(Mineral Resources Infrastructure Work)

NTQF Level -1

Learning Guide # 34

Unit of Competence: Use Hand and Power Tools

Module Title: Using Hand and Power Tools

LG Code: MIN MRI1 M10 LO1-LG-34

TTLM Code: MIN MRI1 TTLM 0819v1

LO_1: Plan and prepare

Instruction Sheet 1	Learning Guide # 34

This learning guide is also developed to provide you the necessary information regarding the following **content coverage** and topics –

- Industry and worksite terminologies
- Accessing, Interpreting and applying relevant compliance documentation
- Obtaining , confirming and applying work instructions
- Job safety analysis (JSA)
- Obtaining and confirming site and equipment safety requirements
- Identifying and confirming environmental protection requirements
- Applying environmental management plan

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, **you will be able to –**

- Know Industry and worksite terminologies
- Access, Interpret and apply relevant compliance documentation
- Obtain , confirm and apply work instructions
- Understand Job safety analysis (JSA)
- Obtain and confirm site and equipment safety requirements
- Identify and confirm environmental protection requirements
- Apply environmental management plan

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described in number 3 to 8.
3. Read the information written in the "Information Sheets 1". Try to understand what are being discussed. Ask you teacher for assistance if you have hard time understanding them.
4. Accomplish from "Self-check 1 up to Self-check 7
5. Ask your teacher the key to correction (key answers) or you can request your teacher to correct your work. (You are to get the key answer only after you finished answering the Self-check).
6. If you earned a satisfactory evaluation proceed to "Information Sheet 2". However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Learning Information Sheet 2
7. If you earned a satisfactory evaluation from the "Self-check" proceed to "Operation Sheet 1 and operation Sheet 2 in page 26
8. Submit your accomplished Self-check. This will form part of your training portfolio.

Information Sheet-1	Industry and Worksite Terminologies

1.1 .Concept of Industry and work site

1.1.1. Industry

Many people think of industry as the collective large-scale manufacturing of goods in well-organized plants with a high degree of automation and specialization. Although this is a common example of industry, it can also include other commercial activities that provide goods and services such as Mining, agriculture, transportation, hospitality, and many others. Industry can be classified into different categories. Such as:

Primary (first): Primary industries are those that extract or produce raw materials from which useful items can be made. Extraction of raw materials includes mining activities, forestry, and fishing.

Secondary (second): Secondary industries are those that change raw materials into usable products through processing and manufacturing..

Figure 1.1 Industries

1.1.2 Work site Information

Work site information (briefing) is important before starting operations; ensure that you have received work information from your supervisor, and a handover from the previous operator (if applicable). Briefings are conducted according to site policy. Information that should be provided in the briefing includes:

- Personnel and equipment scheduled to operate in the area
- known hazards in the work area
- Events that will occur onsite during the day that may affect your task
- Any problems that occurred during the previous day such as breakdowns and schedule slippage

- Updates such as revised survey data or amended priorities of work
- Current progress towards job completion. A toolbox talk or short safety discussion may also take place during the briefing. Do not start any work until you have fully understood the information given to you by the supervisor

Figure1.2. Work site Information

1.2. Terminologies of Industry and worksite

The following are terms commonly used on industry and work sites of mining.

Active workings - Any place in a mine where miners are normally required to work or travel and which are ventilated and inspected regularly.

Belt conveyor - A looped belt on which coal or other materials can be carried, and which is generally constructed of flame-resistant material or of reinforced rubber or rubber-like substance.

Bridge carrier - A rubber-tire-mounted mobile conveyor, about 10 meters long, used as an intermediate unit to create a system of articulated conveyors between a mining machine and a room or entry conveyor.

Chain conveyor - A conveyor on which the material is moved along solid pans (troughs) by the action of scraper crossbars attached to powered chains.

Chain pillar - The pillar of coal left to protect the gangway or entry and the parallel airways.

Check curtain - Sheet of brattice cloth hung across an airway to control the passage of the air current.

Chock - Large hydraulic jacks used to support roof in longwall and shortwall mining systems.

Clay vein - A body of clay-like material that fills a void in a coal bed.

Coal - A solid, brittle, more or less distinctly stratified combustible carbonaceous rock, formed by partial to complete decomposition of vegetation; varies in color from dark brown to black; not fusible without decomposition and very insoluble.

Coal washing – The process of separating undesirable materials from coal based on differences in densities. Pyritic sulfur, or sulfur combined with iron, is heavier and sinks in water; coal is lighter and floats.

Coke – A hard, dry carbon substance produced by heating coal to a very high temperature in the absence of air.

Conveyor - An apparatus for moving material from one point to another in a continuous fashion. This is accomplished with an endless (that is, looped) procession of hooks, buckets, wide rubber belt, etc.

Crusher - A machine for crushing rock or other materials. Among the various types of crushers are the ball mill, gyratory crusher, Handsel mill, hammer mill, jaw crusher, rod mill, rolls, stamp mill, and tube mill.

Cutter; Cutting machine - A machine, usually used in coal that will cut a 10- to 15-cm slot. The slot allows room for expansion of the broken coal. Also applies to the man who operates the machine and to workers engaged in the cutting of coal by pick or drill.

Detectors - Specialized chemical or electronic instruments used to detect mine gases.

Drill - A machine utilizing rotation, percussion (hammering), or a combination of both to make holes. If the hole is much over 0.4m in diameter, the machine is called a borer.

Drilling - The use of such a machine to create holes for exploration or for loading with explosives.

Feeder - A machine that feeds coal onto a conveyor belt evenly.

Geologist - One who studies the constitution, structure, and history of the earth's crust, conducting research into the formation and dissolution of rock layers, analyzing fossil and mineral content of layers, and endeavoring to fix historical sequence of development by relating characteristics to known geological influences (historical geology).

Manhole - A safety hole constructed in the side of a gangway, tunnel, or slope in which miner can be safe from passing locomotives and car also called a refuge hole.

Panic bar - A switch, in the shape of a bar, used to cut off power at the machine in case of an emergency.

Scrubber – Any of several forms of chemical/physical devices that remove sulfur compounds formed during coal combustion. These devices, technically know as flue gas desulfurization systems, combine the sulfur in gaseous emissions with another chemical medium to form inert "sludge," which must then be removed for disposal.

Self-Check -1	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Define what industry means? 3 point
2. What is the importance of worksite information? 3 point
3. List at least three Terminologies of industry and worksite in mining? 4 point

Note: **Satisfactory rating – Above 5 points** **Unsatisfactory - below 5 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-2	Access, Interpret and Apply Relevant Compliance Documentation

2. Introduction to Accessing, Documenting & Recording

The management of accessing, documenting & recording is one of the essential elements of the quality system. The management system addresses both use and maintenance of documents and records. A major goal of keeping documents and records is to find information whenever it is needed.

2.1 Overview of Documents

Documents include all the written policies, processes, and procedures of the laboratory. In order to develop laboratory documents, it is important to understand each of these elements and how they relate.

2.1.1 Differences between Documents and records

Documents provide written information about policies, processes, and procedures.

The following are the characteristics of documents:

- communicate information to all persons who need it, including laboratory staff, users, and laboratory management personnel;
- need to be updated or maintained;
- must be changed when a policy, process, or procedure changes;
- Establish formats for recording and reporting information by the use of standardized forms. Once the forms are used to record information, they become records. Some examples of documents include a quality manual, standard operating procedures (SOP), and job aids.

Records are the collected information produced by the laboratory in the process of performing and reporting a laboratory test.

Characteristics of records are that they:

- Need to be easily retrieved or accessed;
- Contain information that is permanent, and does not require updating. Some examples of records include: completed forms, charts, sample logs, patient records, quality control information, and patient reports. Information is the major product of the laboratory, so manage it carefully with a good system for the laboratory's documents and records.

2.1.2 What is a policy?

A policy is a documented statement of overall intentions and direction defined by those in the organization and endorsed by management. Policies give broad and general direction to the quality system. They:

- tell “what to do”, in a broad and general way;
- include a statement of the organizational mission, goals, and purpose;
- Serve as the framework for the quality system, and should always be specified in the quality manual. Although there are national policies that affect laboratory operations, each laboratory will develop policies specific to its own operations.

2.1.3. process

Processes are the steps involved in carrying out quality policies. Process is defined as a set of interrelated or interacting activities that transform inputs into outputs. Some examples of laboratory inputs include test requests, samples, and requests for information.

2.1.4 procedures

Procedures are the specific activities of a process and easily described as the performance of a test. A procedure tells “how to do it”, and shows the step-by-step instructions that laboratory staff should carefully follow for each activity. The term Standard Operating Procedure is often used to indicate these detailed instructions on how to do it. Job aids, or work instructions, are shortened versions of Standard Operating Procedures that can be posted at the bench for easy reference on performing a procedure.

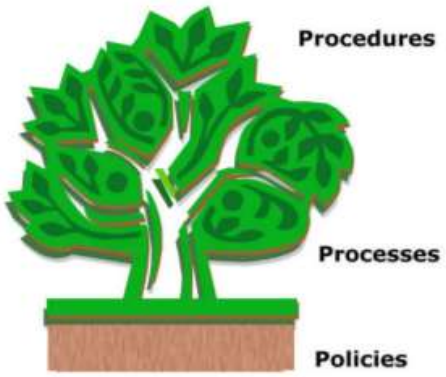


Figure 2.1.Shows relation between polices, process and procedures

2.1.5 Accessibility

The documents needed in the work process must be accessible to all staff. Persons managing samples should have the procedures for sample management directly available to them. Testing personnel will need the SOPs in a convenient place, and perhaps a job aid posted in clear view of the work space where testing is performed. The testing personnel need immediate access to quality control charts and trouble-shooting instructions for equipment. All staff must have access to safety manuals.

Self-Check -2	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Write the differences between documents and records?
2. Mention at least two characteristics of documents?
3. Define what mean a process?

Note: **Satisfactory rating - 3 points** **Unsatisfactory - below 3 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-3	Obtain, Confirm and Apply Work Instructions

3.1 Safe Working Instructions

Safe Working instructions are written instructions for a process or activity that outlines the recommended safe method of undertaking the process or activity. Written Safe Working instructions are an essential part of a safe system of work and are an important part of an overall occupational health and safety program. Safe working instructions provide information necessary to assist all staff and students to perform tasks safely and reliably.

3.2 Safe Working Instructions necessary?

Safe Working Instructions are required for any routine or repeated activity or process that is associated with a medium to high risk. Medium to high risk in this context means any activity or process where an injury may occur if the process is not carried out with care or attention. Where a process or activity is a known cause of injury then Safe Working Instructions are required.

3.3 Responsibilities

Supervisor and Employee: Supervisor led training is required upon employment for employees who operate hand and portable power tools.

Select the Right Tool for the Job: Examples of unsafe practices are: Striking hardened faces of hand tools together (such as using a carpenter's hammer to strike another hammer, hatchet, or metal chisel), using a file for a pry, a wrench for a hammer, using a ‘cheater’, and pliers instead of the proper wrench.

• **Keep Tools in Good Working Condition**: Wrenches with cracked work jaws, screw drivers with broken points or broken handles, hammers with loose heads, dull saws, and extension cords or electric tools with broken plugs, improper or removed grounding prongs, or split insulation are examples of tools in poor conditions. Tools that have deteriorated in this manner must be taken out of service.

• **Use Tools the Right Way**: Screw drivers applied to objects held in the hand, knives pulled toward the body, and failure to ground electrical equipment are common causes of accidents.

• **Place/Keep/Store Tools in a Safe & Secure Place**: Many accidents have been caused by tools falling from overhead and by knives, chisels, and other sharp tools Hand and Power Tool Guidelines GS-91 Page 2 carried in pockets or left in tool boxes with cutting edges exposed. Tools

should be kept away from work bench edges.

3.4 Developing Working Instructions

It is recommended that the preparation of safe working instructions be prioritized as follows:

• All new hazardous processes or activities should have Safe Working Instructions prepared before any hazardous process or activity is undertaken

• for existing processes, the preparation of Safe Working Instructions should be prioritized according to the level of risk, taking into account hazard exposure, frequency of exposure, and worker knowledge and experience. A higher priority should be placed on the tasks carried out by students.

Self-Check -3	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Write the advantage of Safe Working Instructions? 4point
2. When are Safe Working Instructions necessary? 3point
3. Write the responsibility of supervisor and employee safe working instructions? 3point

Note: **Satisfactory rating - 5 points** **Unsatisfactory - below 5 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information Sheet-4	Understand Job Safety Analysis (JSA)

4. Introduction

The process of breaking down a job in to its constituent steps, listing the hazards associated with those steps and developing procedures to reduce those hazards appears in the work area. Job safety analysis, sometimes called job hazard analysis.

4.1 Job Safety Analysis

Job Safety Analysis refers to both the analytical process of developing safer job procedures and to the document that is developed as a result of the analysis

Pertaining to job safety analysis and risk assessment, various techniques are introduced in order to make a job place more secure in case a certain accident occurs. Obviously many of the industrial accidents could have been prevented with proper safety precautions. Obviously there are numerous industrial machines which are extremely dangerous to work with and hence thousands of workers become injured \through accidents. These injuries are caused either through negligence, accident or through incompetence. Hence it is the responsibility of the employer to protect their employees against any possible hazards in the work place and to provide trained staff and information to ensure they are aware how to keep safety in the workplace. The aim of risk identifications to detect those potential hazards that could front a risk related to job. It is also noticeable that several accidents mostly occur in workplace due to lack of inattentiveness of workers, necessary knowledge to perform certain task and especially when working with new machines.

Job Hazard Analysis is

- A step by step process
- Analyzing a job to determine hazards
- A look at the Environment the task is performed in
- Recommending controls
- Aid in developing safe work procedures

Self-Check -4	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Define what mean job safety analysis? 3point
2. What is the importance of job safety analysis? 4point
3. What is the aim of risk identifications? 3 point

Note: **Satisfactory rating - 5 points** **Unsatisfactory - below 5 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information Sheet-5	**Obtain and confirm site and equipment safety requirements**

Introduction

The purpose of this information sheet is to protect employees from the hazards associated with using hand or powered tools at work area.

5.1 The Occupational Health and Safety and its requirements may include:

- Personal protective equipment (PPE's)
- Workplace environment
- Safety handling of materials
- First Aid Kit

5.1.1 Personal protective equipment (PPE's)

When PPE is required to protect employees, it must be provided by the employer at no cost to employees, except for specific items, such as:

- Safety-toe footwear
- Prescription safety eyewear
- Everyday clothing and weather-related gear
- Logging boots

Fig.5.1 proper using of personal Equipment

N.B Eye wash Stations

Eye wash stations should be located within 100 feet of your work area. If you accidentally get something in your eyes, go directly to the eyewash station and flush your eyes with water for 15 minutes. Be sure to hold your eyes open with your fingers and "look" directly into the water streams.

5.1.2. Workplace environment:-

Systematic Work Environment Management

- Observing and taking account, in everyday work, of both psychological and social conditions and work environment issues of a physical nature.
- Taking decisions and measures, in everyday work, so that employees are not injured, do not fall ill and do not fare badly in any other way.
- Observing and taking account of all conditions in the work environment capable of affecting the employees' health and safety.
- Work environment management also applies to work not done at a permanent worksite, e.g. work on construction sites, transport work and work in other people's homes.

Reasons of Systematic Work Environment Management

1. It leads to the discovery and prompt rectification of hazards in the workplace.
2. It prevents employees meeting with accidents or suffering illness, stress or their negative consequences of work.
3. It provides good working conditions, which can mean less sickness absence.
4. It enhances job satisfaction and dedication.
5. It reduces malfunctions and quality losses.
6. It makes the whole undertaking tidier and more orderly, with operations running more smoothly.
7. It helps to improve the firm's financial standing.
8. It gives the firm a good reputation, facilitating the retention and recruitment of personnel.

5.1.3 Safety Handling Of Materials

SAFE MANUAL MATERIAL HANDLING

- Many jobs require frequent lifting, carrying, pushing, pulling, lowering and raising materials by hand. These job tasks are often referred to as manual materials handling. Staff who lift or perform other materials handling tasks may be at risk for back or other injuries. These injuries may be prevented by redesigning jobs and practicing safe handling techniques.

LAYOUT OF WORK AREA

1. The layout of work areas can be arranged to prevent awkward postures such as bending, twisting, and overreaching
2. Work surfaces should be at waist height, or height-adjustable, to prevent bending
3. There should be sufficient space to turn around and prevent twisting

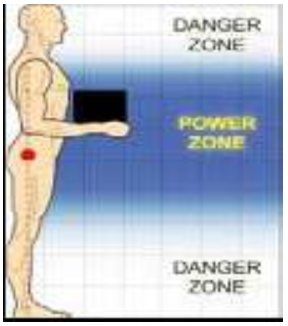
4. Materials that will be manually lifted should not be stored directly on the floor
5. Frequently used and heavy items should be stored between knee and waist height
6. Elevated platforms or step stools should be provided to reach items above chest level

"S.M.A.R.T. LIFTING TECHNIQUE"

1. **S**IZE UP THE LOAD
   - Assess the size, weight, and shape. Remove obstacles from the load (such as loose wrapping materials).
   - Assess whether the load actually needs to be moved
   - Where is the load going to be placed? Remove obstacles from your path.
   - Determine whether mechanical or assistance from a co-worker is required
2. **M**OVE THE LOAD AS CLOSE TO YOUR BODY AS POSSIBLE
   - Stay close throughout the lift
   - The whole hand should be used to ensure a firm grip
3. **A**LWAYS BEND YOUR KNEES
   - Maintain balance
   - Keep feet apart and in a comfortable position
   - Minimize bending at the waist
   - Bend your knees to a semi squat
4. **R**AISE THE LOAD WITH YOUR LEGS
   - Lift smoothly, without jerking
   - Maintain the normal curve of your spine throughout the lift
   - Tighten the abdominal muscles and exhale while lifting

5. **T**URN YOUR FEET IN THE DIRECTION THAT YOU WANT TO MOVE THE LOAD
   - Avoid unnecessary bending, twisting, and reaching
   - Change direction by turning your feet and not your back
   - To set down a load, squat down and keep your head up. Let your legs do the work

THE POWER ZONE



- The power zone for lifting is close to the body, between mid-thigh and mid-chest height. Comparable to the strike zone in baseball, this zone is where arms and back can lift the most with the least amount of effort. (see picture)

TEAM LIFTING

- Team lifts are appropriate if:
  - The load is too heavy for one person
  - The load is large, bulky, or oddly-shaped
  - You feel uncomfortable lifting the load by yourself (and do not have the proper equipment)
- Whenever possible, team member should be of around the same height and build. If this is not possible, taller members should be at the back.

5.1.4. FIRST AID KIT

What does First Aid mean?

- First Aid is an immediate care given to a person who has been injured or suddenly ill.
- It includes self-care and home care if medical assistance is not available or delayed.

Objective of giving First Aid

- To bridge the GAP between the victim and the physician.
- Thus, prolonging life, alleviating suffering and preventing further injury.

Note: Not intended to replace the job of the physician

Ends when the service of the physician begins

INITIAL RESPONSE IN GIVING FIRST AID

A – Ask for help
I – Intervene
D – Do not harm further

Kits vary in contents but most kits have the following items:

- Band-aids / Adhesive bandages
- Gauze pads and tape
- Scissors, cold pack
- Wound bandage / compress
- Eye pads / eye wash solution
- First aid / burn cream
- Antibiotic ointment
- Face shield or barrier mask for providing CPR
- Forceps / tweezers

Figure. 5.2 first aid kit

Self-Check -5	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Say true if the statements is correct and say false if the statement is incorrect

1. If you accidentally get something in your eyes, go directly to the eyewash station. 2point
2. Use plastics for your respiratory as safety in work site area. 2point
3. First Aid is an immediate care given to a person who has been injured or suddenly ill. 2point
4. When you are lifting heavy objects we should follow SMART techniques. 2point
5. There should be sufficient space to turn around and prevent twisting. 2point

Note: **Satisfactory rating – 5 points** **Unsatisfactory - below 5 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information Sheet-6	Identify and Confirm Environmental Protection Requirements

6.1 Definition of Environmental Protection

Environmental protection can be defined as the prevention of unwanted changes to ecosystems and their constituent parts. This includes the protection of ecosystems and their constituent parts from changes associated with human activities; and the prevention of unwanted natural changes to ecosystems and their constituent parts.

6.2 Ethiopia's National Environmental Challenges

In Ethiopia, land degradation is a serious problem affecting agricultural productivity. Overgrazing and the expansion of farming into marginal lands caused by an increasing population pressure without increasing economic productivity have been leaving the land bare. Present key problems in land degradation include loss of vegetation cover and biodiversity followed by escalating soil erosion, declining soil fertility, expanding solemnization as well as aridity through hydrological cycle.

6.3 Measures Being Taken in Ethiopia

The right to live in a clean and healthy environment has been promulgated in the Constitution of the Federal Democratic Republic of Ethiopia. The commitment of the government has also been shown by its approving a relevant environmental policy, laws and regulations, standards as well as strategies that can help improve the country's environmental conditions.

The Conservation Strategy of Ethiopia (CSE) and the Environmental policy of Ethiopia (EPE) were adopted in 1997. Federal laws on environmental organs establishment, environmental pollution control, solid waste management, and environmental impact assessment (EIA) as well as effluent emission standards have been issued. In the course of one and half decades, the Government has ratified a number of international and regional multilateral environmental agreements (MEAs). They have been made part of the laws of the country. Moreover, a number of relevant environmental protection technical and procedural general and sectoral guidelines have also been prepared.

6.4 Environmental protection requirements

6.4.1 Controlling of Water pollution

Mining activities will almost always have an impact on water environment through direct or indirect contact of either the surface or groundwater. Therefore, industries must invest in ensuring that water is not contaminated or where contamination does occur, they invest in treatment or containment within appropriate reservoirs, pipelines, canals or other storage facilities. Mining industries must encourage adopting practices and technologies which are environment friendly. The practice that must be followed by the industries is as follows as highlighted by;

Resource conservation and management by scientific way with minimum waste;
Finding substitutes of the mineral widely used at present;

- ✓ Proper recycling of used metals.
- ✓ Adoption of environmental friendly technologies.
- ✓ Efficient and efficient use of energy.
- ✓ Forestation and preservation of biological diversity.
- ✓ Government should not permit mining operation in ecologically sensitive areas.
- ✓ Follow Acts, Rules and Regulation made by Ministry of Environment, Forest and climate change
- ✓ Waste food material, paper, decaying vegetables and plastics should not be thrown into the open or underground drains.
- ✓ Effluents with high organic content and slurries from distilleries and industries should be sent to biogas plants for generation of energy.
- ✓ Oil slicks should be skimmed off from the surface with oil separators or suction devices. Sawdust may be spread over oil slicks to absorb the oil components and then the material is incinerated.

6.4.2 Control of Air Pollution

The following should be done to manage and control air pollution

- ✓ Use of better designed equipment and smokeless fuels, hearths in industries and at home.
- ✓ Automobiles should be properly maintained and adhere to recent emission-control standards.
- ✓ More trees should be planted along road side and houses.
- ✓ Renewable energy sources, such as wind, solar energy, ocean currents, should fulfil energy needs.
- ✓ Tall chimneys should be installed for vertical dispersion of pollutants.

6.4.3 Control of land Pollution

- ✓ Encourage organic farming
- ✓ Proper garbage disposal
- ✓ Recycle garbage
- ✓ Reduce use of herbicides and pesticides
- ✓ Over packed items
- ✓ Efficient utilization of resources and reducing wage

Self-Check -6	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Write the advantage of environmental protection requirements?3point
2. Mention the environmental protection requirements? 3point
3. List the mechanisms Control of land Pollution (at least 4) ? 4point

Note: **Satisfactory rating - 5 points** **Unsatisfactory - below 5 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Question

Information Sheet-7	Apply Environmental Management Plan

7.1 Definition of Environmental Management Plan(EMP)

The EMP is one of the potent tools for specifying how the mining or prospecting operations' environmental impacts are to be mitigated and managed.

7.2 Purpose of the EMP

- Ensure that commitments to minimize environmental effects are met;
- Document environmental concerns and appropriate protection measures;
- Provide concise and clear instructions to the industry workers regarding procedures for protecting the environment and minimizing environmental impact;
- Provide a reference document for personnel when planning and/or conducting specific activities;
- Provide contingency plans for accidental
- communicate changes in the program through the revision process; and
- Provide a reference to applicable legislative requirements

7.3 Environmental and social impacts of mining

Environmental Management Plan giving the environmental protection measures at mining to meet the stipulated norms, are as detailed.

A. Air Environment

As the proposed mining involves only scooping of River sand from the Delta (surface) of the river bed, the quality of the air will not be altered by this. As it is a manual mining using simple instruments / tools, there will not be emissions into the atmosphere. The surrounding area will not have any change in the air quality due to the proposed mining activity.

The following measures will be adopted in mining to eliminate the fugitive dust emission

Proposed Mitigating Measures: The dust generated during the vehicular movement will be controlled by spraying of water on roads for which water tanker fitted with sprayer are proposed. Over loading of trucks and consequent spillage on the roads will be avoided. Measures such as covering with tarpaulins over the loaded material will prevent spreading of River sand from the trucks.

B. Water Requirement

Waste Water: Sanitary waste water generated will be treated in septic tank followed soak pit outside the Mining block. Hence there will not be any impact due to the waste on the water environment.

Anticipated Impacts: There will not be any water pollution due to the following reasons in this

proposed Mining activity.

C. Solid Waste

The mining does not involve any processes such as overburden removal, drilling, blasting and beneficiation. The mining will involve extraction of river sand by simple hand tool, sorting, manual picking and loading into trucks / tractor / trolley for transporting. Hence there will not be any waste disposal yards proposed.

D. Impact on Vehicular Traffic

The vehicles using this road are very few. The excavated sand will transported to the various places for Building construction, road construction places. River sand will be transported in tarpaulin covered trucks.

E. Noise Environment

The Mining of river sand will not have any adverse effect in Noise levels as the operations are totally manual in nature. No mechanical methods will be used in the sand excavation. The excavated sand will be transported in tarpaulin covered trucks.

F. Land Environment

In the proposed Mining activity there will not be much impact on the land environment due to the following reasons.

- There is no removal of vegetation such as plants, bushes in the work site.
- The proposed Mining of sand block area is situated on the delta /surface of river bed. Alter extraction / mining, the land is not utilized for any other purposes.
- No effluent generation as any further processing of mineral is proposed. Hence, no ground water contamination due to the proposed mining activity.

G. Biological Environment

As the area is devoid of any vegetation, river sand mining is not going to cause any damage to any plant species. Hence the anticipated negative impacts if any are only minor, temporary and easily reversible.

H. Occupational Health Management:

If the workers are continuously exposed for dust it may affect their respiratory systems depending upon the resistance of the individuals. However to overcome this problem, all the workers who work in the mining will be provided with special masks to prevent the same and also provided with PPE.

Self-Check -7	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Say true if the statements is correct and say false if the statement is incorrect

1. One Purpose of the EMP Ensure that commitments to minimize environmental effects are met. 2point
2. The mining involve any processes such as overburden removal, drilling, blasting and beneficiation. 2point
3. The vehicles using this road are very few. 2point
4. If the workers are continuously exposed for dust it may affect their respiratory systems depending upon the resistance of the individuals. 2point
5. As the area is devoid of any vegetation, river sand mining is not going to cause any damage to any plant species. 2point

Note: **Satisfactory rating - 5 points** **Unsatisfactory - below 5 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Operation Sheet 1	Identifying and confirming environmental protection requirements

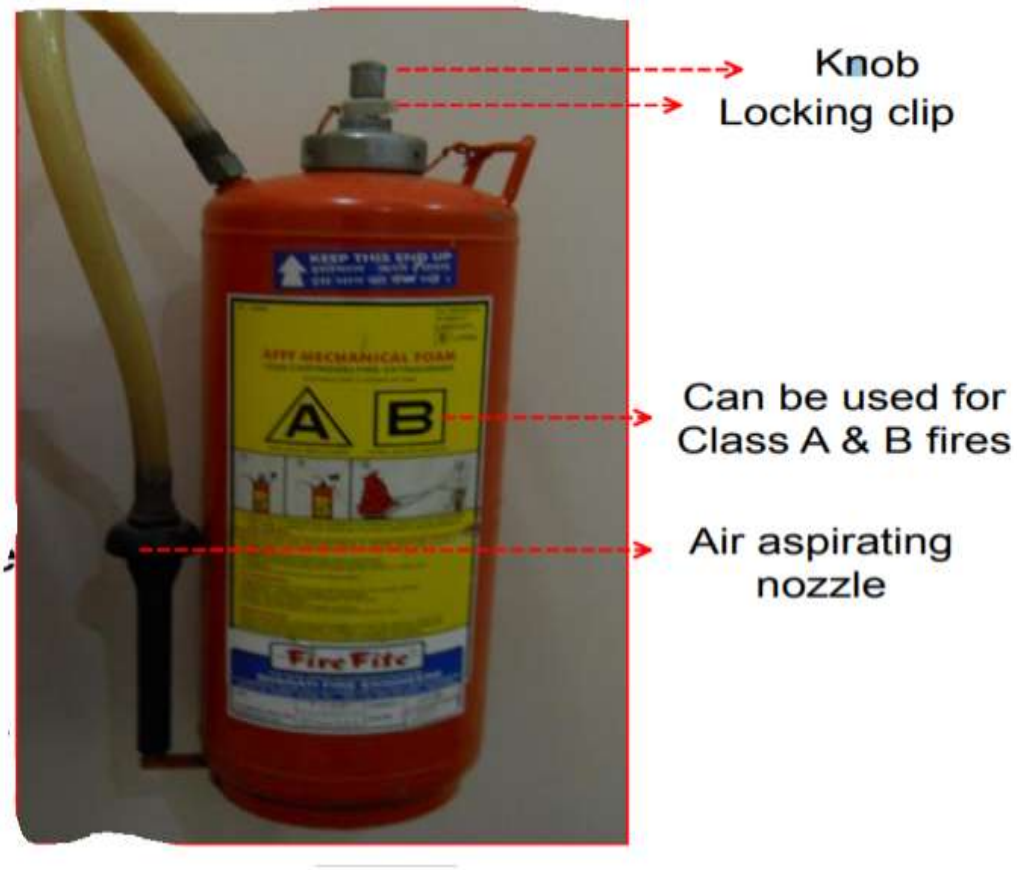
1. Steps of Extinguisher Operation

Step #1- Pull/remove the locking clip

Step# 2- Aim the nozzle at the base of the fire

Step #3-Press the knob down

Step # 4-Starting from the edge of the fire sweep the nozzle from side to side advancing ahead



Operation Sheet 2	Job Safety Analysis

1. Method of conducting the job safety analysis

Step 1- Break the job into steps

Step 2- Identify the hazards of each step

Step 3- Developing controls for all hazards identified.

LAP Test	Practical Demonstration

Name: _____ Date: _____

Time started: _____ Time finished: _____

Instructions: Given necessary templates, tools and materials you are required to perform the following tasks within 3- 4 hour.

Task 1. Demonstrate the operation of firefighting equipment in your work area

Task 2. Describe the method of conducting the job safety analysis

List of Reference Materials

1- Adedipe, N.O. The African Environment: A changing and Scary Scenario. 1992.

2- Adedipe, N.O. The African Environment: A changing and Scary Scenario. 1992.

3- Adeniyi, E.O. "Environmental Management and Development in Nigeria" A paper presented at the proceedings of a National Conference on Development and the Environment, Rosprint Industrial Press Ltd., 1986.

4- Community Services and Health Industry Skills Council**,** Commonwealth of Australia, 2012

5- Work health and safetyRegulations,2012