinate immediate action (safety / operation) with relevant parties.
9. Analyse & propose corrective action and preventive measures report.
10. Prepare authority compliance report.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Compliance Management
Job Area	Water Pollution
Sub Area	N/A
Job Title	Water Pollution Inspector*
Level	4

Job Definition :

A water pollution inspector is designated to perform immediate rectification work based on complaint record, check water pollution severity level and perform safety immediate action with relevant parties.

Job Description :

1. Inspect water sampling equipment and Personal Protective Equipment (PPE) function ability.
2. Collect water sample based on schedule and specification.
3. Check water pollution complaint record / analysis report.
4. Identify source and factors ofwater pollution.
5. Determine water pollution severity level.
6. Carry out water pollution immediate corrective measures.
7. Communicate immediate action (safety / operation) with relevant parties.
8. Prepare water pollution report.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Compliance Management
Job Area	Water Pollution
Sub Area	N/A
Job Title	Water Pollution Technologist*
Level	5

Job Definition :

A water pollution technologist is designated to verify, coordinate, analyse water pollution activities and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Review & update work procedures.
2. Verify water sampling equipment and Personal Protective Equipment (PPE) function ability.
3. Verify collected water sample based on specification.
4. Verify water pollution complaint record.
5. Verify source and factors of water pollution.
6. Verify water pollution severity level.
7. Endorse water pollution immediate corrective measures.
8. Coordinate immediate action (safety / operation) with relevant parties.
9. Analyse & propose corrective action and preventive measures report.
10. Prepare authority compliance report.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Compliance Management
Job Area	Marine Pollution
Sub Area	N/A
Job Title	Marine Pollution Inspector*
Level	4

Job Definition :

A marine pollution inspector is designated to check marine pollution severity level, prepare sea water sampling and perform safety immediate action with relevant parties.

Job Description :

1. Inspect sea water sampling equipment and Personal Protective Equipment (PPE) function ability.
2. Collect sea water sample based on specification.
3. Check marine pollution complaint record / data.
4. Identify source and factors of marine pollution.
5. Determine marine pollution severity level.
6. Communicate immediate action (safety / operation) with relevant parties.
7. Prepare marine pollution report.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Compliance Management
Job Area	Marine Pollution
Sub Area	N/A
Job Title	Marine Pollution Technologist*
Level	5

Job Definition :

A marine pollution technologist is designated to verify, coordinate, analyse marine pollution activities and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Review & update work procedures.
2. Verify sea water sampling equipment and Personal Protective Equipment (PPE) function ability.
3. Verify collected sea water sample based on authorities specification.
4. Verify marine pollution complaint record.
5. Verify source and factors of marine pollution.
6. Verify sea water pollution severity level.
7. Coordinate immediate action (safety / operation) with relevant parties.
8. Analyse & propose corrective action and preventive measures report.
9. Prepare authority compliance report.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Compliance Management
Job Area	Soil Pollution
Sub Area	N/A
Job Title	Soil Pollution Inspector*
Level	4

Job Definition :

A soil pollution inspector is designated to check soil pollution severity level, prepare soil sampling and perform safety immediate action with relevant parties.

Job Description :

1. Inspect soil sampling equipment and Personal Protective Equipment (PPE) function ability.
2. Collects oil sample based on specification.
3. Check soil contamination complaint record / data.
4. Identify source and factors of soil contamination.
5. Determine soil contamination severity level.
6. Communicate immediate action (safety / operation) with relevant parties.
7. Prepare soil contamination report.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Compliance Management
Job Area	Soil Pollution
Sub Area	N/A
Job Title	Soil Pollution Technologist*
Level	5

Job Definition :

A soil pollution technologist (soil pollution) is designated to verify, coordinate, analyse soil pollution activities and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Review & update work procedures.
2. Verify soil sampling equipment and Personal Protective Equipment (PPE) function ability.
3. Verify collected soil sample based on specification.
4. Verify soil contamination complaint record.
5. Verify source and factors of soil contamination.
6. Verify soil contamination severity level.
7. Endorse soil contamination immediate corrective measures.
8. Coordinate immediate action (safety / operation) with relevant parties.
9. Analyse & propose corrective action and preventive measures report.
10. Prepare authority compliance report.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Compliance Management
Job Area	Scheduled Waste Pollution
Sub Area	N/A
Job Title	Scheduled Waste Pollution Inspector*
Level	4

Job Definition :

A scheduled waste pollution inspector is designated to check waste spillage severity level, prepare waste spillage sampling and perform safety immediate action with relevant parties.

Job Description :

1. Inspects scheduled waste spillage sampling equipment and Personal Protective Equipment (PPE) functionability.
2. Collect scheduled waste spillage sample based on specification.
3. Check scheduled waste spillage complaint record / data.
4. Identify source and factors of scheduled waste spillage.
5. Determine scheduled waste spillage severity level.
6. Communicate immediate action (safety / operation) with relevant parties.
7. Prepare scheduled waste spillage report.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Compliance Management
Job Area	Scheduled Waste Pollution
Sub Area	N/A
Job Title	Scheduled Waste Pollution Technologist*
Level	5

Job Definition :

A scheduled waste pollution technologist is designated to verify, coordinate, analyse scheduled waste pollution activities and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Review & update work procedures.
2. Verify scheduled waste spillage sampling equipment and Personal Protective Equipment (PPE) functionability.
3. Verify scheduled waste spillage sample based on authorities specification.
4. Verify scheduled waste spillage complaint record.
5. Verify source and factors of scheduled waste spillage.
6. Verify scheduled waste spillage severity level.
7. Coordinate immediate action (safety / operation) with relevant parties.
8. Analyse & propose corrective action and preventive measures report.
9. Prepare authority compliance report.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Compliance Management
Job Area	Radioactive Pollution
Sub Area	N/A
Job Title	Radioactive Pollution Inspector*
Level	4

Job Definition :

A radioactive pollution inspector (radioactive pollution) is designated to develop radioactive protection program, monitor radioactive level for area personnel and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Develop radioactive protection program.
2. Monitor radioactive level.
3. Produce radiation leak report.
4. Prepare for atomic energy licensing board audit.
5. Coordinate equipment maintenance.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Compliance Management
Job Area	Radioactive Pollution
Sub Area	N/A
Job Title	Radioactive Pollution Technologist*
Level	5

Job Definition :

A radioactive pollution technologist (radioactive pollution) is designated to plan radioactive protection program, monitor radioactive level for area personnel and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Plan radioactive protection program.
2. Monitor radioactive level.
3. Endorse radiation leak report.
4. Verify for atomic energy licensing board audit.
5. Monitor equipment maintenance.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Compliance Management
Job Area	Odour Pollution, Noise Pollution, Air Pollution, Water Pollution, Marine Pollution, Soil Pollution, Scheduled Waste Pollution, Radioactive Pollution
Sub Area	N/A
Job Title	Compliance Management Manager
Level	6

Job Definition :

A compliance management manager is designated to assist research activities on hazardous waste management projects and comply proper safety precautions and prepare inspection records.

Job Description :

1. Monitor management information systems which identify the location of hazardous materials in all facilities.
2. Coordinate employee training programs related to hazardous materials and waste.
3. Supervise work of outside contractors involved in removing or testing hazardous material.
4. Prepare accurate record related to chemical inventories.
5. Prepare operation and inspection logs.
6. Recommend and coordinate the development of programs needed by the district to comply with hazardous materials regulation.

Sector	Environmental Management and Pollution Control
Sub-sector	Compliance Management
Job Area	Odour Pollution, Noise Pollution, Air Pollution, Water Pollution, Marine Pollution, Soil Pollution, Scheduled Waste Pollution, Radioactive Pollution
Sub Area	N/A
Job Title	Compliance Management Specialist
Level	7

Job Definition :

A compliance management specialist is designated to conduct research on hazardous waste management projects to determine the magnitude of problems, learning and observing proper safety precautions and prepare and maintain inspection records.

Job Description :

1. Develop and maintain management information systems which identify the location of hazardous materials in all facilities.
2. Update and deliver employee training programs related to hazardous materials and waste.
3. Supervise work of outside contractors involved in removing or testing hazardous material.
4. Maintain accurate record related to chemical inventories.
5. Maintain operation and inspection logs.
6. Recommend and coordinate the development of programs needed by the district to comply with hazardous materials regulation.

SECTOR : ENVIRONMENTAL MANAGEMENT AND POLLUTION CONTROL

SUB-SECTOR : SUSTAINABLE PRACTICE

Sector	Environmental Management and Pollution Control
Sub-sector	Sustainable Practice
Job Area	Carbon Footprint Management
Sub Area	Transportation, Building, Waste & Water, Energy, Land Use
Job Title	Carbon Footprint Data Collector*
Level	3

Job Definition :

A carbon footprint data collector is designated to perform survey development, assist data providers, collect data and prepare progress report.

Job Description :

1. Check requirement for carbon footprint guidelines/standard.
2. Develop set of questionnaire/survey form based on requirement of guidelines.
3. Identify data providers based on requirement of guidelines.
4. Distribute and follow-upset of questionnaire/survey form to related data provider.
5. Assist data providers to complete questionnaire/ survey form when necessary.
6. Collect requirement data from related data providers.
7. Prepare weekly progress of data collecting report.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Sustainable Practice
Job Area	Carbon Footprint Management
Sub Area	Transportation, Building, Waste & Water, Energy, Land Use
Job Title	Carbon Footprint Auditor*
Level	4

Job Definition :

A carbon footprint auditor is designated to verify carbon footprints guidelines, perform data collecting monitoring and analyse GHG emission based on requirements.

Job Description :

1. Verify requirement for carbon footprint guidelines/standard.
2. Verify set of questionnaire/survey form based on requirement of guidelines.
3. Monitor progress of data collecting weekly.
4. Check and ensure the accuracy and completeness of requirement data from related data providers.
5. Calculate and analyse GHG emission & GHG emission reduction based on requirement of guidelines.
6. Prepare Progress Carbon Footprint report monthly.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Sustainable Practice
Job Area	Carbon Footprint Management
Sub Area	Transportation, Building, Waste & Water, Energy, Land Use
Job Title	Carbon Footprint Lead Auditor*
Level	5

Job Definition :

A carbon footprint lead auditor is designated to monitor carbon footprint progress report, endorse carbon footprint analysis requirement and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Endorse requirement for carbon footprint analysis as per guidelines/standard.
2. Verify the accuracy and completeness of requirement data from related data provider.
3. Ensure all projects related with carbon footprint are delivered.
4. Attend meetings and briefings with client when needed.
5. Verify progress carbon footprint report monthly.
6. Research current, local and global developments in carbon and climate change sector.
7. Deliver carbon and climate change educational tools to related stakeholders.
8. Prepare carbon footprint final report annually.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Sustainable Practice
Job Area	Carbon Footprint Management
Sub Area	Transportation, Building, Waste & Water, Energy, Land Use
Job Title	Carbon Footprint Auditing Manager*
Level	6

Job Definition :

A carbon footprint auditing manager is designated to provide best practice approaches to carbon reductions, liaise with working teams and clients, perform consultancy to related stakeholders and perform budget and training management.

Job Description :

1. Estimate benefit emission trading and emission reduction mechanism/schemes.
2. Develop best practice approaches to carbon reductions.
3. Develop carbon footprint systems available to clients.
4. Liaise with internal teams/client to identify carbon reduction opportunities.
5. Identify operational improvements in the assessment process of carbon footprint project.
6. Provide consultancy on legal, statutory, and technical issues to related stakeholders.
7. Manage budget and training for carbon footprint project.
8. Verify annual Carbon Footprint Final Report.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Sustainable Practice
Job Area	Carbon Footprint Management
Sub Area	Transportation
Job Title	Carbon Footprint Specialist*
Level	7

Job Definition :

A carbon footprint specialist (transportation) is designated to conduct consultation on carbon footprint method, provide practical solutions assist company's growth plan and propose paperwork for client.

Job Description :

1. Interact & evaluate new clients about their carbon footprint.
2. Consult clients to understand carbon footprint method to reduced emissions.
3. Identify practical solutions for client's carbon emissions.
4. Provide Technical and specialist support to the carbon footprint activities.
5. Execute development process emission reduction / carbon footprint project.
6. Support company's growth plan on developing key work stream.
7. Prepare & present paperwork or proposal for client new carbon footprint project.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Sustainable Practice
Job Area	Carbon Footprint Management
Sub Area	Building
Job Title	Carbon Footprint Specialist*
Level	7

Job Definition :

A carbon footprint specialist (building) is designated to conduct consultation on carbon footprint method, provide practical solutions assist company's growth plan and propose paperwork for client.

Job Description :

1. Interact & evaluate new clients about their carbon footprint.
2. Consult clients to understand carbon footprint method to reduced emissions.
3. Identify practical solutions for client's carbon emissions.
4. Provide Technical and specialist support to the carbon footprint activities.
5. Execute development process emission reduction / carbon footprint project.
6. Support company's growth plan on developing key work stream.
7. Prepare & present paperwork or proposal for client new carbon footprint project.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Sustainable Practice
Job Area	Carbon Footprint Management
Sub Area	Waste & Water
Job Title	Carbon Footprint Specialist*
Level	7

Job Definition :

A carbon footprint specialist (waste & water) is designated to conduct consultation on carbon footprint method, provide practical solutions assist company's growth plan and propose paperwork for client.

Job Description :

1. Interact & evaluate new clients about their carbon footprint.
2. Consult clients to understand carbon footprint method to reduced emissions.
3. Identify practical solutions for client's carbon emissions.
4. Provide Technical and specialist support to the carbon footprint activities.
5. Execute development process emission reduction / carbon footprint project.
6. Support company's growth plan on developing key work stream.
7. Prepare & present paperwork or proposal for client new carbon footprint project.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Sustainable Practice
Job Area	Carbon Footprint Management
Sub Area	Energy
Job Title	Carbon Footprint Specialist*
Level	7

Job Definition :

A carbon footprint specialist (energy) is designated to conduct consultation on carbon footprint method, provide practical solutions assist company's growth plan and propose paperwork for client.

Job Description :

1. Interact & evaluate new clients about their carbon footprint.
2. Consult clients to understand carbon footprint method to reduced emissions.
3. Identify practical solutions for client's carbon emissions.
4. Provide Technical and specialist support to the carbon footprint activities.
5. Execute development process emission reduction / carbon footprint project.
6. Support company's growth plan on developing key work stream.
7. Prepare & present paperwork or proposal for client new carbon footprint project.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Sustainable Practice
Job Area	Carbon Footprint Management
Sub Area	Land Use
Job Title	Carbon Footprint Specialist*
Level	7

Job Definition :

A carbon footprint specialist (land use) is designated to conduct consultation on carbon footprint method, provide practical solutions assist company's growth plan and propose paperwork for client.

Job Description :

1. Interact & evaluate new clients about their carbon footprint.
2. Consult clients to understand carbon footprint method to reduced emissions.
3. Identify practical solutions for client's carbon emissions.
4. Provide Technical and specialist support to the carbon footprint activities.
5. Execute development process emission reduction / carbon footprint project.
6. Support company's growth plan on developing key work stream.
7. Prepare & present paperwork or proposal for client new carbon footprint project.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Sustainable Practice
Job Area	Environmental Pollution Control Compliance
Sub Area	N/A
Job Title	National Competency Standard (NCS) for Environmental Pollution Control
Level	N/A

Job Definition :

N/A

Core Competency :

1. Environmental management planning.
2. Environmental standards compliance.
3. Environmental pollution sources and prevention.
4. Environmental Safety, Health & Environmental (SHE) awareness.
5. Environmental impact minimisation.
6. Spillage incident control procedures.

Notes:

***Critical Job Title**

SECTOR : ENVIRONMENTAL MANAGEMENT AND POLLUTION CONTROL

SUB-SECTOR : INFRASTRUCTURE

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Laboratory
Sub Area	N/A
Job Title	Environmental Pollution Assistant Analyst
Level	4

Job Definition :

An environmental pollution assistant analyst is designated to assist data collection, study and analyse data to propose action and policies to create less harmful and cleaner interaction with the environment.

Job Description :

1. Assist research studies to develop theories or methods controlling sources of environmental pollution.
2. Assist research model development.
3. Collect and synthesizes data derived from pollution emission.
4. Assist to prepare graph, charts and statistical models from data.
5. Assist to analyse data to assess pollution problems.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Laboratory
Sub Area	N/A
Job Title	Environmental Pollution Analyst
Level	5

Job Definition :

An environmental pollution analyst is designated to collect study and analyse data to propose action and policies to create less harmful and cleaner interaction with the environment.

Job Description :

1. Conduct research studies to develop theories or methods controlling sources of environmental pollution.
2. Plan and develop research model.
3. Analyse sources of pollution to determine the effects.
4. Collect and synthesizes data derived from pollution emission.
5. Prepare graph, charts and statistical models from data.
6. Analyse data to assess pollution problems.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Waste Management
Sub Area	Waste Water Treatment
Job Title	Waste Water Treatment Plant Technician
Level	2

Job Definition :

A waste water treatment plant technician is designated to carry out treatment and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Check tools and equipment functionability.
2. Operate treatment facilities tools and equipment.
3. Adhere safety requirements.
4. Prepare daily record

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Waste Management
Sub Area	Waste Water Treatment
Job Title	Waste Water Treatment Plant Senior Technician
Level	3

Job Definition :

A waste water treatment plant senior technician is designated to supervise machine and equipment operation, carry out preventive maintenance, carry out waste water sampling and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Monitor and operate waste water treatment plant equipment and machineries.
2. Inspect machine and equipment in designated area.
3. Monitor chemical supply, parts and adjust feed rateas required.
4. Troubleshoot and repairs mechanical and electrical breakdown equipment and machine.
5. Carry out routine preventive maintenance plant equipment, machineries and facilities.
6. Collect and send to laboratory waste water sample as per schedule and specification.
7. Prepare schedule report daily.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Waste Management
Sub Area	Waste Water Treatment
Job Title	Waste Water Treatment Plant Assistant Technologist*
Level	4

Job Definition :

A waste water treatment plant assistant technologist is designated to coordinate plant operation, breakdown repair and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Coordinate waste water treatment plant daily operation.
2. Verify machine and equipment inspection report.
3. Carry out chemical supply and parts purchase requisition.
4. Coordinate breakdown repair equipment and machine.
5. Prepare routine preventive maintenance schedule plant equipment, machineries and facilities.
6. Analyse and review laboratory analysis result.
7. Verify schedule report daily.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Waste Management
Sub Area	Waste Water Treatment
Job Title	Waste Water Treatment Plant Technologist*
Level	5

Job Definition :

A waste water treatment plant technologist is designated to plan treatment plant operation, monitor machine and equipment, manage plant costing and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Plan waste water treatment plant operation.
2. Endorse machine and equipment inspection report.
3. Endorse chemical supply and parts purchase requisition.
4. Monitor breakdown repair equipment and machine.
5. Endorse routine preventive maintenance schedule plant equipment, machineries and facilities.
6. Prepare environmental monitoring report.
7. Prepare and manage plant operation costing report.
8. Carry out treated waste water quality control.
9. Manage plant operation and Safety, Health & Environmental (SHE) regulatory requirements compliance.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Waste Management
Sub Area	Waste Water Treatment
Job Title	Waste Water Treatment Plant Manager
Level	6

Job Definition :

A waste water treatment plant manager is designated to monitor waste water treatment plant, manage plant operation budget and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Monitor and improve waste water treatment plant operation and maintenance.
2. Implement, directs and enforce plant safety and risk management program.
3. Verify plant operation budget and expenses.
4. Endorse breakdown repair equipment and machine.
5. Review environmental monitoring report.
6. Review plant operation, design improvement and cost control report.
7. Enforce treated waste water quality control.
8. Enforce plant operation Safety, Health & Environmental (SHE) regulatory requirements compliance.
9. Plan human resource requirement.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Waste Management
Sub Area	Industrial Effluent Treatment
Job Title	Industrial Effluent Treatment Plant Technician
Level	2

Job Definition :

An industrial effluent treatment plant technician is designated to carry out treatment and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Check tools and equipment functionability.
2. Operate treatment facilities tools and equipment.
3. Adhere safety requirements.
4. Prepare daily record.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Waste Management
Sub Area	Industrial Effluent Treatment
Job Title	Industrial Effluent Treatment Plant Senior Technician
Level	3

Job Definition :

An industrial effluent treatment plant senior technician is designated to supervise waste water treatment plant equipment and machine, perform routine preventive maintenance and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Monitor and operate waste water treatment plant equipment and machineries.
2. Inspect machine and equipment in designated area.
3. Monitor chemical supply, parts and adjust feed rate as required.
4. Troubleshoot and repairs mechanical and electrical breakdown equipment and machine.
5. Carry out routine preventive maintenance plant equipment, machineries and facilities.
6. Collect and send to laboratory waste water sample as per schedule and specification.
7. Prepare schedule report daily.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Waste Management
Sub Area	Industrial Effluent Treatment
Job Title	Industrial Effluent Treatment Plant Assistant Technologist*
Level	4

Job Definition :

An industrial effluent treatment assistant technologist is designated to coordinate plant operation, perform chemical supply, provide preventive maintenance schedule and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Endorse inventory record accuracy.
2. Coordinate industrial effluent treatment plant daily operation.
3. Verify treatment facilities operation.
4. Endorse breakdown repair equipment and machine.
5. Comply routine preventive maintenance schedule plant equipment, machineries and facilities.
6. Verify summary report daily.
7. Monitor compliance Safety, Health & Environmental (SHE) requirement.
8. Prepare report management update.
9. Adhere spillage and accident Emergency Response Plan (ERP) implementation.
10. Prepare environmental monitoring report.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Waste Management
Sub Area	Industrial Effluent Treatment
Job Title	Industrial Effluent Treatment Plant Technologist*
Level	5

Job Definition :

An industrial effluent treatment technologist is designated to plan plant operation, manage chemical supply and purchase requisition, perform scheduled waste treatment quality control and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Plan industrial effluent treatment plant operation.
2. Endorse inspection report.
3. Endorse chemical supply and parts stock machine and equipment purchase requisition.
4. Endorse routine preventive maintenance schedule plant equipment, machineries and facilities.
5. Review environmental monitoring report.
6. Prepare and manage plant operation efficiency and cost control report.
7. Carry out schedule waste treatment.
8. Manage plant operation and Safety, Health & Environmental (SHE) regulatory requirements compliance quality control.
9. Endorse management report as per requirement.
10. Plan human resource and training as per requirement.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Waste Management
Sub Area	Industrial Effluent Treatment
Job Title	Industrial Effluent Treatment Plant Manager
Level	6

Job Definition :

An industrial effluent treatment manager is designated to monitor plant operation, manage plant operation budget and expenses, comply treatment environment quality and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Monitor and improve schedule waste treatment plant operation and maintenance.
2. Implement, directs and enforce plant safety and risk management program.
3. Endorse plant operation budget and expenses.
4. Endorse breakdown repair equipment and machine.
5. Endorse environmental monitoring report.
6. Review and endorse plant operation, design improvement and cost control report.
7. Comply schedule waste treatment environmental quality.
8. Enforce plant operation Safety, Health & Environmental (SHE) regulatory requirements compliance.
9. Endorse human resource and training program.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Waste Management
Sub Area	Solid Waste Treatment
Job Title	Solid Waste Treatment Plant Operator*
Level	1

Job Definition :

A solid waste treatment plant operator is designated to carry out waste sorting, housekeeping and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Carry out waste sorting.
2. Carry out work area housekeeping.
3. Adhere safety requirements.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Waste Management
Sub Area	Solid Waste Treatment
Job Title	Solid Waste Treatment Plant Technician*
Level	2

Job Definition :

A solid waste treatment plant technician is designated to carry out treatment and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Check tools and equipment functionability.
2. Operate treatment facilities tools and equipment.
3. Adhere to safety requirements.
4. Prepare daily record.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Waste Management
Sub Area	Solid Waste Treatment
Job Title	Solid Waste Treatment Plant Senior Technician*
Level	3

Job Definition :

A solid waste treatment plant senior technician is designated to supervise treatment plant machine and equipment, perform routine preventive maintenance, perform solid waste sampling and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Monitor and operate solid waste treatment plant equipment and machineries.
2. Supervise machine and equipment operation.
3. Check chemical supply and parts stock daily.
4. Troubleshoot and repairs mechanical and electrical breakdown equipment and machine.
5. Carry out routine preventive maintenance plant equipment, machineries and facilities.
6. Collect and send to laboratory solid waste sample as per schedule and specification.
7. Prepare summary report daily.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Waste Management
Sub Area	Solid Waste Treatment
Job Title	Solid Waste Treatment Plant Assistant Technologist
Level	4

Job Definition :

A solid waste treatment plant assistant technologist is designated to coordinate plant operation, perform chemical supply, provide preventive maintenance schedule and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Coordinate waste water treatment plant daily operation.
2. Verify machine and equipment operation.
3. Carry out chemical supply and parts stock daily.
4. Coordinate breakdown repair equipment and machine.
5. Prepare routine preventive maintenance schedule plant equipment, machineries and facilities.
6. Analyse and review laboratory analysis result.
7. Verify summary report daily.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Waste Management
Sub Area	Solid Waste Treatment
Job Title	Solid Waste Treatment Plant Technologist
Level	5

Job Definition :

A solid waste treatment plant technologist is designated to plan plant operation, manage chemical supply and purchase requisition, perform solid waste treatment quality control and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Plan solid waste treatment plant operation.
2. Endorse machine and equipment inspection report.
3. Endorse chemical supply and parts stock purchase requisition.
4. Monitor breakdown repair equipment and machine.
5. Endorse routine preventive maintenance schedule plant equipment, machineries and facilities.
6. Prepare environmental monitoring report.
7. Prepare and manage plant operation costing report.
8. Carry outs solid waste treatment quality control.
9. Manage plant operation and Safety, Health & Environmental (SHE) regulatory requirements compliance.
10. Endorse summary report daily.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Waste Management
Sub Area	Solid Waste Treatment
Job Title	Solid Waste Treatment Plant Manager
Level	6

Job Definition :

A solid waste treatment plant manager is designated to monitor plant operation, manage budget and expenses and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Monitor and improve solid waste treatment plant operation and maintenance.
2. Implement, directs and enforce plant safety and risk management program.
3. Endorse plant operation budget and expenses.
4. Endorse breakdown repair equipment and machine.
5. Review environmental monitoring report.
6. Review and endorse plant operation, design improvement and cost control report.
7. Comply solid waste treatment environmental quality.
8. Enforce plant operation Safety, Health & Environmental (SHE) regulatory requirements compliance.
9. Plan and execute human resource and training requirement.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Waste Management
Sub Area	Scheduled Waste Treatment
Job Title	Scheduled Waste Treatment Operator*
Level	1

Job Definition :

A scheduled waste treatment technician operator is designated to carry out screening and categorizing, housekeeping and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Carry out schedule waste screening and categorizing.
2. Carry out work area housekeeping.
3. Adhere safety requirements.
4. Carry out schedule waste storage labelling based on type of waste.
5. Carry out schedule waste container storage area.
6. Update schedule waste inventory daily.
7. Execute Emergency Response Plan (ERP) when spillage.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Waste Management
Sub Area	Scheduled Waste Treatment
Job Title	Scheduled Waste Treatment Technician*
Level	2

Job Definition :

A scheduled waste treatment technician is designated to carry out screening and categorizing, operate tools and equipment and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Check schedule waste screening and categorizing.
2. Check work area cleanliness.
3. Adhere safety requirements.
4. Inspect schedule waste storage labelling based on type of waste.
5. Inspect schedule waste container storage area.
6. Check schedule waste inventory record activities.
7. Check tools and equipment functionability.
8. Operate treatment facilities tools and equipment.
9. Check daily record.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Waste Management
Sub Area	Scheduled Waste Treatment
Job Title	Scheduled Waste Treatment Senior Technician*
Level	3

Job Definition :

A scheduled waste treatment senior technician is designated to supervise screening and categorizing activities, routine preventive maintenance and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Supervise schedule waste screening and categorising.
2. Supervise work area cleanliness.
3. Adhere safety requirements.
4. Verify schedule waste storage labelling based on type of waste.
5. Verify schedule waste container storage area.
6. Verify schedule waste inventory record activities.
7. Supervise spillage and accident Emergency Response Plan (ERP) implementation
8. Verify tools and equipment functionability.
9. Supervise treatment facilities operation mechanical and electrical breakdown equipment and machine.
10. Collect and send to laboratory.
11. Troubleshoot and repairs schedule waste sample as per schedule and specification.
12. Supervise routine preventive maintenance plant equipment, machineries and facilities.
13. Prepare report daily.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Waste Management
Sub Area	Scheduled Waste Treatment
Job Title	Scheduled Waste Treatment Assistant Technologist*
Level	4

Job Definition :

A scheduled waste treatment assistant technologist is designated to coordinate plant operation, perform chemical supply, provide preventive maintenance schedule and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Endorse inventory record accuracy.
2. Coordinate schedule waste treatment plant daily operation.
3. Verify treatment facilities operation.
4. Endorse breakdown repair equipment and machine.
5. Comply routine preventive maintenance schedule plant equipment, machineries and facilities.
6. Verify summary report daily.
7. Monitor compliance Safety, Health & Environmental (SHE) requirement.
8. Prepare report management update.
9. Adhere spillage and accident Emergency Response Plan (ERP) implementation.
10. Prepare environmental monitoring report.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Waste Management
Sub Area	Scheduled Waste Treatment
Job Title	Scheduled Waste Treatment Technologist*
Level	5

Job Definition :

A scheduled waste treatment technologist is designated to plan plant operation, manage chemical supply and purchase requisition, perform scheduled waste treatment quality control and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Plan schedule waste treatment plant operation.
2. Endorse inspection report.
3. Endorse chemical supply and parts stock machine and equipment purchase requisition.
4. Endorse routine preventive maintenance schedule plant equipment, machineries and facilities.
5. Review environmental monitoring report.
6. Prepare and manage plant operation efficiency and cost control report.
7. Carry out schedule waste treatment.
8. Manage plant operation and Safety, Health & Environmental (SHE) regulatory requirements compliance quality control.
9. Endorse management report as per requirement.
10. Plan human resource and training as per requirement.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Waste Management
Sub Area	Scheduled Waste Treatment
Job Title	Scheduled Waste Treatment Manager
Level	6

Job Definition :

A scheduled waste treatment manager is designated to monitor plant operation, manage plant operation budget and expenses, comply treatment environment quality and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Monitor and improve schedule waste treatment plant operation and maintenance.
2. Implement, directs and enforce plant safety and risk management program.
3. Endorse plant operation budget and expenses.
4. Endorse breakdown repair equipment and machine.
5. Endorse environmental monitoring report.
6. Review and endorse plant operation, design improvement and cost control report.
7. Comply schedule waste treatment environmental quality.
8. Enforce plant operation Safety, Health & Environmental (SHE) regulatory requirements compliance.
9. Endorse human resource and training program.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Waste Management
Sub Area	Waste Water Treatment, Industrial Effluent Treatment, Solid Waste Treatment, Scheduled Waste Treatment
Job Title	Waste Treatment Specialist
Level	7

Job Definition :

A waste treatment specialist is designated to deliver engineering documentation, review and check documents submitted by engineering contractors, provide technical guidance and mentoring, set and maintain high standards for HSE, QA and ethical behaviors and provide specialist controls system and technical support at risk assessments.

Job Description :

1. Deliver engineering documentation to satisfy the design requirements in compliance.
2. Review and check documents submitted by engineering contractors.
3. Verify that the level of Technical Integrity required for the safe and long term operation of the plant infrastructure is maintained through all stages of development and operation.
4. Set and maintain high standards for HSE, QA and ethical behaviors.
5. Provide technical guidance and mentoring for discipline engineers.
6. Assess the technical specification of equipment as part of the annual Condition Assessment of the client's waste treatment facilities.
7. Provide specialist input to repair plans for ageing waste treatment equipment.
8. Write engineering reports.
9. Prepare schedules and develop cost estimates.
10. Provide specialist controls system and technical support at risk assessments.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Plant Operation Radioactive Waste Monitoring
Sub Area	N/A
Job Title	Radioactive Waste Technician
Level	3

Job Definition :

A radioactive waste technician is designated to operate radioactive protection program, and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Operate radioactive protection program.
2. Produce radiation leak report.
3. Carry out for atomic energy licensing board audit.
4. Perform equipment maintenance.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Plant Operation Radioactive Waste Monitoring
Sub Area	N/A
Job Title	Radioactive Waste Assistant Technologist
Level	4

Job Definition :

A radioactive waste assistant technologist is designated to develop radioactive protection program, monitor radioactive level for area personnel and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Develop radioactive protection program.
2. Monitor radioactive level.
3. Produce radiation leak report.
4. Prepare for atomic energy licensing board audit.
5. Coordinate equipment maintenance.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Plant Operation Radioactive Waste Monitoring
Sub Area	N/A
Job Title	Radioactive Waste Technologist
Level	5

Job Definition :

A radioactive waste technologist is designated to to plan radioactive protection program, monitor radioactive level for area personnel and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Plan radioactive protection program.
2. Monitor radioactive level.
3. Endorse radiation leak report.
4. Verify for atomic energy licensing board audit.
5. Monitor equipment maintenance.

Notes: Critical Job Title

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Plant Operation Pollution Control
Sub Area	Scheduled Waste, Air, Noise
Job Title	Plant Operation Pollution Control Technician
Level	3

Job Definition :

A plant operation pollution control technician is designated to supervise waste screening schedule, tools and equipment functionability, carry out scheduled waste sampling and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Supervise schedule waste screening and categorizing.
2. Supervise work area cleanliness.
3. Adhere safety requirements.
4. Verify schedule waste storage labelling based on type of waste.
5. Verify schedule waste container storage area.
6. Verify schedule waste inventory record activities.
7. Supervise spillage and accident Emergency Response Plan (ERP) implementation.
8. Verify tools and equipment functionability.
9. Supervise treatment facilities operation.
10. Troubleshoot and repairs mechanical and electrical breakdown equipment and machine.
11. Collect and send to laboratory schedule waste sample as per schedule and specification.
12. Supervise routine preventive maintenance plant equipment, machineries and facilities.
13. Prepare report daily.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Plant Operation Pollution Control
Sub Area	Scheduled Waste, Air, Noise
Job Title	Plant Operation Pollution Control Assistant Technologist
Level	4

Job Definition :

A plant operation pollution control assistant technologist is designated to coordinate schedule, verify facilities operation and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Endorse inventory record accuracy.
2. Coordinate schedule waste treatment plant daily operation.
3. Verify treatment facilities operation.
4. Endorse breakdown repair equipment and machine.
5. Comply routine preventive maintenance schedule plant equipment, machineries and facilities.
6. Verify summary report daily.
7. Monitor compliance Safety, Health & Environmental (SHE) requirement.
8. Prepare report management update.
9. Adhere spillage and accident Emergency Response Plan (ERP) implementation.
10. Prepare environmental monitoring report.

Notes: Critical Job Title

Sub-sector Infrastructure

Job Area Plant Operation Pollution Control

Sub Area Scheduled Waste

Job Title Scheduled Waste Manager*

Level 5

Job Definition :

A scheduled waste manager is designated to plan management operation, identify safe storage, monitor routine preventive maintenance, monitor scheduled waste management quality control and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Plan scheduled waste management operation.
2. Ensure machine and equipment functionability.
3. Ensure chemical supply safe storage.
4. Endorse routine preventive maintenance schedule plant equipment, machineries and facilities.
5. Review scheduled waste environmental monitoring report.
6. Prepare and manage plant operation efficiency and cost control report.
7. Monitor scheduled waste management quality control and pollution system.
8. Manage scheduled waste pollution control measures regulatory requirements compliance.
9. Prepare scheduled waste management report as per requirement.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Plant Operation Pollution Control
Sub Area	Air
Job Title	Air Pollution Control Technologist*
Level	5

Job Definition :

An air pollution control technologist is designated to plan air pollution system operation, monitor routine preventive maintenance schedule, air pollution control system efficiency and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Plan air pollution control system operation.
2. Ensure air pollution control system function ability.
3. Ensure chemical supply safe storage.
4. Endorse routine preventive maintenance schedule reliability and efficiency.
5. Prepare and propose cost control report.
6. Monitor air pollution control system efficiency.
7. Comply air pollution control measures regulatory requirements compliance.
8. Prepare air pollution management report as per requirement.
9. Ensure air monitoring device calibrated.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Plant Operation Pollution Control
Sub Area	Noise
Job Title	Noise Pollution Control Technologist*
Level	5

Job Definition :

A noise pollution control technologist is designated to plan noise pollution system operation, monitor routine preventive maintenance schedule, noise pollution control system efficiency and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Plan noise pollution control system operation.
2. Ensure noise pollution control system function ability.
3. Ensure sound level meter calibrated.
4. Endorse routine preventive maintenance schedule reliability and efficiency.
5. Prepare and propose cost control report.
6. Monitor noise pollution control system efficiency report.
7. Comply noise pollution control measures regulatory requirements compliance.
8. Prepare noise pollution management report as per requirement.
9. Adhere Personal Protective Equipment (PPE) relevant staff.
10. Perform noise pollution audit finding.
11. Prepare corrective action report.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Plant Operation Pollution Control
Sub Area	Scheduled Waste, Air, Noise
Job Title	Plant Operation Pollution Control Manager
Level	6

Job Definition :

A plant operation pollution control manager is designated to monitor scheduled waste management, endorse Standard Operating Procedures, monitor plant operation and cost control and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Monitor and improve environmental pollution control system and scheduled waste management.
2. Implement, directs and enforce plant safety and risk management program.
3. Endorse pollution control management Standard Operating Procedures.
4. Endorse routine preventive maintenance schedule and breakdown repair reliability and efficiency.
5. Review and endorse environmental pollution management report at management level.
6. Review and endorse plant operation, design improvement and cost control report.
7. Comply schedule waste management / air pollution / noise pollution regulatory requirements compliance.
8. Enforce plant operation Safety, Health & Environmental (SHE) regulatory requirements compliance.
9. Endorse human resource and training program.
10. Carry out environmental performance tracking and analysis regulatory requirements and corrective measures.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Plant Operation Pollution Control
Sub Area	Scheduled Waste, Air, Noise
Job Title	Plant Operation Pollution Control Specialist
Level	7

Job Definition :

A plant operation pollution control specialist is designated to deliver engineering documentation, review and check documents submitted by engineering contractors, provide technical guidance and mentoring, set and maintain high standards for HSE, QA and ethical behaviors and provide specialist controls system and technical support at risk assessments.

Job Description :

1. Deliver engineering documentation to satisfy the design requirements in compliance.
2. Review and check documents submitted by engineering contractors.
3. Verify that the level of Technical Integrity required for the safe and long term operation of the plant infrastructure is maintained through all stages of development and operation.
4. Set and maintain high standards for HSE, QA and ethical behaviours.
5. Provide technical guidance and mentoring for discipline engineers.
6. Assess the technical specification of equipment as part of the annual Condition Assessment of the client's waste treatment facilities.
7. Provide specialist input to repair plans for ageing waste treatment equipment.
8. Write engineering reports.
9. Prepare schedules and develop cost estimates.
10. Provide specialist controls system and technical support at risk assessments.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Final Disposal
Sub Area	Solid Waste Landfill
Job Title	Solid Waste Landfill Operator
Level	1

Job Definition :

A solid waste landfill operator is designated to perform waste sorting, housekeeping, control vehicle movement and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Operate weigh scale system daily record.
2. Carry out waste sorting at designated area.
3. Carry out work area housekeeping.
4. Adhere safety requirements.
5. Control vehicle movement within tipping area.
6. Carry out odour control.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Final Disposal
Sub Area	Solid Waste Landfill
Job Title	Solid Waste Landfill Technician
Level	2

Job Definition :

A solid waste landfill technician is designated to carry out equipment & machinery operation, perform pre and post inspection and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Operate equipment and machinery.
2. Comply to waste coverage and compaction Standard Operating Procedures (SOP).
3. Adhere to health and safety requirements.
4. Prepare daily record.
5. Carry out machinery pre and post inspection.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Final Disposal
Sub Area	Solid Waste Landfill
Job Title	Solid Waste Landfill Supervisor
Level	3

Job Definition :

A solid waste landfill supervisor is designated to supervise landfill operation, coordinate mechanical and electrical breakdown, carry out sampling and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Supervise solid waste landfill operation.
2. Ensure worker and machineries are sufficient.
3. Check cover materials and consumables stock daily.
4. Check and coordinate mechanical and electrical breakdown and routine preventive maintenance repair.
5. Collect and send to laboratory leachate treatment plan effluent discharge sample as per schedule and specification.
6. Prepare operation report daily.
7. Adhere Safety, Health & Environmental (SHE) regulatory requirements.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Final Disposal
Sub Area	Solid Waste Landfill
Job Title	Solid Waste Landfill Assistant Technologist
Level	4

Job Definition :

A solid waste landfill assistant technologist is designated to coordinate landfill operation, perform materials and consumables, monitor routine preventive maintenance schedule, manage operational cost and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Coordinate solid waste landfill daily operation.
2. Verify machine and equipment operation.
3. Carry out cover materials and consumables stock daily.
4. Monitor and control mechanical and electrical breakdown and routine preventive maintenance repair works and maintenance schedule.
5. Monitor gas emission and leachate treatment plant effluent discharge quality regulatory requirements.
6. Analyse and review laboratory analysis result.
7. Prepare management report as per schedule.
8. Adhere Safety, Health & Environmental (SHE) regulatory requirements.
9. Manage operational cost within budget.
10. Coordinate Emergency Response Plan (ERP) implementation.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Final Disposal
Sub Area	Solid Waste Landfill
Job Title	Solid Waste Landfill Technologist
Level	5

Job Definition :

A solid waste landfill technologist is designated to plan solid waste landfill operation, monitor routine preventive maintenance, manage operational cost and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Plan and organize solid waste land fill overall operation.
2. Review and endorse resources operation requirements.
3. Monitor and control mechanical and electrical breakdown and routine preventive maintenance repair works and maintenance schedule.
4. Comply environmental monitoring program regulatory requirements.
5. Review and analyse environmental monitoring result.
6. Review and endorse management report as per schedule.
7. Carry outland fill safety program regulatory requirements.
8. Manage operational cost within budget.
9. Prepare Emergency Response Plan (ERP) program and guidelines.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Final Disposal
Sub Area	Solid Waste Landfill
Job Title	Solid Waste Landfill Manager
Level	6

Job Definition :

A solid waste landfill manager is designated to endorse operation specification, manage resources, instruct improvement plan, perform employees training and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Review and endorse solid waste landfill operation specification.
2. Manage resources and cost execution plan and budget.
3. Endorse mechanical and electrical breakdown and routine preventive maintenance repair works and maintenance schedule.
4. Endorse environmental monitoring program regulatory requirements.
5. Endorse environmental monitoring result.
6. Instruct improvement plan and rectification works.
7. Review and endorse management report as per schedule.
8. Comply Safety, Health & Environmental (SHE) program regulatory requirements.
9. Carry out employees training need analysis.
10. Plan and execute Emergency Response Plan (ERP) program and guidelines.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Final Disposal
Sub Area	Carbon Capture & Storage (CCS)
Job Title	Carbon Capture & Storage (CCS) Operator*
Level	1

Job Definition :

A carbon capture & storage (CCS) operator is designated to perform waste sorting, housekeeping, control vehicle movement and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Operate weight scale system daily record.
2. Carry out waste sorting at designated area.
3. Carry out work area housekeeping.
4. Adhere safety requirements.
5. Control vehicle movement within tipping area.
6. Carry out odour control.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Final Disposal
Sub Area	Carbon Capture & Storage (CCS)
Job Title	Carbon Capture & Storage (CCS) Technician*
Level	2

Job Definition :

A carbon capture & storage (CCS) technician is designated to carry out equipment & machinery operation, perform pre and post inspection and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Operate equipment and machinery.
2. Comply waste coverage and compaction Standard Operating Procedures (SOP).
3. Adhere health and safety requirements.
4. Prepare daily record.
5. Carry out machinery pre and post inspection.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Final Disposal
Sub Area	Carbon Capture & Storage (CCS)
Job Title	Carbon Capture & Storage (CCS) Supervisor*
Level	3

Job Definition :

A carbon capture & storage (CCS) supervisor is designated to supervise carbon capture & storage (CCS) operation, coordinate mechanical and electrical breakdown, carry out sampling and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Supervise carbon capture & storage (CCS) operation.
2. Ensure worker and machineries sufficient.
3. Check covers materials and consumables stock daily.
4. Check and coordinate mechanical and electrical breakdown and routine preventive maintenance repair.
5. Collect and send to laboratory leachate treatment plan effluent discharge sample as per schedule and specification.
6. Prepare operation report daily.
7. Adhere Safety, Health & Environmental (SHE) regulatory requirements.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Final Disposal
Sub Area	Carbon Capture & Storage (CCS)
Job Title	Carbon Capture & Storage (CCS) Assistant Technologist*
Level	4

Job Definition :

A carbon capture & storage (CCS) assistant technologist is designated to assist on technical issues, carry out rectification work and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Assist storage technical issues and interfaces internally and externally.
2. Comply project technical objectives.
3. Assist to manage resources and cost execution plan and budget.
4. Collect environmental monitoring result.
5. Monitor improvement plan and rectification works.
6. Verify management report as per schedule.
7. Comply Safety, Health & Environmental (SHE) program regulatory requirements.
8. Carry out Emergency Response Plan (ERP) program and guidelines.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Final Disposal
Sub Area	Carbon Capture & Storage (CCS)
Job Title	Carbon Capture & Storage (CCS) Technologist*
Level	5

Job Definition :

A carbon capture & storage (CCS) technologist is designated to plan appraisal well drilling, plan technical issues, manage resources and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Plan and evaluate appraisal well drilling.
2. Deliver storage technical work program.
3. Plan storage technical issues and interfaces internally and externally.
4. Verify storage technical progress.
5. Comply project technical objectives.
6. Manage resources and cost execution plan and budget.
7. Verify environmental monitoring result.
8. Monitor improvement plan and rectification works.
9. Verify management report as per schedule.
10. Comply Safety, Health & Environmental (SHE) program regulatory requirements.
11. Carry out employees training need analysis.
12. Plan and execute Emergency Response Plan (ERP) program and guidelines.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Final Disposal
Sub Area	Carbon Capture & Storage (CCS)
Job Title	Carbon Capture & Storage (CCS) Manager
Level	6

Job Definition :

A carbon capture & storage (CCS) manager is designated to manage appraisal well drilling, manage technical issues, manage resources and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Manage and evaluate appraisal well drilling.
2. Deliver storage technical work program.
3. Manage storage technical issues and interfaces internally and externally.
4. Report storage technical progress.
5. Monitor project technical objectives.
6. Manage resources and cost execution plan and budget.
7. Endorse environmental monitoring result.
8. Instruct improvement plan and rectification works.
9. Review and endorse management report as per schedule.
10. Comply Safety, Health & Environmental (SHE) program regulatory requirements.
11. Carry out employees training need analysis.
12. Plan and execute Emergency Response Plan (ERP) program and guidelines.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Final Disposal
Sub Area	Secure Landfill
Job Title	Secure Landfill Operator
Level	1

Job Definition :

A secure landfill operator is designated to carry out hazardous waste sorting, housekeeping and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Carry out hazardous waste sorting.
2. Carry out work area housekeeping.
3. Adhere safety requirements.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Final Disposal
Sub Area	Secure Landfill
Job Title	Secure Landfill Technician
Level	2

Job Definition :

A secure landfill technician is designated to carry out treatment and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Check tools and equipment functionability.
2. Operate treatment facilities tools and equipment.
3. Adhere safety requirements.
4. Prepare daily record.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Final Disposal
Sub Area	Secure Landfill
Job Title	Secure Landfill Supervisor
Level	3

Job Definition :

A secure landfill supervisor is designated to supervise treatment plant machine and equipment, perform routine preventive maintenance, perform hazardous waste sampling and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Monitor and operate hazardous waste treatment plant equipment and machineries.
2. Supervise machine and equipment operation.
3. Check chemical supply and parts stock daily.
4. Troubleshoot and repairs mechanical and electrical breakdown equipment and machine.
5. Carry out routine preventive maintenance plant equipment, machineries and facilities.
6. Collect and send to laboratory hazardous waste sample as per schedule and specification.
7. Prepare summary report daily.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Final Disposal
Sub Area	Secure Landfill
Job Title	Secure Landfill Assistant Technologist
Level	4

Job Definition :

A secure landfill assistant technologist is designated to coordinate plant operation, perform chemical supply, provide preventive maintenance schedule and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Coordinate hazardous waste treatment plant daily operation.
2. Verify machine and equipment operation.
3. Carry out chemical supply and parts stock daily.
4. Coordinate breakdown repair equipment and machine.
5. Prepare routine preventive maintenance schedule plant equipment, machineries and facilities.
6. Analyse and review laboratory analysis result.
7. Verify summary report daily.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Final Disposal
Sub Area	Secure Landfill
Job Title	Secure Landfill Technologist
Level	5

Job Definition :

A secure landfill technologist is designated to plan plant operation, manage chemical supply and purchase requisition, perform hazardous waste treatment quality control and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Plan hazardous waste treatment plant operation.
2. Endorse machine and equipment inspection report.
3. Endorse chemical supply and parts stock purchase requisition.
4. Monitor breakdown repair equipment and machine.
5. Endorse routine preventive maintenance schedule plant equipment, machineries and facilities.
6. Prepare environmental monitoring report.
7. Prepare and manage plant operation costing report.
8. Carry out hazardous waste treatment quality control.
9. Manage plant operation and Safety, Health & Environmental (SHE) regulatory requirements compliance.
10. Endorse summary report daily.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Final Disposal
Sub Area	Secure Landfill
Job Title	Secure Landfill Manager
Level	6

Job Definition :

A secure landfill manager is designated to monitor plant operation, manage budget and expenses and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Monitor and improve hazardous waste treatment plant operation and maintenance.
2. Implement, directs and enforce plant safety and risk management program.
3. Endorse plant operation budget and expenses.
4. Endorse breakdown repair equipment and machine.
5. Review environmental monitoring report.
6. Review and endorse plant operation, design improvement and cost control report.
7. Comply hazardous waste treatment environmental quality.
8. Enforce plant operation Safety, Health & Environmental (SHE) regulatory requirements compliance.
9. Plan and execute human resource and training requirement.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Final Disposal
Sub Area	Repository
Job Title	Repository Operator
Level	1

Job Definition :

A repository operator is designated to carry out hazardous waste sorting, housekeeping and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Carry out hazardous waste sorting.
2. Carry out work area housekeeping.
3. Adhere safety requirements.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Final Disposal
Sub Area	Repository
Job Title	Repository Technician
Level	2

Job Definition :

A repository technician is designated to carry out treatment and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Check tools and equipment functionability.
2. Operate treatment facilities tools and equipment.
3. Adhere safety requirements.
4. Prepare daily record.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Final Disposal
Sub Area	Repository
Job Title	Repository Supervisor
Level	3

Job Definition :

A repository supervisor is designated to supervise treatment plant machine and equipment, perform routine preventive maintenance, perform hazardous waste sampling and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Monitor and operate hazardous waste treatment plant equipment and machineries.
2. Supervise machine and equipment operation.
3. Check chemical supply and parts stock daily.
4. Troubleshoot and repairs mechanical and electrical breakdown equipment and machine.
5. Carry out routine preventive maintenance plant equipment, machineries and facilities.
6. Collect and send to laboratory hazardous waste sample as per schedule and specification.
7. Prepare summary report daily.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Final Disposal
Sub Area	Repository
Job Title	Repository Assistant Technologist
Level	4

Job Definition :

A repository assistant technologist is designated to coordinate plant operation, perform chemical supply, provide preventive maintenance schedule and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Coordinate hazardous waste treatment plant daily operation.
2. Verify machine and equipment operation.
3. Carry out chemical supply and parts stock daily.
4. Coordinate breakdown repair equipment and machine.
5. Prepare routine preventive maintenance schedule plant equipment, machineries and facilities.
6. Analyse and review laboratory analysis result.
7. Verify summary report daily.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Final Disposal
Sub Area	Repository
Job Title	Repository Technologist
Level	5

Job Definition :

A repository technologist is designated to plan plant operation, manage chemical supply and purchase requisition, perform hazardous waste treatment quality control and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Plan hazardous waste treatment plant operation.
2. Endorse machine and equipment inspection report.
3. Endorse chemical supply and parts stock purchase requisition.
4. Monitor breakdown repair equipment and machine.
5. Endorse routine preventive maintenance schedule plant equipment, machineries and facilities.
6. Prepare environmental monitoring report.
7. Prepare and manage plant operation costing report.
8. Carry out hazardous waste treatment quality control.
9. Manage plant operation and Safety, Health & Environmental (SHE) regulatory requirements compliance.
10. Endorse summary report daily.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Final Disposal
Sub Area	Repository
Job Title	Repository Manager
Level	6

Job Definition :

A repository manager is designated to monitor plant operation, manage budget and expenses and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Monitor and improve hazardous waste treatment plant operation and maintenance.
2. Implement, directs and enforce plant safety and risk management program.
3. Endorse plant operation budget and expenses.
4. Endorse breakdown repair equipment and machine.
5. Review environmental monitoring report.
6. Review and endorse plant operation, design improvement and cost control report.
7. Comply hazardous waste treatment environmental quality.
8. Enforce plant operation Safety, Health & Environmental (SHE) regulatory requirements compliance.
9. Plan and execute human resource and training requirement.

Sector	Environmental Management and Pollution Control
Sub-sector	Infrastructure
Job Area	Final Disposal
Sub Area	Solid Waste Landfill, Carbon Capture & Storage (CCS), Secure Landfill & Repository
Job Title	Final Disposal Specialist
Level	7

Job Definition :

A final disposal specialist is designated to deliver engineering documentation, review and check documents submitted by engineering contractors, provide technical guidance and mentoring, set and maintain high standards for HSE, QA and ethical behaviors and provide specialist controls system and technical support at risk assessments.

Job Description :

1. Deliver engineering documentation to satisfy the design requirements in compliance.
2. Review and check documents submitted by engineering contractors.
3. Verify that the level of Technical Integrity required for the safe and long term operation of the plant infrastructure is maintained through all stages of development and operation.
4. Set and maintain high standards for HSE, QA and ethical behaviours.
5. Provide technical guidance and mentoring for discipline engineers.
6. Assess the technical specification of equipment as part of the annual Condition Assessment of the client's waste treatment facilities.
7. Provide specialist input to repair plans for ageing waste treatment equipment.
8. Write engineering reports.
9. Prepare schedules and develop cost estimates.
10. Provide specialist controls system and technical support at risk assessments.

SECTOR : ENVIRONMENTAL MANAGEMENT AND POLLUTION CONTROL

SUB-SECTOR : ENVIRONMENTAL POLLUTION RESEARCH & DEVELOPMENT (R & D)

Sector	Environmental Management and Pollution Control
Sub-sector	Environmental Pollution Research & Development (R & D)
Job Area	N/A
Sub Area	N/A
Job Title	Environmental Pollution R & D Technician
Level	3

Job Definition :

An environmental pollution research & development (R & D) technician is designated to assist in research activities, carry out sample preparation, carry out laboratory ware preparation, carry out preventive analytical instrument maintenance and follow laboratory standard operating procedures.

Job Description :

1. Carry out laboratory ware preparation.
2. Carry out preventive analytical instrument maintenance.
3. Assist in sample preparation
4. Assist in research activities
5. Carry out sample preparation.
6. Follow laboratory standard operating procedures.
7. Adhere required safety procedures.

Sector	Environmental Management and Pollution Control
Sub-sector	Environmental Pollution Research & Development (R & D)
Job Area	N/A
Sub Area	N/A
Job Title	Environmental Pollution R & D Assistant Researcher
Level	4

Job Definition :

An environmental pollution research & development (R & D) assistant researcher is designated to perform research activities, operate analytical instrument, coordinate sample preparation, coordinate laboratory ware preparation, coordinate preventive analytical instrument maintenance, operate analytical instrument and sample preparation and follow laboratory standard operating procedures.

Job Description :

1. Coordinate laboratory ware preparation.
2. Coordinate preventive analytical instrument maintenance.
3. Carry out sample preparation
4. Carry out research activities
5. Operate analytical instrument.
6. Coordinate sample preparation.
7. Follow laboratory standard operating procedures.
8. Adhere required safety procedures.

Sector	Environmental Management and Pollution Control
Sub-sector	Environmental Pollution Research & Development (R & D)
Job Area	N/A
Sub Area	N/A
Job Title	Environmental Pollution R & D Researcher
Level	5

Job Definition :

An environmental pollution research & development (R & D) researcher is designated to perform research activities, assist in managerial function, operate analytical instrument, supervise sample preparation, verify laboratory ware preparation, conduct preventive analytical instrument maintenance, carry out requisition activities, operate analytical instrument and sample preparation and follow laboratory standard operating procedures.

Job Description :

1. Verify laboratory ware preparation.
2. Conduct preventive analytical instrument maintenance.
3. Carry out requisition activities.
4. Operate analytical instrument.
5. Carry out sample preparation
6. Perform research activities
7. Assist in managerial function
8. Operate analytical instrument.
9. Supervise sample preparation.
10. Follow laboratory standard operating procedures.
11. Perform evaluation testing.
12. Adhere required safety procedures.

Sector	Environmental Management and Pollution Control
Sub-sector	Environmental Pollution Research & Development (R & D)
Job Area	N/A
Sub Area	N/A
Job Title	Environmental Pollution R & D Manager
Level	6

Job Definition :

An environmental pollution research & development (R & D) manager is designated to assist in accreditation activities, conduct managerial function, verify research activities, approve purchasing activities and implement laboratory Standard Operating Procedures.

Job Description :

1. Perform research activities.
2. Conduct managerial function.
3. Prepare research & development (R & D) activities requirements.
4. Approve purchasing activities.
5. Prepare research & development (R & D) budget.
6. Implement laboratory standard operating procedures.
7. Verify required safety procedures.

Sector	Environmental Management and Pollution Control
Sub-sector	Environmental Pollution Research & Development (R & D)
Job Area	N/A
Sub Area	N/A
Job Title	Environmental Pollution R & D Specialist
Level	7

Job Definition :

An environmental pollution research & development (R & D) specialist is designated to conduct accreditation activities, implement managerial duties, plan research activities, endorse purchasing activities and design laboratory Standard Operating Procedures.

Job Description :

1. Verify research & development (R & D) budget.
2. Plan accreditation activities.
3. Plan research activities.
4. Endorse purchasing activities
5. Design laboratory standard operating procedures.
6. Verify evaluation testing of researcher.
7. Verify required safety procedures.

SECTOR : ENVIRONMENTAL MANAGEMENT AND POLLUTION CONTROL

SUB-SECTOR : ENVIRONMENTAL POLLUTION CRISIS MANAGEMENT

Sector	Environmental Management and Pollution Control
Sub-sector	Environmental Pollution Crisis Management
Job Area	Pollution Emergency Response Operation
Sub Area	Oil & Gas
Job Title	Oil & Gas Emergency Response Technician*
Level	3

Job Definition :

An oil & gas emergency response technician is designated to initiate evacuation procedures, eliminate potential pollution sources and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Taking appropriate personal protective measures.
2. Notifying Supervisory Personnel and/or Incident Commander of the incident.
3. Advising personnel in the area of any potential threat.
4. Initiate evacuation procedures.
5. Eliminate potential pollution sources.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Environmental Pollution Crisis Management
Job Area	Pollution Emergency Response Operation
Sub Area	Oil & Gas
Job Title	Oil & Gas Emergency Response Team Supervisor*
Level	4

Job Definition :

An oil & gas emergency response team supervisor is designated to provide guidance, coordinate with relevant parties and assist development and implementation of Safety, Health & Environmental (SHE) procedures.

Job Description :

1. Provide guidance to applicable to parties where required.
2. Communicate rectification works with stakeholders and relevant authorities bodies.
3. Coordinate with applicable departments and external service provider (s).
4. Ensure emergencies response activities documented.
5. Monitor and provide update on status of assigned action items related to continuous improvement.
6. Ensure emergency preparedness and response training is provided to appropriate staff members.
7. Assist development and implementation of divisional Safety, Health & Environmental (SHE) procedures.
8. Coordinate further response actions with superior and local responders.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Environmental Pollution Crisis Management
Job Area	Pollution Emergency Response Operation
Sub Area	Oil & Gas
Job Title	Oil & Gas Emergency Response Incident Commander*
Level	5

Job Definition :

An oil & gas emergency response incident commander is designated to organise emergency response team, monitor safety aspect at site and coordinate additional internal / external notifications.

Job Description :

1. Organise the Emergency Response team.
2. Evaluate Severity, Potential Impact, Safety Concerns, and Response Requirements based on the initial information.
3. Confirm safety aspects at site, including need for personal protective equipment, sources of pollution, and potential need for evacuation.
4. Communicate and provide incident briefings.
5. Coordinate/complete additional internal and external notifications.
6. Communicate with Emergency Response Team, as the situation demands.
7. Direct response an corrective/rectification operations.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Environmental Pollution Crisis Management
Job Area	Pollution Emergency Response Operation
Sub Area	Hazardous Material
Job Title	Hazardous Material Emergency Response Technician*
Level	3

Job Definition :

A hazardous material response technician is designated to initiate evacuation procedures, eliminate potential pollution sources and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Taking appropriate personal protective measures.
2. Notifying Supervisory Personnel and/or Incident Commander of the incident.
3. Advising personnel in the area of any potential threat.
4. Initiate evacuation procedures.
5. Eliminate potential pollution sources.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Environmental Pollution Crisis Management
Job Area	Pollution Emergency Response Operation
Sub Area	Hazardous Material
Job Title	Hazardous Material Emergency Response Team Supervisor*
Level	4

Job Definition :

A hazardous material response team supervisor is designated to oil & gas emergency response team supervisor is designated to provide guidance, coordinate with relevant parties and assist development and implementation of SHE procedures.

Job Description :

1. Provide guidance to applicable to parties where required.
2. Communicate rectification works with stakeholders and relevant authorities bodies.
3. Coordinate with applicable departments and external service provider (s).
4. Ensure emergencies response activities documented.
5. Monitor and provide update on status of assigned action items related to continuous improvement.
6. Ensure emergency preparedness and response training is provided to appropriate staff members.
7. Assist development and implementation of divisional Safety, Health & Environmental (SHE) procedures.
8. Coordinate further response actions with superior and local responders.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Environmental Pollution Crisis Management
Job Area	Pollution Emergency Response Operation
Sub Area	Hazardous Material
Job Title	Hazardous Material Emergency Response Incident Commander*
Level	5

Job Definition :

A hazardous material response incident commander is designated to organise emergency response team, monitor safety aspect at site and coordinate additional internal / external notifications.

Job Description :

1. Organise the Emergency Response team.
2. Evaluate Severity, Potential Impact, Safety Concerns, and Response Requirements based on the initial information.
3. Confirm safety aspects at site, including need for personal protective equipment, sources of pollution, and potential need for evacuation.
4. Communicate and provide incident briefings.
5. Coordinate/complete additional internal and external notifications.
6. Communicate with Emergency Response Team, as the situation demands.
7. Direct response a corrective/rectification operations.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Environmental Pollution Crisis Management
Job Area	Pollution Emergency Response Operation
Sub Area	Radioactive
Job Title	Radioactive Emergency Response Technician*
Level	3

Job Definition :

A radioactive responsive technician is designated to initiate evacuation procedures, eliminate potential pollution sources and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Taking appropriate personal protective measures.
2. Notifying Supervisory Personnel and/or Incident Commander of the incident.
3. Advising personnel in the area of any radioactive potential threat.
4. Initiate evacuation procedures.
5. Eliminate potential radioactive pollution sources.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Environmental Pollution Crisis Management
Job Area	Pollution Emergency Response Operation
Sub Area	Radioactive
Job Title	Radioactive Emergency Response Team Supervisor*
Level	4

Job Definition :

A radioactive responsive team supervisor is designated to provide guidance, coordinate with relevant parties and assist development and implementation of SHE procedures.

Job Description :

1. Provide guidance to applicable to parties where required.
2. Communicate rectification works with stakeholders and relevant authorities bodies.
3. Coordinate with applicable departments and external service provider (s).
4. Ensure radioactive emergencies response activities documented.
5. Monitor and provide update on status of assigned action items related to continuous improvement.
6. Ensure radioactive emergency preparedness and response training is provided to appropriate staff members.
7. Assist development and implementation of divisional Safety, Health & Environmental (SHE) procedures.
8. Coordinate further response actions with superior and local responders.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Environmental Pollution Crisis Management
Job Area	Pollution Emergency Response Operation
Sub Area	Radioactive
Job Title	Radioactive Emergency Response Incident Commander*
Level	5

Job Definition :

A radioactive responsive incident commander is designated to organise emergency response team, monitor safety aspect at site and coordinate additional internal / external notifications.

Job Description :

1. Organise the Emergency Response team.
2. Evaluate Severity, Potential Impact, Safety Concerns, and Response Requirements based on the initial information.
3. Confirm safety aspects at site, including need for personal protective equipment, sources of pollution, and potential need for evacuation.
4. Communicate and provide incident briefings.
5. Coordinate/complete additional internal and external notifications.
6. Communicate with Emergency Response Team, as the situation demands.
7. Direct response a corrective/rectification operations.

Notes:

***Critical Job Title**

Sector	Environmental Management and Pollution Control
Sub-sector	Environmental Pollution Crisis Management
Job Area	Environmental Pollution Forensic
Sub Area	N/A
Job Title	Environmental Pollution Forensic Assistant Researcher
Level	4

Job Definition :

An environmental pollution forensic assistant researcher is designated to assist in collect waste sample, attend and examine sites, assist in collect sampling results and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Assist in collect waste sample.
2. Attend and examine sites.
3. Assist in collect trace evidence.
4. Liaise with team members.
5. Communicate with outside agencies.
6. Assist in collect sampling results.
7. Prepare detail report.

Sector	Environmental Management and Pollution Control
Sub-sector	Environmental Pollution Crisis Management
Job Area	Environmental Pollution Forensic
Sub Area	N/A
Job Title	Environmental Pollution Forensic Researcher
Level	5

Job Definition :

An environmental pollution forensic researcher is designated to prepare waste sample, attend and examine sites, record relevant data, collect sampling results and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Prepare waste sample.
2. Coordinate sifting and sorting evidence.
3. Attend and examine sites.
4. Collect trace evidence.
5. Record relevant data.
6. Liaise with team members.
7. Communicate with outside agencies.
8. Collect sampling results.
9. Prepare detail report.

Sector	Environmental Management and Pollution Control
Sub-sector	Environmental Pollution Crisis Management
Job Area	Environmental Pollution Forensic
Sub Area	N/A
Job Title	Environmental Pollution Forensic Manager
Level	6

Job Definition :

An environmental pollution forensic manager is designated to verify waste sample, attend and examine sites, inputting relevant data, prepare sampling results and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Verify waste sample.
2. Plan sifting and sorting evidence.
3. Attend and examine sites.
4. Prepare findings and collecting trace evidence.
5. Inputting relevant data.
6. Liaise with team members.
7. Coordinate with outside agencies.
8. Prepare sampling results.
9. Prepare detail report.

Sector	Environmental Management and Pollution Control
Sub-sector	Environmental Pollution Crisis Management
Job Area	Environmental Pollution Forensic
Sub Area	N/A
Job Title	Environmental Pollution Forensic Specialist
Level	7

Job Definition :

An environmental pollution forensic specialist is designated to analyse sample, attend and examine sites, inputting relevant data, analyse and interpret results and follow Safety, Health & Environmental (SHE) requirements.

Job Description :

1. Analyse waste sample.
2. Sifting and sorting evidence.
3. Attend and examine sites.
4. Verify record findings and collecting trace evidence.
5. Verify relevant data.
6. Liaise with team members.
7. Coordinate with outside agencies.
8. Analyse and interpret results.
9. Endorse detail report.