



**NATIONAL ENVIRONMENTAL STANDARDS AND
REGULATIONS ENFORCEMENT AGENCY (NESREA)
STATE SECRETARIAT COMPLEX,
UMUAHIA, ABIA STATE**

PREPARED BY

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APRIL, 2025

TITLE PAGE

ENVIRONMENTAL AUDIT REPORT OF

ST. MARY'S FUNERAL HOME

AT

**NDI OKPO IHECHIOWA
AROKHUKWU L.G.A, ABIA STATE.**

SUBMITTED TO

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LIST OF ABBREVIATION

ABSEPA – Abia State Environmental Protection Agency

BOD - Biochemical Oxygen Demand

COD - Chemical Oxygen Demand

dB - Decibel

DREM - Direct Reading Engineering Method

EA - Environmental Audit

EHW - Extreme Hazardous Waste

EIS - Environmental Impact Statement

EMP - Environmental Management Plan

EMS - Environmental Management System

FMENV - Federal Ministry of Environment

GMP – Good Manufacturing Practice

HSE – Health Safety and Environment

LCA - Life Cycle Analysis

MSDS – Material Safety Data Sheet

NESREA - National Environmental Standards and Regulations Enforcement Agency

NIS – Nigerian Industrial Standard

PPE - Personal Protective Equipment

ppm- part per million

SON – Standard Organization of Nigeria

SS - Suspended Solids

TOC – Total Organic Carbon

ToR - Terms of Reference

CERTIFICATION

We certify that this Environmental Audit Report was carried out in accordance with Professional Practice and National Environmental Standards and Regulations Enforcement Agency (NESREA) Standards.

The facility inspection and data collection/auditing were done from 4th to 14th day of April, 2025.

(NESREA ACCREDITATION NO.022)



Signed:.....

DR. DENNIS NEBEDUM

(Fellow Environmental Management Association of Nigeria *FEMAN*)

ACKNOWLEDGEMENT

An exercise of this magnitude is multidisciplinary as such members of the team deserve to be acknowledged due to their contributions in making this exercise a success.

The Management of ***Green Earth Environmental Consult*** wishes to acknowledge the wonderful opportunity given to us by **St. Mary's Funeral Home** to carry out this Environmental Audit exercise.

We sincerely appreciate the cooperation, support and information supplied by the Managing Director **Dr. Kalu Amah** and the entire staff of **St. Mary's Funeral Home** during the course of this exercise.

Thanks also go to the members of the EA Team for their various inputs and conviviality accounted for the successful completion of this exercise.

EXECUTIVE SUMMARY

Environmental Audit originated in the 'United States in the 1970s and was introduced to the UK and other Countries mainly by multi-national companies who began to apply the audit procedures corporately and via subsidiaries (horizontally). It is now being encouraged down the supply chain when large companies demand that their suppliers have green credentials (vertically).

Since then, Environmental Audit has also become more proactive as Organizations and Individuals have recognized potential market and stakeholder benefits, efficiency gains, financial savings and the importance of improved public relations. Historically, Environmental Audit has been developed for industrial (Healthcare Sector) applications.

In Nigeria, Environmental Audit was introduced in the 1990s after the establishment of the Federal Environmental Protection Agency (FEPA) by Decree No. 58 of 1988 as amended by Decree No. 59 of 1992. The National Guideline on Environmental Audit was also established for managers and operators of facilities, manufacturing and production industries to guide the implementation of environmental auditing throughout the country.

The need to enforce Environmental Legislations has necessitated the establishment of National Environmental Standards and Regulations Enforcement Agency (NESREA) by Act of 2007. NESREA has now full responsibility of enforcing all Environmental Laws, Regulations, Guidelines and Standards. The Agency (NESREA) responsibility also

extends to enforcing conventions, treaties, and protocols on the environment to which Nigeria is signatory.

St. Mary's Funeral Home is a private mortuary that provides quality mortuary services to the populace of Ihechiowa and beyond.

In order to balance the socio-economic impact of its project operations with environmental implications, **St. Mary's Funeral Home** in writing engaged the services of **Green Earth Environmental Consult** to carry out its funeral home Environmental Audit with a view to determine the facility's level of compliance to NESREA statutory guidelines and regulations.

Objectives of the Audit

The main objective of this Environmental Audit is to ascertain ameliorative measures made by **St. Mary's Funeral Home** towards improving its operational activities in compliance to NESREA regulations. Other objectives are:

- To X-ray the working environment of **St. Mary's Funeral Home** to ensure that the occupational health and safety of its workforce are maintained.
- To examine the facility's existing Environmental Management System (EMS).
- To ascertain whether the facility's operations/activities are tailored to the existing Environmental Laws, Guidelines, Regulations, Standards and permits.
- To assess whether measures provided by the facility to deal with environmental issues were adequate and appropriate to minimize environmental problems within and around their operational areas.

- To assess whether the existing facilities in the company were in good state, efficient and cost-effective in tackling the likely environmental pollution from its production operations.
- To ascertain whether relevant institutional factors and technologies for dealing with environmental issues are adequate, appropriate and applied accordingly to minimize the diverse environmental effects on the immediate and remote environment of the facility and environs.

Terms of Reference (ToR)

The Terms of Reference (ToR) of this Environmental Audit are:

- To determine the level of the facility's compliance and assess its environmental, safety and health policies in relation to established NESREA regulations and standards.
- To ascertain the facility operation process, technology and assess its efficiency of technology to utilization of raw materials against waste generation and utilization through the 5Rs (i.e. recovery recycle, reduce, reuse and repair).
- To ascertain if the facility housekeeping arrangement conform to NESREA Standards.
- To make appropriate recommendations on how to improve on the present environmental status of the facility to ensure greater productivity, workers' satisfaction and meeting the demands of NESREA as well as improved community relationship.
- To produce action plans to deal with issues/concerns identified.
- To prepare an Environment Management Plan.

LEGAL ASPECT OF ENVIRONMENTAL AUDIT

NESREA recommended Environmental Audit as a step towards waste minimization. NESREA was established basically to enforce the implementation of environmental laws, regulations and standards on facility operators except oil and gas sector.

However, for the purpose of this environmental audit, the following NESREA regulations will be relied upon:

- National Environmental (Surface and Groundwater Quality Control) Regulations, S.I. No. 22 of 2011.
- National Environmental (Healthcare Waste Control) Regulations, 2021.
- National Environmental (Sanitation and Waste Control) Regulations, 2009.
- National Environmental (Noise Standards and Control) Regulations, 2009.

OVERVIEW OF THE FACILITY/DEVELOPMENT

Description of Facility

St. Mary's Funeral Home is a privately owned mortuary located at Ndi Okpo Ihechiowa in Arochukwu L.G.A, Abia State. The facility was established to provide quality mortuary services to the populace of Ihechiowa and beyond. The facility is occupying an area of about 1,500sqm.

St. Mary's Funeral Home with its moderate working environment has ensured that its activities do not in any way cause environmental nuisance on its immediate environment being Ndi Okpo Ihechiowa.

The facility was registered under the Corporate Affairs decree of the Federal Republic of Nigeria on 15th April 2025 with registration number **RC: 8415539.**

PROCESS DESCRIPTION

St. Mary's Funeral Home uses formalin to preserve corpses. When a corpse is brought to the funeral home, the mortician prepares the embalmment process. Formalin is diluted with water and injected into the dead body through the veins and arteries. After the injection, the corpse will be left for two to three hours in the embalmment room before taking it into the mortuary section where it is kept until the owners are ready to collect for burial.

SUMMARY OF ANCILLARY OPERATIONS

Storage of Chemicals

Chemical used by the facility is formalin and it is contained in jerry cans. It is stored in a well ventilated area. The content is inscribed on each of the jerry-can for easy of identification.

Transportation

Formalin is delivered to the facility in jerry-cans. They are air tight to avoid spill.

Treatment

Good housekeeping is adopted by the facility to reduce its solid waste generation as the wastes generated are incinerated and the residues (ashes) are buried at the facility's landed property every week while wastewater from domestic activities within the facility is channeled to the facility's underground septic tank.

Location of the Project Area:

Ndi Okpo Ihechiowa is in Arochukwu L.G.A of Abia State. It is one of the five clans that made up of Arochukwu. Abia State is located between latitudes 4°49.30'N – 6°02'N and between longitudes 7°08'E – 8°04'E in the south-eastern part of Nigeria. It has an area of about 5,833.77 km², which is roughly 9% of Nigeria's land mass. It is bounded in the north by Enugu State, in the south by Rivers State, in the east by Cross River and Akwa Ibom States and in the west by Imo State. Abia State had a population of 4,112,230 from the 2006 National Population Census and is made up of 17 Local Government Areas. Arochukwu Local Government Area has a population of 193,820 in 2011.

Environmental Policy

The facility has its Environmental Policy in line with its mortuary business on safeguarding its working environment and neighbourhood. Its policy Statements were not placed at strategic positions within the premises at the time of this Audit exercise.

AUDIT FINDINGS

The surrounding vegetation of the facility and its environs are gradually changing significantly from what it was before the setting of the facility. The area is gradually transforming to built-up environment though with still undeveloped empty plots of land. Meanwhile, observations at the time of audit exercise in the facility are:

- Administrative office is a storey building with tires.
- The premises is beautified with ornamental flowers.
- The facility has parameter fence to ensure security of its workers and visitors alike.
- The facility premises is very calm and neat.

- Most areas within the facility are concrete paved.
- Presence of muster point within the premises.
- Presence of fire extinguishers at strategic locations.
- The cloak room, toilets and bathrooms in the facility are adequate.
- Presence of caution signs.
- Raw materials are properly arranged.
- Presence of spring water about 700meters from the facility.
- The facility workers make use of their PPE's.
- Presence of a septic tank within the facility premises at the right.
- Absence of oil spill at the generator area.
- There is ongoing road construction work at the road leading to the facility as at the time of this audit.

Meanwhile, areas of environmental concern observed in the premises include:

- Absence of bund wall round the generators' area.

Evaluation of General Housekeeping

The evaluation of the general housekeeping is stated below:

- Workers in the facility are provided with adequate Personal Protective Equipment (PPE).
- The cloak room, toilets and bathrooms in the facility are adequate. However, there is need for regular usage of disinfectant and detergents to reduce incident of pathogen outbreak.
- There are adequate fire extinguishers in strategy locations within the premises. Telephone numbers of public fighting agency in the state are also made available to the workers at the site.
- The facility has perimeter fence that ensures the security network of its assets.

- Materials are properly arranged within the facility premises.
- The facility premises is clean.
- The facility is beautified with ornamental flowers.

IDENTIFICATION, QUANTIFICATION AND CHARACTERIZATION OF WASTES

Solid Waste Generation and Management

The facility's solid waste include: hand glove, cotton wool, jerry-cans, office wastes, cartons, paper and polyethylene. These wastes except jerry-cans are incinerated in a drum at the facility temporal waste site while the residues (ashes) are buried at the facility's landed property every week. The jerry-cans are sold to interested buyers.

Office and Premises Waste

Office and premises wastes generated are pieces of papers, cartons, biscuit wraps, sachet water and polythene bags while wastes within the premises such as dust and dry flower leaves at the administrative block section are swept and deposited in the waste bins.

Liquid Waste Generation and Management

The facility's liquid wastes include: wastewater from cleaning and other domestic usage as well as spent oil. The liquid waste from both the administrative section and the mortuary during mobbing and cleaning are channeled into the facility septic tank which is evacuated by an accredited vendor when full.

Spent oil is generated during generator maintenance. Spent oil from this source is stored in jerry cans depending on the volume available at that time and they are sold to the third party.

Gaseous, Noise Emission and Management

Gaseous emissions generated in the facility are from the generator when operational and delivery vehicles. These components release emissions such as particulates, SO₂, CO, NO₂, CH₄ and soot/fume.

Noise generation in the facility is mainly from the generator set when operational and delivery vehicles. However, noise level is minimized because the facility uses its solar facility as its source of electricity.

Production Process Waste

This can be regarded as wastes generated during the facility embalment activities. Liquid wastes generated during embalment are usually reused.

Water Source and Consumption

Water used in the facility is primarily sourced from water vendors. The water is used for cleaning and other domestic purposes.

On the average, the facility uses about 500liters of water every month. This volume of water is used mainly for utility purposes.

Energy Source and Consumption

The sources of energy to the facility are the Enugu Electricity Distribution Company (EEDC), solar energy and Generator which serve as alternatives when there is power outage.

IMPACT QUANTIFICATION

Impact quantification can be highlighted when the analyzed parameters are compared with the prescribed limits of the regulatory authority.

Physico-Chemical Analysis

Water

The results of the water sample collected from three (3) locations mainly Iyi Ukwu (upstream and downstream) and spring water showed that the tested parameters were within the NESREA acceptable limits except taste and odour which recorded objectionable both downstream and upstream as against NESREA limit of unobjectionable. Colour and copper recorded 271mg/l and 115mg/l; 0.3mg/l and 0.11mg/l respectively in both downstream and upstream as against NESREA limits of 5-50 and 0.05mg/l respectively. Manganese and E coli recorded 0.35mg/l and 0.2mg/l; 140 and 90 in both downstream and upstream as against NESREA limits of 0.05mg/l and 0 respectively. Finally iron recorded 0.4mg/l downstream as against NESREA limit of 0.3mg/l.

Soil

Soil analysis result showed that the parameters were all within NESREA statutory limits except pH which recorded 3.2 and 3.9 at both locations as against NESREA limit of 6.5 – 8.5. Iron (Fe) recorded 0.14MG/KG and 0.26MG/KG at both sample locations as against NESREA limits of 0.03MG/KG.

Air Quality

Air quality analysis result revealed that the analyzed parameters were within NESREA acceptable limits.

Noise

Noise assessment taken in some points within the facility revealed that all the noise levels were below NESREA prescribed limits.

RECOMMENDATIONS

- **General Recommendations** The facility should submit its Environmental Audit Report (EA) Report and Environmental Management Plan (EMP) to the National Environmental Standards and Regulations Enforcement Agency (NESREA) as stipulated by law.
- The Environmental Audit follow-up action plan drawn up should be vigorously pursued in order to attain full compliance status with NESREA.

SPECIFIC RECOMMENDATIONS

The Specific recommendations have to do with pieces of advice, solutions etc to tackle particular problem in the facility where the effects are more pronounced or severe than in others.

It will focus on liquid waste discharges, waste reduction and minimization, health and safety and solid waste disposal.

- Petroleum products used by the facility should be handled properly to avoid environmental contamination while oil spill should be cleaned with detergents, sand or wood sheaves.
- Bund walls should construct round the generator area.
- Raw materials used in the facility should be stored and handled appropriately as recommended in the Materials Safety Data Sheet by the various manufacturers.
- Solid wastes generated should be properly incinerated to avoid environmental contamination.

FOLLOW up ACTION PLAN

Follow up action plan is provided in table 5.1 in the main report in order for the facility to meet the compliance status of National Environmental Standards and Regulations Enforcement Agency (NESREA).

Environmental Management Plan (EMP)

EMP is a planned program carried out to ensure that the anticipated potential impacts are brought within regulatory or self-imposed limits. The EMP expected at the facility include: Environmental impacts/mitigation; environmental monitoring; social and health management; noise and emission; waste management; contingency; audit; training and abandonment/decommissioning plans.

Environmental Monitoring Plan

Environmental monitoring plan has been scheduled to cover pertinent areas of the facilities which will involve the collection and analysis of effluent before discharge, air quality, noise and solid wastes collection method and disposal.

CHAPTER ONE

1.0 INTRODUCTION

1.1 OVERVIEW OF BACKGROUND INFORMATION

Environmental Audit Originated in the 'United States in the 1970s and was introduced to the UK and other Countries mainly by multi-national companies who began to apply the audit procedures corporately and via subsidiaries (horizontally). It is now being encouraged down the supply chain when large companies demand that their suppliers have green credentials (vertically).

Since then, Environmental Audit has also become more proactive as Organizations and Individuals have recognized the potential market and stakeholder benefits, efficiency gains, financial savings and the importance of improved public relations. Historically, Environmental Audit has been developed for industrial (Health Care Facility) applications.

In Nigeria, Environmental Audit was introduced in the 1990s after the establishment of the Federal Environmental Protection Agency (FEPA) by Decree No. 58 of 1988 as amended by Decree No. 59 of 1992. The National Guideline on Environmental Audit was also established for managers and operators of facilities, manufacturing and production industries to guide the implementation of environmental auditing throughout the country.

However, the enforcement of the Environmental Policies by the Government has not been encouraging and this has resulted to indiscriminate discharge of effluent into our environment. Furthermore, the need to enforce Environmental Legislations has necessitated the

establishment of National Environmental Standards and Regulations Enforcement Agency (NESREA) by Act of 2007. NESREA has now full responsibility of enforcing all Environmental Laws, Regulations, Guidelines and Standards. The Agency (NESREA) responsibility also extends to enforcing conventions, treaties, and protocols on the environment to which Nigeria is signatory.

St. Mary's Funeral Home is a private mortuary that provides quality mortuary services to the populace of Ihechiowa and beyond.

In order to balance the socio-economic impact of its project operations with environmental implications, **St. Mary's Funeral Home** in writing engaged the services of **Green Earth Environmental Consult** to carry out its funeral home Environmental Audit with a view to determine the facility's level of compliance to NESREA statutory guidelines and regulations.

1.2 OBJECTIVES OF THE ENVIRONMENTAL AUDIT

The main objective of this Environmental Audit is to ascertain ameliorative measures made by **St. Mary's Funeral Home** towards improving its operational activities in compliance to NESREA regulations. Other objectives are:

- To X-ray the working environment of **St. Mary's Funeral Home** to ensure that the occupational health and safety of its workforce are maintained.
- To examine the facility's existing Environmental Management System (EMS).
- To ascertain whether the facility's operations/activities are tailored to the existing Environmental Laws, Guidelines, Regulations,

Standards and permits.

- To assess whether measures provided by the facility to deal with environmental issues were adequate and appropriate to minimize environmental problems within and around their operational areas.
- To assess whether the existing facilities in the company were in good state, efficient and cost-effective in tackling the likely environmental pollution from its production operations.
- To ascertain whether relevant institutional factors and technologies for dealing with environmental issues are adequate, appropriate and applied accordingly to minimize the diverse environmental effects on the immediate and remote environment of the facility and environs.

1.3 TERMS of REFERENCE (ToR)

The Terms of Reference (ToR) of this Environmental Audit are:

- To ascertain the status of the facility's compliance and assess its environmental, safety and health policies in relation to established NESREA regulations and standards.
- To ascertain the status of the facility operation process, technology and assess its efficiency of technology to utilization of raw materials against waste generation and utilization through the 5Rs (i.e. recovery recycle, reduce, reuse and repair).
- To ascertain if there are improvement in the facility housekeeping arrangement.
- To make appropriate recommendations on how to improve on the present environmental status of the facility to ensure greater productivity, workers' satisfaction and meeting the demands of NESREA as well as improved community relationship.

- To produce action plans to deal with issues/concerns identified.
- To prepare an Environment Management Plan.

1.4 DEFINITION OF ENVIRONMENTAL AUDIT

Environmental Audit can as best be defined as a Management tool comprising a systematic, documented, periodic and objective evaluation of performance of organizations, management system and processes designed to protect the environment with the aim of facilitating management control of practices which may have impact on the environment and assessing compliance with company policies (CEC, 1993).

It can also be defined as the systematic examination of the interaction between any business operation and its surrounding. This includes all emissions to air, land and water; the effects on the neighbouring /host community, landscape and ecology; and public's perception of the operating company in the local area (CBI, 1990).

1.4.1 Types of Environmental Audit

Environmental Audit is specified in different types which includes the following:

1.4.1.1 Compliance Audit

This is the most common type of Environmental Audit consisting of checks against environmental legislation and company policy.

1.4.1.2 Issues Audit

It is an evaluation of how a company's activities relate to Environmental issues (e.g. global pollution, energy use) or an evaluation of specific issues (e.g. buildings, supplies).

1.4.1.3 Health and Safety Audit

This type of Audit is an assessment of risks and contingency planning which sometimes are merged with environmental auditing because of the interconnected impacts of industrial processes and hazards.

1.4.1.4 Site Audit

This is an audit of a particular site to examine actual or potential environmental problems.

1.4.1.5 Corporate Audit

This method is an audit of a company and its policies, structures, procedures and practices.

1.4.1.6 Due Diligence Audit:

This is an assessment of potential environmental and financial risks and liabilities carried out before a company merger or site acquisition or divestiture (e.g. contaminated land remediation cost).

1.4.1.7 Activity or Operational Audit:

This method of Audit is an assessment of activities that may cross company departments or units (e.g. energy or waste management).

1.4.1.8 Product or Life Cycle Audit:

This is an analysis of Environmental Impacts of a product through all stages of its design, production, use and disposal including its reuse and recycling (cradle to grave) Environmental Resource Management (ERM, 1996).

1.5 LEGAL ASPECT OF ENVIRONMENTAL AUDIT

NESREA recommended Environmental Audit as a step towards waste minimization. NESREA was established basically to enforce the implementation of environmental laws, regulations and standards on facility operators except oil and gas sector.

Some regulations established by National Environmental Standards and Regulations Enforcement Agency (NESREA) include:

- National Environmental (Healthcare Waste Control) Regulations, 2021.
- National Environmental (Construction Sector) Regulations, S.I. No. 19 of 2011.
- National Environmental (Pollution Abatement in mining and processing of Coal, Ore and Industrial Minerals) Regulations, 2009
- National Environmental (Sanitation and Waste Control) Regulations, 2009.
- National Environmental (Chemical, Pharmaceuticals, Soaps, and Detergent Manufacturing Industries) Regulations, 2009.
- National Environmental (Food, Beverages and Tobacco Sector) Regulations, 2009.
- National Environmental (Textile Wearing Apparel, Leather and Footwear Industry) Regulations, 2009.
- The National Environmental (Wetland, River Banks, and Lake Shores Protection) Regulations, 2009.
- The National Environmental (Water Shed, Hilly Mountainous and Catchments Area) Regulation, 2009.
- National Environmental (Ozone Layer Protection) Regulations, 2009.
- National Environmental (Noise Standards and Control) Regulations, 2009.
- National Environmental (Access to Genetic Resources and Benefit Sharing) Regulations, 2009.

- National Environmental (Permitting and Licensing System) Regulations, 2009.
- National Environmental (Standards for Telecommunications and Broadcasting Facilities) Regulations, S.I. No. 11 of 2011.
- National Environmental (Soil Erosion and Flood Control) Regulations, S.I. No. 12 of 2011.
- National Environmental (Desertification Control and Drought Mitigation) Regulations, S.I. No. 13 of 2011.
- National Environmental (Base Metals, Iron and Steel Manufacturing/Recycling Industries) Regulations, S.I. No. 14 of 2011.
- National Environmental (Control of Bush/Forest Fire and Open Burning) Regulations, S.I. No. 15 of 2011.
- National Environmental (Domestic and Industrial Plastic, Rubber and Foam Sector) Regulations, S.I. No. 17 of 2011.
- National Environmental (Coastal and Marine Area Protection) Regulations, S.I. No. 18 of 2011.
- National Environmental (Control of Vehicular Emissions from Petrol and Diesel Engines) Regulations, S.I. No. 20 of 2011.
- National Environmental (Non-Metallic Minerals Manufacturing Industries Sector) Regulations, S.I. No. 21 of 2011.
- National Environmental (Surface and Groundwater Quality Control) Regulations, S.I. No. 22 of 2011.
- National Environmental (Electrical/Electronic Sector) Regulations, S.I. No. 23 of 2011.
- National Environmental (Protection of Endangered Species in International Trade) Regulations, S.I. No. 16 of 2011.

However, for the purpose of this environmental audit, the following NESREA regulations will be relied upon:

- National Environmental (Surface and Groundwater Quality Control) Regulations, S.I. No. 22 of 2011.
- National Environmental (Healthcare Waste Control) Regulations, 2021.
- National Environmental (Sanitation and Waste Control) Regulations, 2009.
- National Environmental (Noise Standards and Control) Regulations, 2009.

1.6 WASTE MANAGEMENT AUDITING

A Waste Management Audit provides a means of examining all aspects of waste management in the facility. It is a good material management approach and an excellent way of obtaining detailed and independent review of a company's environmental performance. It reviews the management systems, procedures and practices concerned with the handling, storage, treatment and disposal of wastes. According to Young and Rushbrook (1993), a waste audit will involve:

- Identification and description of all wastes.
- Description and evaluation of what happens to all wastes while in the client's control.
- Evaluation of waste management practices with respect to legislative requirements and codes of practice.
- Identification and assessment of the performance of waste contractors and disposers.
- Identification and evaluation of alternatives to the current methods of Waste Management and disposal.

The information required for the Audit may be obtained through a series of structured interviews with the managers or supervisors responsible for particular waste generation activities. The questions asked may be classified into:

- The waste producers themselves,
- The waste carriers,
- Waste treaters and disposers.

A properly executed waste management audit can result in reduction of the amount of waste generated and increase in service efficiency.

1.7 BENEFITS OF ENVIRONMENTAL AUDIT

Environmental Audit (EA) Report is one of the effective managerial tools for enhanced facility's efficiency and sustainable development. However, the areas which the facility benefits from Environmental Audit include:

- It provides means for the staff to perform their tasks right at the first time, thereby reducing damage to the environment.
- It provides basis for identifying the right tasks and specifying them in a way sustainable on the environment.
- Serves as means for documenting the company's experience on the interaction between economic development and environmental sustainability.
- Increased employees' awareness and sensitivities to environmental policies and responsibilities, thus leading to less accidents, injuries and ill health and to higher productivity and less economic loss.
- Provides objective evidence that can demonstrate that the Technologies, products and Services are environment friendly.

- Provides an up to-date environmental data base for internal management awareness and decision making in relation to plant modification, new plans and strategies.
- Showcases audit finding and results of analysis of sample for management attention and decision-making.
- Reduces ad-hoc approach in combating environmental problems thereby making Management/Operators proactive.
- Maintains consistency on Environmental Management.
- Helps in winning both workers and consumers confidence on the technology, products and services of the organization.
- Enhances business competitiveness of the organization.

1.8 AUDIT PROCESS

For effective Environmental Auditing, the following steps/procedures were taken:

- Pre-Audit meeting with the facility's officer charged with environmental responsibility.
- Pre-Audit visit to the facility premises.
- Pre-Audit information package through the distribution of copies of questionnaire to key officers of the company for completion.
- Inspection of operational units, department and facilities including waste discharge, and receiving environment (drainages, dumpsite) etc.
- Documentation and assessment of the unit operations including operational procedure, equipment performance, housekeeping, safety measures, health and arrangement provision.
- Material balance, energy balance and waste Audit (identification, classification, disposal methods and minimization).

- Facility Environment, Safety and Health policy statements and their practical implementation, accident records, check etc.
- Facility emergency/contingency arrangement.
- Evaluation of finding and results of the analysis of sample, recommendations based on findings.
- Provide action plans based on Audit findings.

1.9 PERIOD OF AUDIT

This Environmental Audit exercise was carried out from 4th to 14th day of April, 2025.

CHAPTER TWO

2.0 OVERVIEW OF THE FACILITY/DEVELOPMENT

2.1 DESCRIPTION OF FACILITY

St. Mary's Funeral Home is a privately owned mortuary located at Ndi Okpo Ihechiowa in Arochukwu L.G.A, Abia State. The facility was established to provide quality mortuary services to the populace of Ihechiowa and beyond. The facility is occupying an area of about 1,500sqm.

St. Mary's Funeral Home with its moderate working environment has ensured that its activities do not in any way cause environmental nuisance on its immediate environment being Ndi Okpo Ihechiowa.

2.1.1 Year of Establishment

The company was established in 2022 and commenced operation in July 2022. The facility was registered under the Corporate Affairs decree of the Federal Republic of Nigeria on 15th April 2025 with registration number **RC: 8415539**. The company presently has its Corporate Head Office located at Ndi Okpo Ihechiowa in Arochukwu L.G.A, Abia State.

2.1.2 Company Location

The facility is located at Ndi Okpo Ihechiowa in Arochukwu L.G.A, Abia State. The facility environment is typically of rural setting with economic trees, vegetation and one industrial facility. The topography of the area is sloppy but the facility is in a tabular landform within the Administrative and Mortuary sections while sloppy towards the parameter fence.

The Geographical Positioning System (GPS) of the facility was established with its Latitude and Longitude shown as **N 05° 28' 6.77"** and **E 07° 52' 53.69"**.

Major landmarks located within the facility environs include: Palm Oil Production Factory, De Lazz Inc, The Apostolic Church, Jenoil Filling Station, Ihechiowa Micro Finance Bank, Mercy Catholic Hospital, Mercy Mortuary, St. Mulumba Parish, Assemblies of God Church, commercial shops among others.

2.1.3 Company Layout

The facility is laid out to accommodate its operational activities. The administrative offices/reception is accommodated in a storey building. Different sections of the mortuary are accommodated in a bungalow building while the facility constructed septic tank is located by the right side of the bungalow. The raw materials are stored at a corner within the bungalow. However, the entire facility premises were not concrete paved.

2.2 ORGANIZATIONAL STRUCTURE OF THE COMPANY

The facility has well-articulated Organizational structure with **Dr. Kalu Amah** as the CEO/Managing Director and other management staff as listed below:

- Mazi Okoronkwo Kalu Amah (Manager)
- Mr. Azuma Samuel (Mortician)
- Mazi Daniel Mbani (Driver)

2.2.1 Staff Strength

The company has total staff strength of 4. The company does not operate shift in its operating schedule. Hence, its normal working hours

is 9hrs daily, starting from 8am in the morning to 5pm in the evening with 1 hour break.

2.3 PROCESS DESCRIPTION

St. Mary's Funeral Home uses formalin to preserve corpses. When a corpse is brought to the funeral home, the mortician prepares the embalmment process. Formalin is diluted with water and injected into the dead body through the veins and arteries. After the injection, the corpse will be left for two to three hours in the embalmment room before taking it into the mortuary section where it is kept until the owners are ready to collect for burial.

2.4 SUMMARY OF ANCILLARY OPERATIONS

2.4.1 Storage of Chemicals

Chemical used by the facility is formalin and it is contained in jerry cans. It is stored in a well ventilated area. The content is inscribed on each of the jerry-can for ease of identification.

2.4.2 Transportation

Formalin is delivered to the facility in jerry-cans. They are air tight to avoid spill.

2.4.3 Treatment

Good housekeeping is adopted by the facility to reduce its solid waste generation as the wastes generated are incinerated and the residues (ashes) are buried at the facility's landed property every week while wastewater from domestic activities within the facility is channeled to the facility's underground septic tank.

CHAPTER THREE

3.0 BASELINE ENVIRONMENTAL ASSESSMENT AND MANAGEMENT STUDY

3.1 DESCRIPTION OF SURROUNDING ENVIRONMENT

The facility surrounding environment is gradually changing significantly from what it was before the setting of the project. The facility is not located near to any wet lands. It is also not near to forest or grazing lands as the area is a rural environment. The area is gradually transforming to built-up environment. The human population within the area could be estimated at about 650 people.

3.1.1 Location of the Project Area

Ndi Okpo Ihechiowa is in Arochukwu L.G.A of Abia State. It is one of the five clans that made up of Arochukwu. Abia State is located between latitudes 4°49.30'N – 6°02'N and between longitudes 7°08'E – 8°04'E in the south-eastern part of Nigeria. It has an area of about 5,833.77 km², which is roughly 9% of Nigeria's land mass. It is bounded in the north by Enugu State, in the south by Rivers State, in the east by Cross River and Akwa Ibom States and in the west by Imo State. Abia State had a population of 4,112,230 from the 2006 National Population Census and is made up of 17 Local Government Areas. Arochukwu Local Government Area has a population of 193,820 in 2011.

Terrain

The study area falls within the Imo River Basin that lies generally between 100 and 200 meters above sea level. The project site follows the alignment of the crest separating the dissected hills and valleys, with several erosion and erosion-prone sites on both sides of the project road.

Geology and Drainage System

The geological formation of the study area is better understood within the framework of the extended geological formation of south-eastern Nigeria, (Nyong, 1995). Geologically, Abia State is characterized by a number of geologic formations. The area within which the project site falls is underlain by coastal plain sands that are close to the Bende-Ameke formation.

Climatic Conditions:

Umuahia experiences the sub-equatorial type of climate, characterized by two seasons, a dry and wet season with high relative humidity. The dry season lasts from November to March, while the wet season starts from April and ends in October.

Temperature:

Mean annual temperature is 24°C, with maximum temperature occurring at ranges between 30.4°C and 36.9°C, recorded in the dry months, between December and March, which also coincide with the periods of higher sunshine.

Wind Direction and Speed:

The prevailing wind in Abia State is lower than 2.5m/s and rarely exceeds 2.8m/s. Comparing wind speed values recorded in the daytime, night hours are relatively lower than daytime records, with highest value occurring at the outset of the rainy season, late March and early April. Wind direction in Abia State is mainly south-west (210-2400), prevailing for eight (8) months and accounting for about 60% of the annual winds (EMP, 2020).

Relative Humidity

Relative humidity is over 90% in the early morning but falls to between 60% and 40% in the afternoon (NIMET, 2015). Typically, there is a direct correlation between rainfall and humidity, such that the lower humidity values coincide with the periods of low rainfall, (December to March), while the higher values occur in the peak of the rains, between June and October.

Rainfall

Extreme seasonal variations in monthly rainfall are common in Abia State. From February 1 to December 12, there are 10 months of rain, with a median 31-day rainfall of at least 0.5 inches. With an average rainfall of 10.6 inches, September is the wettest month in Abia State.

The year's dry spell lasts from December 12 to February 1, for 1.7 months. With an average rainfall of just 0.3 inches, January is the month with the least amount of rain in Abia State.

Flora and Fauna:

The natural vegetation is classified as the Lowland Rain Forest.

Flora (plant) species found within the study location are mainly ornamental/economic species, which indicates about human habitations. Such species include *Terminalia catapa*; *Ficus spp.* *Mangifera indica*, *Pinus spp*, *Gmelina arboreus*, *Delonix regia*, *Carica papaya*, *Tectona grandis*, *Polyathiaspp.* Some of these plants grown in the backyard farms, include Banana, Citrus, *Cocos nucifera* (Coconut), *Chrysophyllum albidum* (Pineapple).

Terrestrial fauna species in the project environment were gotten from the locals, hunters, meat traders, through interviews, to determine the type of wildlife species in the study area. The project location is

endowed with abundant Fauna species. Because of the relative variability in Fauna types there, ranging from deep forest through derived savannah, to clear and open farmlands, Fauna species also vary along these lines. The major classes of Fauna documented to exist in the area include Mammals, Birds and Reptiles. Some of the birds' species documented in this includes various dove species, such as *Streptopelin semintorquata, s. Vinnacea*.

3.1.2 Report of Site/Facility

The team of Environmental Auditors (EA) inspected **St. Mary's Funeral Home** environment and its operational activities vis-à-vis, Administrative block, mortuary, source of water, waste management, raw material storage, sample collection, house-keeping and its general environment to ascertain its level of compliance to NESREA Regulations.

3.2 EXISTING ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)

Environmental Management System (EMS) is a structured control method employed by an organization to attend to the environmental effects of their actions/activities and also improve their environmental performance (Onyeabor and Ikwuegbu, 1999).

The application of good housekeeping has reduced the facility solid waste generation while spills generated during generator maintenance are covered with sand.

3.2.1 Strategies for Waste Reduction

The facility adopts good housekeeping and outright incineration of solid wastes generated as its methods to ensure waste reduction of its activities.

3.2.2 Effluent Discharge

Effluent is generated mainly from the administrative section, cleaning and servicing of generator. The facility discharges its effluent generated into its constructed septic tank which is evacuated by an accredited vendor when full.

While spent oil generated during the maintenance of generator is stored in containers and sold to interested buyers who use them for different purposes.

3.2.3 Solid Waste Disposal

Solid wastes generated from the facility are incinerated on daily basis, while the residues (ashes) are buried at the facility's landed property.

3.2.4 Gaseous Emission and Noise

Gaseous emissions generated in the facility are from the generator when operational and delivery vehicles. These components release emissions such as particulates, SO₂, CO, NO₂, CH₄ and soot/fume.

Noise generation in the facility is mainly from the generator set when operational and delivery vehicles. Meanwhile, the facility has solar energy as its alternative source of light.

3.2.5 Contingency/Combating Plan

Chemicals used during embalmment can be classified as hazardous if inhaled over a long period by workers. The facility made available some safety measures such as:

- Fire extinguishers.
- Equipped first aid kits.
- Police and fire service phone numbers.
- Enforcing the use of safety gadgets by workers.
- Ambulance.

- Provision of liquid milks on weekly basis to workers.

However, the facility in this regard is taking proactive measures to prevent disaster occurrence. Moreover, where it occurs, good established measures are on ground to handle any contingency to minimize casualty and enhance workers safety.

3.3 SURVEY OF COMPLIANCE WITH ENVIRONMENTAL LAWS, REGULATIONS AND COMPANY POLICY

3.3.1 National Environmental Standards and Regulations

Enforcement Agency (NESREA) Regulations

The facility is not aware of NESREA regulations relevant to them as well as permits with respect to Waste and Toxic substances and Air Quality permit.

3.3.2 Environmental Policy

The facility has its Environmental Policy in line with its mortuary business on safeguarding its working environment and neighbourhood. Its policy Statements were not placed at strategic positions within the premises at the time of this Audit exercise.

3.3.3 St. Mary's Funeral Home, Health & Safety Policies

The facility is operating under the following Environment, Health and Safety Policies:

- To train, involve and successfully communicate all our employees to appreciate the Environment, Health & Safety responsibilities to themselves, their colleagues and the general environment.
- Ensures that Environment, Health & Safety is constantly improved through continuous Health monitoring programmes and good working relationship with relevant Regulatory Authorities.

- Provides friendly environment as part of our social responsibility to our host community and also to coordinate and minimize Environment, Health & Safety Risks to personnel through pro-active safety.
- To make Environment, Health & Safety of equal priority with other aspects of the company's business.
- To ensure that Environment, Health & Safety is integrated into the daily management of the company at all operational levels.

3.3.4 Pollution Monitoring Unit

The facility has no pollution monitoring unit in its organizational chart but the manager monitors and enforces environmental and safety standards in the facility.

3.3.5 Environmental Audit

Environmental Auditing is defined as a management tool comprising of a systematic, documented, periodic and objective evaluation of the performance of the organization, management system and processes designed to protect the environment. **St. Mary's Funeral Home** in compliance to Environmental regulations has awarded the preparation of its Funeral Home Environmental Audit to **Green Earth Environmental Consult**. This demonstrates its desire for compliance to Environmental Regulations.

3.3.6 Health Policy

The facility ensures that its activities are in line with its professional body being the Nigeria Medical Association. The environmental policies provided by these organizations are properly observed by the facility and have helped to minimize environmental degradation arising from the facility.

3.3.7 Staff Training and Competence

St. Mary's Funeral Home engages in the training of its personnel mostly in the area of compliance to safety and environmental standards. The facility is knowledgeable about environmental related issues.

3.3.8 Accidents

The facility has not witnessed any major unusual/accidental spill of chemical on the environment. It has not recorded any major injuries of its workers during operational periods. It has well equipped First Aid box/Kits for emergency situations.

CHAPTER FOUR

4.0 AUDIT FINDINGS

4.1 OBSERVATION AND EVALUATION OF GENERAL HOUSE KEEPING PRACTICES

The surrounding vegetation of the facility and its environs are gradually changing significantly from what it was before the setting of the facility. The area is gradually transforming to built-up environment though with still undeveloped empty plots of land. Meanwhile, observations at the time of audit exercise in the facility are:

- Administrative office is a storey building with tires.
- The premises is beautified with ornamental flowers.
- The facility has parameter fence to ensure security of its workers and visitors alike.
- The facility premises is very calm and neat.
- Most areas within the facility are concrete paved.
- Presence of muster point within the premises.
- Presence of fire extinguishers at strategic locations.
- The cloak room, toilets and bathrooms in the facility are adequate.
- Presence of caution signs.
- Raw materials are properly arranged.
- Presence of spring water about 700meters from the facility.
- The facility workers make use of their PPE's.
- Presence of a septic tank within the facility premises at the right.
- Absence of oil spill at the generator area.
- There is ongoing road construction work at the road leading to the facility as at the time of this audit.

Meanwhile, areas of environmental concern observed in the premises include:

- Absence of bund wall round the generators' area.

4.1.1 Evaluation of General Housekeeping

The evaluation of the general housekeeping is stated below:

- Workers in the facility are provided with adequate Personal Protective Equipment (PPE).
- The cloak room, toilets and bathrooms in the facility are adequate. However, there is need for regular usage of disinfectant and detergents to reduce incident of pathogen outbreak.
- There are adequate fire extinguishers in strategy locations within the premises. Telephone numbers of public fighting agency in the state are also made available to the workers at the site.
- The facility has perimeter fence that ensures the security network of its assets.
- Materials are properly arranged within the facility premises.
- The facility premises is clean.
- The facility is beautified with ornamental flowers.

4.2 IDENTIFICATION, QUANTIFICATION AND CHARACTERIZATION OF WASTES

4.2.1 Introduction

In **St. Mary's Funeral Home**, good knowledge of wastes stream is necessary to ensure its management and control by providing appropriate equipment for the segregation, collection, treatment, transportation and disposal.

Wastes are those rejects or defective products found not useful anymore. Some wastes are either recycled, recover, reduce, repair or reused.

In the facility, wastes generated are into three categories namely:

- Solid Waste
- Liquid Waste
- Gaseous and noise emissions.

4.2.2 Solid Waste Generation and Management

The facility's solid waste include: hand glove, cotton wool, jerry-cans, office wastes, cartons, paper and polyethylene. These wastes except jerry-cans are incinerated in a drum at the facility temporal waste site while the residues (ashes) are buried at the facility's landed property every week. The jerry-cans are sold to interested buyers.

4.2.3 Office and Premises Waste

Office and premises wastes generated are pieces of papers, cartons, biscuit wraps, sachet water and polythene bags while wastes within the premises such as dust and dry flower leaves at the administrative block section are swept and deposited in the waste bins.

4.2.4 Liquid Waste Generation and Management

The facility's liquid wastes include: wastewater from cleaning and other domestic usage as well as spent oil. The liquid waste from both the administrative section and the mortuary during mobbing and cleaning are channeled into the facility septic tank which is evacuated by an accredited vendor when full.

Spent oil is generated during generator maintenance. Spent oil from this source is stored in jerry cans depending on the volume available at that time and they are sold to the third party.

4.2.5 Gaseous, Noise Emission and Management

Gaseous emissions generated in the facility are from the generator when operational and delivery vehicles. These components release emissions such as particulates, SO₂, CO, NO₂, CH₄ and soot/fume.

Noise generation in the facility is mainly from the generator set when operational and delivery vehicles. However, noise level is minimized because the facility uses its solar facility as its source of electricity.

4.2.6 Production Process Waste

This can be regarded as wastes generated during the facility embalment activities. Liquid wastes generated during embalment are usually reused.

4.2.7 Measurement of Physio-chemical Parameters for Water Sample

The following Physiochemical test (A) were investigated on water – General appearance, Odour, Electrical conductivity, Turbidity, pH @ 25⁰C, Total Solids, Taste, Total Dissolved Solids, Total Hardness-EDTA, Total Alkalinity, Total Acidity, Residual Chlorine, Free Carbon dioxide, Chlorine, Nitrate, Nitrite, Arsenic, Total Phosphate, Sulphate, COD, Cadmium, Calcium, Chromium (Hexavalent), Magnesium, Total Iron, Lead, Copper, Manganese, Salinity, hydrogen Sulphide, Phenols, Mineral Oil, Detergents Phenolphthalein Alkalinity, Temperature, while Microbiological Test (B) Total Coliform count and Faecal Coliform (E-coli).

Physiochemical test investigated on soil are: Appearance, Moisture content, Temperature, pH, Organic Matter, Conductivity (1:1), Chloride, Oil/Fat, while Chemical Test – Nitrate, Sulphate, Calcium, Bicarbonate, Copper, Lead, Iron, Magnesium, Manganese, Zinc, Ammonical Nitrogen and Arsenic.

TABLE 4.1: APPROACH AND METHODS OF PHYSIO-CHEMICAL, MICROBIOLOGICAL AND CHEMICAL TEST FOR WATER AND SOIL

Parameters	Methodology
pH	ASTMD 1293B
Temperature	Thermometer
Taste	-
Colour	APHA
Odour	Threshold Odour No
Electrical Conductivity	ASTM
Total Solids	ASTM
Total Dissolved Solids	ASTM
Total Suspended Solids	ASTM
Iron	ASTM
Copper	ASTM
Calcium	ASTM
Magnesium	ASTM
Dissolved Oxygen	APHA
Total Dissolved Solids	ASTM
Total Solids	ASTM
Potassium	ASTM
Sodium	ASTM
Phenols	APHA
Mercury	APHA
Organic Matter	ASTM
Nitrogen	ASTM
Aluminum	ASTM
Nitrate	ASTM

Lead	ASTM
Manganese	ASTM
Arsenic	ASTM
BOD ₅	5 days method APHA 507
COD	APHA
E-Coli	APHA
Coli-form	APHA
Acidity	ASTM 1067-92
Alkalinity	ASTM1067-92
Total Hardness	ASTM1126-86
Chloride	APHA
Dissolved Oxygen	APHA
Sulphate	ASTM
VOC (Volatile Org. Compound)	ASTM
Moisture	%
Phosphorous	ASTM

Source: FMEnv

4.2.8 Result of Water Sample Analysis

Water samples were collected from three (3) locations. Two from Iyi ukwu stream (upstream and downstream) and one from the spring water about 300m away from the facility. The upstream of iyi ukwu stream is before the facility while the downstream is after the facility. The spring water was used as a control point.

TABLE 4.2: SHOWS THE RESULT OF WATER SAMPLE ANALYSIS

Parameters	Units	Iyi Ukwu Down Stream	Iyi Ukwu Up Stream	Spring Water	NESREA Limit
pH	-	7.5	7.2	6.3	6 - 9
Temperature	°C	27.5	27.3	27.2	<3
Taste	Unobjectionable	Objectionable	Objectionable	Unobjectionable	Unobjectionable
Colour	hazen colour disc	271	115	15	5 – 50
Odour	Unobjectionable	Objectionable	Objectionable	Unobjectionable	Unobjectionable

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Electrical conductivity	– Us/cm ²	10 ² X 1.9	10 ² X 3.7	10 ² X 2.4	NS
Acidity	mg/l	140	120	80	NS
Alkalinity	mg/l	180	140	100	NS
Total Hardness	mg/l/(CaCO ₃)	89.52	58.99	15.12	100
Dissolved Oxygen	mg/l	0.32	0.44	0.4	6
Total solids	mg/l	98.71	61.74	51.16	500
Total Dissolved Solids	mg/l	58.38	52.85	50.69	1200
Total Suspended Solids	mg/l	38.33	8.89	0.47	50
Calcium	mg/l	24.01	16.31	4.66	75
Magnesium	mg/l	15.29	9.59	1.98	30
Iron	mg/l	0.4	0.22	0.08	0.3
Lead	mg/l	0.05	0.03	NIL	0.05
Copper	mg/l	0.3	0.11	NIL	0.05
Arsenic	mg/l	ND	ND	ND	0.01
BOD ₅	mg/l	5.46	6.9	6.29	50
COD	mg/l	4.88	5.92	5.8	250
Sodium	mg/l	49.02	35.86	24.66	-
Manganese	mg/l	0.35	0.2	NIL	0.05
Potassium	mg/l	64.36	47.22	37.18	NS
Chloride	mg/l	86.19	68.24	46.16	250
Nitrate	mg/l	0.7	0.3	0.11	10
Sulphate	mg/l	124.05	92.46	68.51	250
Phenols	mg/l	ND	ND	ND	0.5
Oil/Grease	%	5.19	0.35	NIL	10
E-Coli,	Mpn/100ml	140	90	NIL	0
Coliform	Mpn/100ml	*	*	NIL	400

Source: Field Survey 2025.

Legend:

NS = Not Stated

ENVIRONMENTAL AUDIT REPORT

Prepared by Green Earth Environmental Consult
2nd Floor Akalaka Plaza Chime Avenue, New Haven, Enugu.

4.2.9 Result of Soil Sample Analysis

Soil samples were collected in two locations namely outside the facility premises and 30m away from the facility premises which serves as a control.

TABLE 4.3: RESULT OF SOIL SAMPLES ANALYSIS

PARAMETERS	UNITS	SOIL RESULT	CONTROL	NESREA LIMIT	REMARKS
Temperature	°C	26.8	26.8	<3	Satisfactory
pH		3.2	3.9	6.5 - 8.5	Unsatisfactory
Moisture	MG/KG	22.15	25.03	-	Satisfactory
Loss on Ignition	%	9.8	10.64	-	Satisfactory
Calcium (Ca)	MG/KG	41.06	38.72	-	Satisfactory
Magnesium (Mg)	MG/KG	26.27	21.49	-	Satisfactory
Iron (Fe)	MG/KG	0.14	0.26	0.03	Unsatisfactory
Sodium (Na)	MG/KG	39.92	43.88	-	Satisfactory
Potassium (K)	MG/KG	47.04	61.33	-	Satisfactory
Sulphate	MG/KG	78.07	84.11	-	Satisfactory
Lead (Pb)	MG/KG	0.08	0.03	164	Satisfactory
Copper (Cu)	MG/KG	0.06	0.03	100	Satisfactory
Nitrate (NO ₃)	MG/KG	0.53	0.77	10	Satisfactory
Oil and Grease	MG/KG	2.08	1.53		Satisfactory

Source: Field Survey 2025.

4.2.10 Air Quality

TABLE 4.4: AIR QUALITY ANALYSIS RESULTS

Parameters	Unit	Admin Block	Mortuary Area	NESREA Limit	Remarks
Carbon Monoxide (CO)	Ppm	0.0	0.0	1-5	Satisfactory
Hydrogen Sulphide (H ₂ S)	Ppm	0.00	0.00	NS	Satisfactory

Nitrogen Dioxide (NO ₂)	Ppm	0.00	0.00	0.04– 0.06	Satisfactory
Sulphur Dioxide (SO ₂)	Ppm	0.00	0.00	0.1	Satisfactory
Oxygen (O ₂)	Ppm	20.9	20.9	-	Satisfactory

Source: Field Survey 2025.

Legend:

ppm = part per million

NS = Not stated.

4.2.11 Noise Level Assessment

Noise level reading was carried out at specific times of 10:55pm as time in and 3:07pm as time out. The noise level was assessed using Digital Extech sound level meter through DREM calibrated in decibel dBA (ranges from 30-130 dBA). Meanwhile, areas taken and results are as detailed in table 4.5:

TABLE 4.5: RESULT OF NOISE LEVEL ANALYSIS

S/N	LOCATION	RESULT dB (A)	NESREA LIMIT dB (A)	REMARKS
1.	Admin Block	62.1	85	Satisfactory
2.	Facility Premises	60.2	85	Satisfactory
3.	Generator	58.6	85	Satisfactory
4.	Mortuary Section	57.8	85	Satisfactory
5.	Security Post	62.9	85	Satisfactory

Source: Field Survey 2025.

4.3 MATERIAL BALANCE

4.3.1 Life Cycle Analysis (LCA)

The Life Cycle Analysis (LCA) in the facility consists of looking at the facility's production process, analyzing its product's Environmental Impact during its whole life from the raw materials phase through the

consumption phases to the final disposal stage or activity from its inception to its completion.

The basic stages in a life cycle assessment are raw materials acquisition, use/reuse/maintenance and recycle/waste management. LCA addresses the fact that solving one problem almost creates others.

A complete LCA consists of:

- **Inventory Analysis:** This is the identification and quantification of energy and resources use and waste emissions.
- **Impact Analysis:** This is the assessment of the consequences the wastes have on the environment (Human, Ecology, Health and Welfare) and
- **Improvement Analysis:** This involves the evaluation and implementation of opportunities to effect environmental improvement.

4.3.2 Qualitative Description of Input Materials

The major raw material used by the facility is shown in table 4.6:

TABLE 4.6: LIST OF RAW MATERIAL (QUALITATIVE)

S/N	RAW MATERIAL
1.	Formalin

Source: Field Survey 2025.

This raw material is hazardous if swallowed or inhaled over a long period of time.

4.3.3 Quantitative Description of Materials

The basic raw material used by the facility is listed in the raw materials qualitative table above, which are 100% locally sourced. Meanwhile, the quantity of the materials used per day depends on the number of corpses available. The facility material input and their quantity is shown in table 4.7:

TABLE 4.7: MATERIAL INPUT QUANTITATIVE MONTHLY

S/N	RAW MATERIALS	QUANTITY USED
1.	Formalin	22.5 litres
2.	Water	7.5 litres
	Monthly Total	30 litres

Source: Field Survey 2025.

4.3.4 Identification of output Materials

There are two categories of outputs materials generated by the facility; the useful and non-useful outputs. The useful output is the mixed formalin for embalmment. The non-useful output is very little formalin that may spill. Table 4.8 showed the Input-Output Quantification.

TABLE 4.8: INPUTS – OUTPUT QUANTIFICATION

S/N	DESCRIPTION	QUANTITY
1.	Input	30
2.	Output	29.5
3.	Difference	0.5

Source: Field Survey 2025.

In Material Balance, the calculation requires a good working knowledge of the process. It will indicate areas of concern and help to prioritize problem of waste. Comparing the material input of the facility with the useful output materials, the production efficiency can be obtained from the formula.

$$\begin{aligned}
 \text{Material Balance} &= \frac{\text{Material output} \times 100}{\text{Material input}} \\
 &= \frac{29.5 \times 100}{30}
 \end{aligned}$$

$$= 98.3\%$$

$$\text{Material Loss} = 100 - 98.3 = 1.7\%$$

Thus from the input - output quantification table; material input = 30 l; output = 29.5 l; therefore, the facility has material loss of 1.7% that could be mainly due to poor handling.

4.3.5 Water Source and Consumption

Water used in the facility is primarily sourced from water vendors. The water is used for cleaning and other domestic purposes.

On the average, the facility uses about 500liters of water every month. This volume of water is used mainly for utility purposes.

4.3.6 Energy Source and Consumption

The sources of energy to the facility are the Enugu Electricity Distribution Company (EEDC), solar energy and Generator which serve as alternatives when there is power outage.

4.4 DESCRIPTION OF ENVIRONMENT EFFECTS RELATED TO OPERATIONAL ACTIVITIES

4.4.1 HAZOP Analysis

Hazop analysis was carried out to identify ways in which improper performance of the company's activities, systems or processes could result in employees' injury, equipment malfunction/damage and environmental harm or stress.

4.4.2 Potential Hazards

The list of possible hazards to staff, equipment, processes, systems and the environment are: formalin and oil spill.

4.5 IMPACT EVALUATION

Impact evaluation is divided into four sections. These sections are impact identification, quantification, public health and social impacts of the facility.

4.5.1 Impact Identification

Various types of wastes (solid, liquid, gaseous and noise) can be easily identified within the facility activities. Impact identification can be viewed in the light of volume of waste materials generated by the facility above the required threshold and their effect on the environment.

4.5.2 Solid Waste

The facility's solid waste include: hand glove, cotton wool, jerry-cans, office wastes, cartons, paper and polyethylene. These wastes except jerry-cans are incinerated in a drum at the facility temporal waste site while the residues (ashes) are buried at the facility's landed property every week. The jerry-cans are sold to interested buyers. The volume of solid waste generated is about 20kg every month as reported by the facility manager.

4.5.3 Liquid Waste

The Audit team during the site inspection verified that effluent (wastewater) generated in the facility is wastewater from cleaning and other domestic purposes as well as spent oil. The liquid waste from the administrative and mortuary sections are channeled into the facility septic tank which is evacuated by an accredited vendor when full.

Spent oil is generated during generator maintenance. Spent oil from this source is stored in jerry cans depending on the volume available at that time and they are sold to the third party.

4.5.4 Gaseous and Noise Emission

Gaseous emissions generated in the facility are from the generator set when operational and delivery vehicles. These components release emissions such as particulates, SO₂, CO, NO₂, CH₄ and soot/fume.

Noise generation in the facility is mainly from the generator set when operational and delivery vehicles.

4.6. IMPACT QUANTIFICATION

Impact quantification can be highlighted when the analyzed parameters are compared with the prescribed limits of the regulatory authority.

4.6.1 PHYSIO-CHEMICAL (WATER AND SOIL)

4.6.1.1 Water

The results of the water sample collected from three (3) locations mainly Iyi Ukwu (upstream and downstream) and spring water showed that the tested parameters were within the NESREA acceptable limits except taste and odour which recorded objectionable both downstream and upstream as against NESREA limit of unobjectionable. Colour and copper recorded 271mg/l and 115mg/l; 0.3 and 0.11mg/l respectively in both downstream and upstream as against NESREA limits of 5-50 and 0.05mg/l respectively. Manganese and E coli recorded 0.35mg/l and 0.2mg/l; 140 and 90 in both downstream and upstream as against NESREA limits of 0.05mg/l and 0 respectively. Finally iron recorded 0.4mg/l downstream as against NESREA limit of 0.3mg/l.

4.6.1.2 Soil

Soil analysis result showed that the parameters were all within NESREA statutory limits except pH which recorded 3.2 and 3.9 at both locations as against NESREA limit of 6.5 – 8.5. Iron (Fe) recorded 0.14MG/KG and

0.26MG/KG at both sample locations as against NESREA limits of 0.03MG/KG.

4.6.2 Air Quality

Air quality analysis result revealed that the analyzed parameters were within NESREA acceptable limits.

4.6.3 Noise

Noise assessment taken in some points within the facility revealed that all the noise levels were below NESREA prescribed limits.

4.7 PUBLIC HEALTH IMPACT

Public health impact survey revealed that there were no new or strange cases of illness and diseases within the facility and its host community. The normal disease/illness include: headache, stomach upset, malaria, typhoid fever etc.

The facility has a fully equipped First Aid Kit and clinic while appropriate Health, Safety and Environment Reporting procedure will be worked out by the consultant.

TABLE 4.9: INTERACTION MATRIX SCORES ENVIRONMENTAL SETTING (PHYSIO-CHEMICAL PARAMETERS)

Impact	Land	Air	Flora	Fauna	Water	Neighborhood
Generating Factors						
Gaseous Emissions	-1/1	- 1/1	-1/1	-1/1	-	-1/1
Effluent Discharges	-	-1/1	-	-	-	-
Noise Generation	-2/1	- 2/1	-	-2/1	-	-1/1
Solid Wastes	-2/2	-1/1	-	-1/1	-1/1	-

Source: Field Survey 2025.

4.8 SOCIO-ECONOMIC IMPACT

Socio-economic impact of the facility in the lives of the community and the workers has been positive. The facility has provided the workers source of livelihood and work experience.

The community has benefited from the numerous social responsibilities of the company amongst which are security watch support and other social activities organized in the community.

The facility also provides revenue to government (local, state and federal) through Tax payment, thereby contributing to the Gross Domestic Product (GDP) of the country's economy:

TABLE 4.10: INTERACTION MATRIX SCORES ENVIRONMENTAL SETTING (SOCIO-ECONOMIC PARAMETERS)

Socio-Economic Factor	Jobs	Community Relationship	Economic activities	Social/health activities	Security	Income	Land value	Traffic
Impact	+5/5	+5/3	+5/3	+5/3	+5/4	+6/5	+4/3	-2/1

Source: Field Survey 2025.

Legend: + == Significant Positive Impact

- == Negative Impact

1-2 ... Negligible Impact

3-4 == Mild or Low Impact

5-6 = Significant Impact

7-10 == Severe Impact

The Interactive Matrix scores in table 4.10 above showed that the facility has a positive impact on the socio-economic life of the workers, host community and Nigerian economy generally.

CHAPTER FIVE

5.0 RECOMMENDATIONS

The recommendations of the Environmental Audit (EA) were based on the findings of the Audit Team. The recommendations however were divided into two sections. The first section dealt with recommendations that are general to the facility while the second section is recommendations that are specific and need urgent attention.

5.1 GENERAL RECOMMENDATIONS

- The facility should submit its Environmental Audit Report (EA) Report and Environmental Management Plan (EMP) to the National Environmental Standards and Regulations Enforcement Agency (NESREA) as stipulated by law.
- The Environmental Audit follow-up action plan drawn up should be vigorously pursued in order to attain full compliance status with NESREA.

SPECIFIC RECOMMENDATIONS

The Specific recommendations have to do with pieces of advice, solutions etc to tackle particular problem in the facility where the effects are more pronounced or severe than in others.

It will focus on liquid waste discharges, waste reduction and minimization, health and safety and solid waste disposal.

- Petroleum products used by the facility should be handled properly to avoid environmental contamination while oil spill should be cleaned with detergents, sand or wood sheaves.
- Bund walls should construct round the generator area.

- Raw materials used in the facility should be stored and handled appropriately as recommended in the Materials Safety Data Sheet by the various manufacturers.
- Solid wastes generated should be properly incinerated to avoid environmental contamination.

5.2 FOLLOW up ACTION PLAN

The follow up action plan below is provided in order for the facility to meet the compliance status of National Environmental Standards and Regulations Enforcement Agency (NESREA).

TABLE 5.1: FACILITY FOLLOW up ACTION PLAN

S/No	Environmental issues	Action	Personnel Responsible	Time line
1.	General housekeeping	a) Bund walls should be constructed round the generator area. b) Flowers and ornamental trees should be trimmed as and when due.	Manager	1 month
2.	Emergency Response Procedures	(a) Enforce the use of Personal Protective Equipment (PPE) by workers.	Manager	Daily
3.	Staff Awareness and Training	(a) Periodic conduct of in-house Health, Safety and Environment training for its workers.	Manager	3 months
4.	Response to Regulations Compliance	(a)The facility should obtain its air quality; waste and toxics substance permit.	Manager	3 months

Source: Field Survey 2025.

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APPENDIX 1

ST. MARY'S FUNERAL HOME ENVIRONMENTAL POLICY STATEMENT

St. Mary's Funeral Home statement on environment serves to demonstrate our collective responsibility to the environment as we pursue our vision in our line of business(s). To this end, we strive to comply with all current and future environmental laws and regulations, and consciously prove and improve the efficiency of our operations to reduce negative impacts on the environment **AS LOW AS REASONABLY PRACTICABLY (ALARP).**

OUR SEVEN (7) KEY POINTS

1. Compliance with relevant State and Federal laws and regulations.
2. Engage the Best Available Technology (BAT) and knowledge (Local and Foreign) to prevent and reduce pollution.
3. Seek savings in water and energy.
4. Employ strategies like recycling and reuse in handling our operational wastes and materials.
5. Assessment of environmental impacts on new projects and development.
6. Creating awareness among employers, customers and visitors to ensure active participation of all to enhance clean, green, safe and healthy working environment.
7. Promotion of environmental sustainability by participating regularly on environmental regulating dialogue with authorities on how to improve on environmental protection.

SUMMARY STATEMENT

"St. Mary's Funeral Home strives to maintain high environmental standards by involving all our stakeholders (workers, clients, visitors etc) to acquire good environmental habits because we believe that environmental issues are common to all, more so, to engage Best Available Technology (BAT), to ensure clean, green, safe and healthy working environment that enhance our productivity, with least impacts on the environment".

APPENDIX 2

PHOTOLOGS OF ST. MARY'S FUNERAL HOME



FACILITY MORTUARY



ADMIN BUILDING



FRONT VIEW OF THE FACILITY



BACK OF THE MORTUARY BUILDING



FACILITY RAW MATERIAL Unit

APPENDIX 3

GENERALIZED QUESTIONNAIRE FOR ENVIRONMENTAL AUDIT REPORT

- Name of Company:.....
- Year of Registration:.....
- Year of Operation:.....
- Address of the company:.....
- Names of Directors:.....
- Company Profile:.....
- Type of product(s) if any:.....
- Staff strength:.....
- Do you operate shift? (a) Yes (b) No
- If yes, state number of working hours per day?.....
- Attach your organizational chart.
- State your production output capacity:.....
- Describe your company production process:.....
- How do you ensure process efficiency in your company?.....
- List raw materials and quantities used per day in your company and their storage conditions.
- How do you source your raw materials?
- Locally %

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- Abroad %
- Both
- State the percentage local content of raw material.

ENVIRONMENTAL MANAGEMENT SYSTEM

- Do you have Co-operate Environmental and Safety Policy?
- Show inventory of your safety gadgets/equipment.
- How efficient is your housekeeping record?
(a) Efficient (b) Inefficient
- How do you rate your general state of cleanliness in your company?
Above average Average Below average
- How often do you clean your surroundings?
Once a week Fortnightly Specify
- Are there any beautification plans for your company? (a) Yes or
(b) No
- How do you rate the conditions of your drains and pipes?
Good Fair Poor
- Do you keep the floors of your company free from spent oil/grease and other spillages?
Frequent Occasionally Rarely

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- Indicate sources of water used in your company.

Well ☐ Municipal ☐ Surface ☐ Borehole ☐ Others ☐

- State the volume of water used if possible or estimate per day:.....

- State the areas water is used in your company.

Process ☐ Cooling ☐ Boiler ☐ Washing ☐ Cleaning ☐

- Please give a brief summary description of the processes involved in the used of water?

WASTE WATER

- What are the means by which wastewater is collected in your facility per litre/day?

(a) Efficient water (b) Process water (c) Others

- How many water outlets are in your company?
- Indicate volume discharge from each outlet litres/day.....
- Where do you discharge your untreated wastewater:.....
- Do you treat your waste water? (a) Yes (b) No.

If yes, state the method.

Electromechanical ☐ Chemical ☐ Physical ☐ Biological or
any other ☐

- How efficient and adaptable is the method?
- Where do you discharge the treated water?

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Public drain ☐ Water body ☐ Recycle ☐ Reuse etc ☐

- Do you know the quality of the water before discharge? Show evidence if possible.

MONITORING

- Are samples of the waste water analyzed? (a) Yes (b) No.

If yes, indicate the frequency of sampling and analysis.

Weekly ☐ Fortnightly ☐ Monthly ☐ Quarterly ☐ Yearly ☐

- At what point along your production process, do you generate solid waste?.....
- What is the total (daily, weekly, monthly, annual) solid waste generated by your company, if it is not possible give estimate:.....
- How do you manage your solid waste?

Contractor ☐ Compression/compaction ☐ Recovery ☐ Reuse
Incineration (open/incineration) ☐ Store ☐ Bury etc ☐

- Where is the final waste disposal site?
- How do you treat and dispose off any corrosive, inflammable or radioactive waste materials?
- How do you dispose off your expired raw materials or products?
- List major air contaminants emitted by your facility.
- Indicate the type of gaseous emissions abatement method put in place in your company.

Filters ☐ Scrubbers ☐ Precipitator ☐

- What is the maintenance schedule if any?.....
- What is the height of your chimney/stack above ground levels?.....

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- Do you use power generating set? (a) Yes (b) No. If yes, what is the capacity/make?.....
- How many hours does it work per day?
- How is the efficiency? (oil, fuel/diesel, noise, smoke emission).
- What quantity of spent oil/grease do you generate?
- How do you manage it?
- Do you have any noise control measure in place, if yes state them?.....
- List your input raw materials for production:.....
- State your output materials (products/waste).....
- State your sales volume (daily, weekly, monthly, annually).
- What is your level of electricity (PHCN), Generator) consumption (daily, weekly, monthly, annually).
- Do you have enough ventilation in your work place?.....
- Do you have enough parking spaces for vehicles in your factory, if not, what is your plan?
- Which permit do you have (industrial waste discharge permit, municipal/industrial waste disposal permit, locally generated hazardous/toxic waste disposal permit, chemical importation permit from NAFDAC, permit to operate landfill site).
- State the number of accidents recorded within the last three years.
- State the number of fatalities recorded within the last three years.
- State the number and types of illness reported by workers in the last three years.
- Do you have private clinic or retainreship clinic for your company?

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- Do you have safety warning signs and state them if yes?
- How do you enforce the usage of safety gargets in your company, if there is any?
- What impacts do the activities of your facilities have on the immediate environment?
- What social oriented project have you had with the host community?

ENVIRONMENTAL AUDIT SPECIFIC QUESTIONS

1. Monitoring Pollution Units.

- (a) Is there any monitoring unit?
- (b) Is there any pollution control equipment?
- (c) Is there any person responsible for pollution control?
- (d) Is it captured in your organogram?
- (e) Do you have factory layout plan?

2. Discharge Monitoring Report.

- (a) Does your organization analyze and report effluent quality monthly?

3. Unusual or Accident Discharge.

- (a) Does your organizational have accident discharge log sheet?
- (b) If yes. Do you report same within 24 hours to NESREA?

4. List Chemicals.

- (a) Does your organization have list of the chemicals used in the manufacturing of your products?
- (b) Do you have details of stored chemicals and storage conditions?
- (c) Where do you buy and sale your chemicals?

5. *Contingency Plan.*

- (a) Does your facility have contingency plan for discharge?
- (b) If yes. Was it approved by the Ministry?

6. *Machinery for Combating Pollution.*

- (a) Does your facility have internal/external mechanism to combat pollution?
- (b) If no. what are your plans?

7. *Storage, Treatment and Transport of Harmful Toxic Waste*

- (a) Does your facility produce toxic waste?
- (b) If yes. Do you have storage, treatment & transport facilities to handle it?

8. *Generator's Liability.*

- (a) Who is responsible for the collection, treatment, transportation & disposal of your waste?
- (b) Is it your facility or contracted out?
- (c) If contracted out, is the organization accredited by NESREA?

9. *Strategies for Waste Reduction.*

- (a) Does your organization have waste reduction strategy?
- (b) If yes. Which applies to your organization?
 - (i) Reuse.
 - (ii) Recycle.
 - (iii) Minimization.
 - (iv) Combination of the above.

10. *Permissible Limits of Discharge into Public Drains.*

- (a) Is your organization aware of permissible limits into public drains such as streams, land etc.

11. Solid Waste to be disposed of in environmentally Safe Manner.

- (a) Which of the following environmental safe manner does your organization adapt?
- (b) Container (barrel, drum etc).
- (c) Tank.
- (d) Waste pile.
- (e) Surface impoundment.
- (f) Others (specify).

12. Release of Gaseous Matters.

- (a) Does your organization produce gaseous matters (specify)?

13. Surrounding of Factories

- (a) How does your organization maintain and preserve her?
- (i) Aesthetics.
- (ii) Sanitary Conditions.

14. Safety of Workers.

- (a) What are the health and safety plans for the workers (specify)?
- (b) What is your staff strength (m/f)?

15. Environmental Impact Assessment/Audit.

- (a) Does your organization have EIS?
- (b) Does your organization have Audit Report?
- (c) If yes. When?
- (d) When was your organization established?

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(e) Do you have health, safety & environmental policy?

16. Volume of Water used Daily.

(a) What is the volume of water your organization use daily?

(b) Where is the source?

(c) How do you treat it?

(d) Does your facility keep records of her energy consumption?

17. Log Book/Record Keeping.

(a) Do you have log book/record for your facilities that produce waste?

18. Does your organization have NIS/ISO/NAFDAC Certification?

19. Have you received pollution/consumer complaints from stakeholders?

Date:.....

Facility Operator:.....

Auditor:.....

ENVIRONMENTAL MANAGEMENT PLAN

OF

ST. MARY'S FUNERAL HOME

AT

NDI OKPO IHECHIOWA,

AROCHUKWU L.G.A, ABIA STATE.

ENVIRONMENTAL AUDIT REPORT

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ENVIRONMENTAL MANAGEMENT PLAN

1.0 INTRODUCTION

The National Environmental Standards and Regulations Enforcement Agency (NESREA) Act of 2007 was established to enforce all Environmental Laws, Regulations, Guidelines and Standards. Their responsibility also extends to enforcing conventions, treaties, and protocols on the environment to which Nigeria is signatory.

NESREA enforce Environmental Audit on facilities that did not carry out Environmental Impact Assessment (EIA) prior to its construction or facilities that has operated over three years while Environmental Management Plan are for facilities whose activities cause minimal impact on the environment.

Environmental Management Plan is a planned program carried out to ensure that the anticipated potential impacts are brought within regulatory or self-imposed limits. To this end, Environmental Management Plan (EMP) is one of the key components within the company's Environmental Management System (EMS) that clearly defines the company's initiatives to ensure protection of the environment and all affected stakeholders from operational activities.

The program will form the key reference document to ensuring that environmental issues are addressed and should be fully communicated to all staff, suppliers and contractors involved in the company business. This provides confidence on the part of the company operators that top management commitment exists. To this end, the Managing Director heads the strategic planning and decision making of the company

Health, Safety and Environmental (HSE) issues. While the Environmental Officer report all environmental issues to the Managing Director.

Tasks should be assigned based on knowledge and competence. HSE implementation should toe the bottom-top approach because the operators of the facility are the most exposed, therefore, mitigation should be tailored toward their protection. It also provides procedures and other schemes necessary to manage any contingency that may arise during operations in the company.

The EMP is usually customized from the International Standard Organization, ISO 14001 and the Environmental Management System (EMS) is made to suit the particular conditions and need of the project.

ISO 14001 requires that the EMS and EMP be integrated with an organizations other management activities. With the EMP in place, an organization can make the necessary budgetary allocation for the environment, assign responsibilities to its staff and work towards achieving full compliance with statutes.

This report presents the Environmental Management Plan (EMP) of **St. Mary's Funeral Home** located at Ndi Okpo Ihechiowa in Arochukwu L.G.A. of Abia State.

2.0 ENVIRONMENTAL MANAGEMENT PLAN OBJECTIVES

For any environmental responsible organization, the following objectives will form an integral part of its environmental protection policy/strategy:

- Minimize the negative impacts and enhance the positive impacts on the environment.
- Ensure compliance with all relevant regulatory requirements and company policy.

- Enhance social acceptability by all stakeholders.
- Enhance and demonstrate sound environmental performance built around principle of continuous improvement.
- Enable management to establish environmental priorities.
- Develop waste management program for the facility.
- Integrate environmental concerns fully into the day-to-day business of the company.
- Rationalize and streamline environmental activities to add value in efficiency and effectiveness.
- To provide early warning of Environmental damage so that emergency procedures can be activated to prevent or reduce deterioration of the environment.
- To ensure regular training of staff on environmental safety and management in line with ever changing and dynamic environmental system and technologies.

2.1 Environmental Policy

The facility has an Environmental Policy in line with its activities on safeguarding its workers and environment. However, its Quality Policy Statements were not placed at strategic positions within the premises.

3.0 PROJECT PROPONENT

St. Mary's Funeral Home is a privately owned mortuary located at Ndi Okpo Ihechiowa in Arochukwu L.G.A, Abia State. The facility was established to provide quality mortuary services to the populace of Ihechiowa and beyond. **St. Mary's Funeral Home** with its moderate working environment has ensured that its activities do not in any way cause environmental nuisance on its immediate environment being Ndi Okpo Ihechiowa.

The facility was registered under the Corporate Affairs decree of the Federal Republic of Nigeria on 15th April 2025 with registration number **RC: 8415539**. The company presently has its Corporate Head Office located at Ndi Okpo Ihechiowa in Arochukwu L.G.A, Abia State.

The facility has well-articulated Organizational structure with **Dr. Kalu Amah** as the CEO/Managing Director and other management staff as listed below:

- Mazi Okoronkwo Kalu Amah (Manager)
- Mr. Azuma Samuel (Mortician)
- Mazi Daniel Mbani (Driver)

3.1 Location of the Facility

The facility is located at Ndi Okpo Ihechiowa in Arochukwu L.G.A, Abia State. The facility environment is typically of rural setting with economic trees, vegetation and one industrial facility. The topography of the area is sloppy but the facility is in a tabular landform within the Administrative and Mortuary sections while sloppy towards the parameter fence.

The Geographical Positioning System (GPS) of the facility was established with its Latitude and Longitude shown as **N 05° 28' 6.77"** and **E 07° 52' 53.69"**.

Major landmarks located within the facility environs include: Palm Oil Production Factory, De Lazz Inc, The Apostolic Church, Jenoil Filling Station, Ihechiowa Micro Finance Bank, Mercy Catholic Hospital, Mercy Mortuary, St. Mulumba Parish, Assemblies of God Church, commercial shops among others.

3.2 Staff Strength

The company has total staff strength of 4. The company does not operate shift in its operating schedule. Hence, its normal working hours is 9hrs daily, starting from 8am in the morning to 5 pm in the evening with 1 hour break.

4.0 ECO-SYSTEM SENSITIVITY

4.1 Adjoining Ecosystems

The facility is located 10 meters to Iyiukwu stream. It is not near to forest or grazing lands as the area is a rural area.

4.2 Human Settlement

The area is a rural environment with built up structures of human settlement. The human population within the area could be estimated at about 650 people.

4.3 Discharge Point

Effluent is generated mainly from the administrative section, cleaning and servicing of generator set. The facility discharges its effluent generated into its constructed septic tank which is evacuated by an accredited vendor when full.

Spent oil generated during the maintenance of generator set is stored in containers and sold to interested buyers who use them for different purposes.

5.0 ENVIRONMENTAL POLLUTION INDEX

5.1 Industrial Facility in the Locality

Industrial and commercial facility in the locality are Palm Oil Production Factory, De Lazz Inc, Jenoil Filling Station etc.

5.2 Water Source and Consumption

Water used in the facility is primarily sourced from water vendors. The water is used for cleaning and domestic purposes.

On the average, the facility uses about 500 liters of water every month. This volume of water goes out for utility purposes.

5.3 Energy Source and Consumption

The sources of energy to the facility are the Enugu Electricity Distribution Company (EEDC), solar energy and a Generator which serve as alternatives when there is power outage.

7.0 RISK LEVEL

6.1 Impact of Activities

6.1.1 Production Process

St. Mary's Funeral Home uses formalin to preserve corpses. When a corpse is brought to the funeral home, the mortician prepares the embalmment process. Formalin is diluted with water and injected into the dead body through the veins and arteries. After the injection, the corpse will be left for two to three hours in the embalmment room before taking it into the mortuary section where it is kept until the owners are ready to collect for burial.

Impact of Process Raw Material

Various types of wastes (solid, liquid, gaseous and noise) can be easily identified during production process. Impacts can be viewed in the light of waste materials generated by the facility and their effect on the environment.

Solid Waste

The facility's solid waste include: hand glove, cotton wool, jerry-cans, office wastes, cartons, paper and polyethylene. These wastes except jerry-cans are incinerated at the facility temporal waste site, the residues (ashes) are buried at the facility's landed property every week. The jerry-cans are sold to interested buyers. These waste if not properly disposed can deface the aesthetic of the facility premises. The facility's volume of solid waste generated is about 20kg every month as reported by the facility manger.

Liquid Waste

The Audit team during the site inspection verified that effluent (wastewater) generated in the facility is wastewater from cleaning and other domestic purposes as well as spent oil. Liquid waste from the administrative and mortuary sections are channeled into the facility septic tank which is evacuated by an accredited vendor when full, while rain water within the facility premises are channeled to the outer environment.

Spent oil is generated during generator maintenance. Spent oil from this source is stored in jerry cans depending on the volume available at that time and they are sold to the third party.

Gaseous and Noise Emission

Gaseous emissions generated in the facility are from the generator when operational and delivery vehicles. These components release emissions such as particulates, SO₂, CO, NO₂, CH₄ and soot/fume.

Air quality investigation was carried out at different locations in the facility premises using Aeroquul 200 Series Air quality equipment through Direct Reading Engineering Method (DREM).

Noise generation in the facility is mainly from the generator set when operational and delivery vehicles.

Noise levels were taken at different locations in the facility using Extech sound level meter equipment through DREM.

Air Quality Analysis

TABLE 6.1: RESULT OF AIR QUALITY ANALYSIS

Parameters	Unit	Admin Block	Mortuary Area	NESREA Limit	Remarks
Carbon Monoxide (CO)	Ppm	0.0	0.0	1-5	Satisfactory
Hydrogen Sulphide (H ₂ S)	Ppm	0.00	0.00	NS	Satisfactory
Nitrogen Dioxide (NO ₂)	Ppm	0.00	0.00	0.04– 0.06	Satisfactory
Sulphur Dioxide (SO ₂)	Ppm	0.00	0.00	0.1	Satisfactory
Oxygen (O ₂)	Ppm	20.9	20.9	-	Satisfactory

Source: Fieldwork Survey, 2025

Legend:

ppm= part per million

NS= Not stated;

Water Sample Analysis

Water samples were collected from three (3) locations. Two from Iyi ukwu stream (upstream and downstream) and one from the spring water about 300m away from the facility. The upstream of iyi ukwu stream is before the facility while the downstream is after the facility. The spring water was used as a control point.

TABLE 6.2: WATER SAMPLE ANALYSIS OF THE STUDY AREA

Parameters	Units	Iyi Ukwu Down Stream	Iyi Ukwu Up Stream	Spring Water	NESREA Limit
pH	-	7.5	7.2	6.3	6 - 9
Temperature	°C	27.5	27.3	27.2	<3
Taste	Unobjectionable	Objectionable	Objectionable	Unobjectionable	Unobjectionable
Colour	hazen colour disc	271	115	15	5 – 50
Odour	Unobjectionable	Objectionable	Objectionable	Unobjectionable	Unobjectionable
Electrical conductivity	– Us/cm ²	10 ² X 1.9	10 ² X 3.7	10 ² X 2.4	NS
Acidity	mg/l	140	120	80	NS
Alkalinity	mg/l	180	140	100	NS
Total Hardness	mg/l/CaCo ₃)	89.52	58.99	15.12	100
Dissolved Oxygen	mg/l	0.32	0.44	0.4	6
Total solids	mg/l	98.71	61.74	51.16	500
Total Dissolved Solids	mg/l	58.38	52.85	50.69	1200
Total Suspended Solids	mg/l	38.33	8.89	0.47	50
Calcium	mg/l	24.01	16.31	4.66	75
Magnesium	mg/l	15.29	9.59	1.98	30
Iron	mg/l	0.4	0.22	0.08	0.3
Lead	mg/l	0.05	0.03	NIL	0.05
Copper	mg/l	0.3	0.11	NIL	0.05
Arsenic	mg/l	ND	ND	ND	0.01
BOD ₅	mg/l	5.46	6.9	6.29	50
COD	mg/l	4.88	5.92	5.8	250
Sodium	mg/l	49.02	35.86	24.66	-
Manganese	mg/1	0.35	0.2	NIL	0.05
Potassium	mg/l	64.36	47.22	37.18	NS

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Prepared by Green Earth Environmental Consult
 2nd Floor Akalaka Plaza Chime Avenue, New Haven, Enugu.

Chloride	mg/l	86.19	68.24	46.16	250
Nitrate	mg/l	0.7	0.3	0.11	10
Sulphate	mg/l	124.05	92.46	68.51	250
Phenols	mg/l	ND	ND	ND	0.5
Oil/Grease	%	5.19	0.35	NIL	10
E-Coli,	Mpn/100ml	140	90	NIL	0
Coliform	Mpn/100ml	*	*	NIL	400

Source: Field Survey 2025.

Noise Level Assessment

Noise level reading was carried out at specific times of 10:55pm as time in and 3:07pm as time out. The noise level was assessed using Digital Extech sound level meter through DREM calibrated in decibel dBA (ranges from 30-130 dBA). Meanwhile, areas investigated and results were as detailed in table 6.3 below:

TABLE 6.3: RESULT OF NOISE LEVEL ANALYSIS AT SELECTED POINTS

S/N	LOCATION	RESULT dB (A)	NESREA LIMIT dB (A)	REMARKS
1.	Admin Block	62.1	85	Satisfactory
2.	Facility Premises	60.2	85	Satisfactory
3.	Generator	58.6	85	Satisfactory
4.	Mortuary Section	57.8	85	Satisfactory
5.	Security Post	62.9	85	Satisfactory

Source: Fieldwork Survey, 2025

Air Quality

Air quality analysis showed that the analyzed parameters were within the acceptable limit of NESREA.

Water

The results of the water sample collected from three (3) locations mainly Iyi Ukwu (upstream and downstream) and spring water showed that the tested parameters were within the NESREA acceptable limits except

taste and odour which recorded objectionable both in the downstream and upstream as against NESREA limit of unobjectionable. Colour and copper recorded 271mg/l and 115mg/l; 0.3 and 0.11mg/l respectively in both downstream and upstream as against NESREA limits of 5-50 and 0.05mg/l respectively. Manganese and E coli recorded 0.35mg/l and 0.2mg/l; 140 and 90 in both downstream and upstream as against NESREA limits of 0.05mg/l and 0 respectively. Finally iron recorded 0.4mg/l downstream as against NESREA limit of 0.3mg/l.

Noise

Noise assessment at selected points revealed that noise levels were within the acceptable NESREA limit of 85db (A).

6.2 Storage

Chemical used by the facility is formalin and it is contained in jerry cans. It is stored in a well ventilated area. The content is inscribed on each of the jerry-can for easy of identification.

Treatment

Good housekeeping is adopted by the facility to reduce its solid waste generation as the wastes generated are incinerated and the residues (ashes) are buried at the facility's landed property every week while wastewater is channeled to the facility septic tank.

7.0 Abatement Technology

In **St. Mary's Funeral Home** good knowledge of wastes stream is necessary to ensure its management and control by providing appropriate equipment for the segregation, collection, treatment, transportation, and disposal.

Wastes are those rejects or defective products found not useful anymore. Some wastes are either recycled, recover, reduce, repair or reused.

In the facility, wastes generated are into three categories namely:

- Solid Waste
- Liquid Waste
- Gaseous and noise emissions.

Solid Waste Generation and Management

The facility's solid waste include: hand glove, cotton wool, jerry-cans, office wastes, cartons, paper and polyethylene. These wastes except jerry-cans are incinerated in a drum at the facility temporal waste dump while the residues (ashes) are buried at the facility's landed property every week. The jerry-cans are sold to interested buyers. These waste if not properly disposed can deface the aesthetic of the facility premises.

Office and Premises Waste

Office and premises wastes generated are pieces of papers, cartons, biscuit wraps, sachet water and polythene bags while wastes within the premises such as dust and dry flower leaves at the administrative block section are swept and deposited in the waste bins.

Liquid Waste Generation and Management

The facility's liquid wastes include: wastewater from cleaning, other domestic usage and spent oil. Liquid waste from the administrative and mortuary sections are channeled into the facility septic tank which is evacuated by an accredited vendor when full, while rain water within the facility premises are channeled to the outer environment.

Spent oil is generated during generator maintenance. Spent oil from this source is stored in jerry cans depending on the volume available at that time and they are sold to the third party.

Gaseous, Noise Emission and Management

Gaseous emissions generated in the facility are from the generator set when operational and delivery vehicles. These components release emissions such as particulates, SO₂, CO, NO₂, CH₄ and soot/fume.

Air quality investigation was carried out at different locations in the facility premises using Aeroquol 200 Series Air quality equipment through Direct Reading Engineering Method (DREM).

Noise generated in the facility is mainly from the generator set when operational and also from delivery vehicles.

8.0 Contingency/Combating Plan

The facility has made available some safety measures such as:

- Fire extinguishers.
- Equipped first aid kits.
- Police and fire service phone numbers.
- Enforcing the use of safety gadgets by workers.
- Ambulance.

However, the facility in this regard is taking proactive measures to prevent disaster occurrence. Moreover, where it occurs, good established measures are on ground to handle any contingency to minimize casualty and enhance workers safety.

9.0 ENVIRONMENTAL MONITORING PLAN

The National Environmental Standards and Regulations Enforcement Agency (NESREA) regulations required environmental monitoring for any

manufacturing and pollution producing facilities. Monitoring may require sampling of ground and surface water and analysis of emissions and effluents on the environment. Monitoring is also “a process of generating, collecting, analyzing, and evaluating data on the environmental settings of a project area”. The technical field team of NESREA will be visiting the facility periodically during its operational stage to know its level of compliance with statutory limits and environment friendly.

The purpose of this are:

- To verify company’s compliance against the approved EMP and regulatory requirements.
 - To identify any sign of environmental degradation within the project area, resulting from the project activities.
 - Monitoring reports will be submitted to NESREA monthly, quarterly and twice a year for review as the case maybe.
- Anomalies and non-compliance will receive immediate attention.

The table below shows parameters to be monitored:

TABLE 9.1: PARAMETERS TO BE MONITORED

Medium	Parameters	Frequency	Action party
Air Quality	Total particulate, Nitrogen iv oxide (NO ₂), Carbon (11) Oxide (CO), Ammonia (NH ₃) Hydrocarbons (CH ₃)	Monthly	NESREA/Consultant
Solid Waste	Types and volume	Monthly	NESREA/Consultant
Water Quality	pH, Total dissolved solid, Phosphate Sulphide, Nitrate, Sulphate,	Monthly	NESREA/Consultant

	Chloride, Sodium, Potassium Calcium, Magnesium, Iron, Lead Copper		
Noise	dB level	Monthly	NESREA/Consultant

Source: Fieldwork Survey, 2025

TABLE 9.2: ENVIRONMENTAL MANAGEMENT PLAN LEGEND TO WORK

SCHEDULE

S/No	Environmental issues	Action	Personnel Responsible	Time line
1.	General housekeeping	(a) Bund walls should be constructed round the generator area.	Manager	1 month
2.	Emergency Response Procedures	(a) Enforce the use of Personal Protective Equipment (PPE).	Manager	Daily
3.	Staff Awareness and Training	(a) Periodic conduct of in-house Health, Safety and Environment training for its workers.	Manager	3 months

Source: Fieldwork Survey, 2025.

9.1 SOCIAL RESPONSIBILITIES

St. Mary's Funeral Home has as part of its corporate policy render services to both its host communities and the nation at large. The company partakes in all vigilante activities in the host community.

9.2 REMEDIATION PLANS AFTER DECOMMISSIONING AND CLOSURE

The proponent shall carryout abandonment of its facilities in a safe and environmentally responsible manner such that it constitutes no harm to the environment and health of stakeholders through various remediation

strategies as far as possible. Thereafter, the site will be converted into another effective and best use in harmony with the general environment of the area.

The abandonment process will involve the following:

- Operation shutdown.
- Dismantling/removal of all surface facilities.
- Remediation of impacted areas in order to restore them to their original condition as far as possible.
- Breaking down of civil structures if any and disposal at approved dumpsite or host community or interest third party.
- Assessing residual impacts that the project has had on the environment during its life span.

It is **Green Earth Environmental Consult** opinion that, if the Management of the project adheres strictly to guidelines made in this Environmental Management Plan Report, it will operate an environment friendly and peaceful atmosphere.