Mineral Resources Infrastructure Work

Level–I

Based on December, 2018 Version 2 OS and April, 2021 V1 Curriculum.

Module Title: Handling Resources an Infrastructure Materials and Safely Disposing of Non-toxic Materials

LG Code: MINMRI1M12LO (1-3) LG (42-44)

TTLM Code: MINMRI1TTLM 04 21 V1

April, 2021

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Table Contents

LG #42	LO #1- Plan and prepare

Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:-

- Industry and worksite terminology
- Job Safety Analysis(JSA)
- Accessing, interpreting and applying compliance documentation
- Obtaining, confirming and applying work instruction and quality requirements
- Obtaining, confirming and applying safety requirements
- Site isolation and traffic control responsibilities and authorities
- Identifying and obtaining signage requirements from the project traffic management plan
- Selecting tools and equipment
- Checking and reporting serviceability and any faults of tools and equipment
- Identifying and confirming environmental protection requirements

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:

- Access, interpret and apply compliance documentation
- Obtain, confirm and apply Work instructions and quality requirements.
- Obtain ,confirm and apply safety requirements
- Identify and obtain the signage requirements from the project traffic management plan
- Select tools and equipment
- Check and report serviceability and any faults of tools and equipment.
- Identify and confirm Environmental protection requirements

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described in number 3 to 7.
3. Read the information written in the “Information Sheets. Try to understand what are being discussed. Ask you teacher for assistance if you have hard time understanding them.
4. Accomplish the “Self-check 1-11” in page -4, 8, 13,20,25,30,32,35,36 and 38 respectively**.**
5. Ask from 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 each Self-check).

6. If you earned a satisfactory evaluation proceed to the next “Information Sheet”. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Learning Activity above.
7. Submit your accomplished Self-check. This will form part of your training portfolio:

Information Sheet 1- Industry and worksite terminology

1.1 worksite terminology

There are many terms and expressions unique to mining industry work site that characterize the field and identify the user of such terms as a ‘‘mining person.

The following three terms are closely related:

- **Mine:** an excavation made in the earth to extract minerals.
- **Mining:** the activity, occupation, and industry concerned with the extraction of minerals.
- **Mining engineering:** the practice of applying engineering principles to the development, planning, operation, closure, and reclamation of mines.

Geologically, some terms distinguish various types of mined minerals; one can distinguish the following mineral categories.

- **Mineral:** a naturally occurring inorganic element or compound having an orderly internal structure and a characteristic chemical composition, crystal form, and physical properties.
- **Rock:** any naturally formed aggregate of one or more types of mineral particles.

Economic differences in the nature of mineral deposits are evident in the following terms:

- **Ore:** a mineral deposit that has sufficient utility and value to be mined at a profit.
- **Gangue:** the valueless mineral particles within an ore deposit that must be discarded.
- **Waste:** the material associated with an ore deposit that must be mined to get at the ore and must then be discarded. Gangue is a particular type of waste.

These terms are often used in the industry to differentiate between the fuels, metals, and nonmetallic minerals.

The following are the most common terms used in this differentiation:

- **Metallic ores:** those ores of the ferrous metals (iron, manganese, molybdenum, and tungsten), the base metals (copper, lead, zinc, and tin), the precious metals (gold, silver, the platinum group metals), and the radioactive minerals (uranium, thorium, and radium).
- **Nonmetallic minerals (also known as industrial minerals):** the nonfuel mineral ores that is not associated with the production of metals. These include phosphate, potash, halite, sand, gravel, limestone, sulfur, and many others.
- **Fossil fuels (also known as mineral fuels):** the organic mineral substances that can be utilized as fuels, such as coal, petroleum, natural gas and coal bed methane.

The following are also common terms in **mining industry working site**:

- **Glory hole**: a high grade portion of ore
- **Jackpot:** a particularly bad work area
- **Face:** the surface you are drilling in attempt to advance your drift
- **Jumbo**: machine that drills the face

This list contains terms and their definitions frequently used either in **the waste industry or specifically by Waste Management.**

Airspace: The projected bank cubic yards (BCY) of the landfill to be filled with waste as determined by survey and/or other engineering techniques.

Baler: A piece of equipment used to compress and form recycled material into bales.

Boiler**:** A device used to absorb the heat released during the combustion process of burning waste.

Brownfield Development: defines a brownfield as an “abandoned, idled, or under-used industrial and commercial facility where expansion or redevelopment is complicated by real or perceived environmental contamination.”

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Capping: This is the process of placing the final cover material on the landfill.

Cell: Landfills are constructed in phases (cells) that adjoin one another, separated by a berm to contain leachate within an area.

Closed Site (Landfill): A landfill that has reached its permitted waste capacity and has been permanently capped and certified as closed by the appropriate state regulatory agency.

***Closure*:** The period of time after a landfill has reached its permitted capacity but before it has received certification of closure from a state regulatory agency.

During the closure period, certain activities must be performed to comply with environmental and other regulations (e.g. capping, landscaping, etc.)

Commercial Customer: A segment of the business that is made up of commercial and industrial collection.

Construction and Demolition (C&D): A waste stream that is primarily received from construction sites.

Some examples of C&D waste include, but are not limited to, concrete, rebar, wood, paneling, linoleum, and carpet.

Container: Any receptacle used to accumulate waste from residential, commercial and industrial sites. Containers are also referred to as dumpsters.

Chemical Waste Management (CWM): The operating name of Waste Management's hazardous waste landfills.

***Daily Cover*:**:The material used to cover the working face of a landfill at the close of each day.

Disposal Fee::A fee charged for the amount of waste disposed of by customers at a landfill.

Drop-off Box or Center: Sectioned containers where individuals and businesses can put recyclable material or containers used for waste collection where individual service is not available.

***Dumpster*:** A generic term use for front-load and rear-load containers.

Self-Check -1	**Written Test**

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

1. Briefly explain the difference between the following Mining Terms(10)
   A. Mineral and Rock
   B. Ore and Waste
   C. Metallic ores, nonmetallic ore and Fossil fuels
   D. Landfill and Chemical Waste Management

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet- 2	**Job Safety Analysis(JSA)**

2.1. Concept of Job Safety Analysis (JSA)

A job safety analysis (JSA) is a procedure which helps integrate accepted safety and health principles and practices into a particular task or job operation.

Mining practices general numerous condition that have huge consequence on human safety and health. These safety and health problem emanate as a result of biological, chemical and physical risk factors.

Some individuals prefer to expand the analysis into all aspects of the job, not just safety. This approach is known as total job analysis.

Methodology is based on the idea that safety is an integral part of every job and not a separate entity. In this topic, only health and safety aspects will be considered.

The terms "job" and "task" are commonly used interchangeably to mean a specific work assignment, such as "operating a grinder," "using a pressurized water extinguisher," or "changing a flat tire."

2.2. Benefits of doing a Job Safety Analysis

Ideally, all jobs should be subjected to a JSA. In some cases there are practical constraints posed by the amount of time and effort required to do a JSA. Another consideration is that each JSA will require revision whenever equipment, raw materials, processes, or the environment change. For these reasons, it is usually necessary to identify which jobs are to be analyzed. Even if analysis of all jobs is planned

Factors to be considered in setting a priority for analysis of jobs include:

- **Accident frequency and severity**: jobs where accidents occur frequently or where they occur infrequently but result in serious injuries.
- **Potential for severe injuries or illnesses**: the consequences of an accident, hazardous condition, or exposure to harmful products are potentially severe.
- **Newly established jobs**: due to lack of experience in these jobs, hazards may not be evident or anticipated.
- **Modified jobs**: new hazards may be associated with changes in job procedures.
- **Infrequently performed jobs**: workers may be at greater risk when undertaking non-routine jobs and a JSA provides a means of reviewing hazards.

To help identify potential hazards, the job analyst may use questions such as:

- Do tools, machines, or equipment present any hazards?
- Can the worker make harmful contact with moving objects?
- Can the worker slip, trip, or fall?
- Can the worker suffer strain from lifting, pushing, or pulling?
- Is the worker exposed to extreme heat or cold?
- Is excessive noise or vibration a problem?
- Is there a danger from falling objects?
- Is lighting a problem?
- Can weather conditions affect safety?
- Is harmful radiation a possibility?
- Can contact be made with hot, toxic, or caustic products?
- Are there dusts, fumes, mists, or vapors in the air?

2.3. Determining preventive measures:

The final stage in a JSA is to determine ways to eliminate or control the hazards identified. The generally accepted measures, in order of preference are:

2.3.1. Eliminate the hazard

Elimination is the most effective measure. These techniques should be used to eliminate the hazards:

- Choose a different process
- Modify an existing process
- Substitute with less hazardous product
- Improve environment (e.g., ventilation)
- Modify or change equipment or tools

2.3.2. Contain the hazard

If the hazard cannot be eliminated, contact might be prevented by using enclosures, machine guards, worker booths or similar devices.

2.3.3. Revise work procedures

Consideration might be given to modifying steps which are hazardous, changing the sequence of steps, or adding additional steps (such as locking out energy sources).

2.3.4. Reduce the exposure

These measures are the least effective and should only be used if no other solutions are possible. One way of minimizing exposure is to reduce the number of times the hazard is encountered. An example would be modifying machinery so that less maintenance is necessary. The use of appropriate personal protective equipment may be required. To reduce the severity of an incident, emergency facilities, such as eyewash stations, may need to be provided.

Self-Check -2	**Written Test**

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

1. What is a Job Safety Analysis (JSA)? (2 points)
2. What are the benefits of a JSA? (2 points)
3. When is a JSA recommended? (2 points)
4 what are Factors to be considered in setting a priority for analysis of jobs? (2 point)

Note: **Satisfactory rating - 4 points** **Unsatisfactory – below 4 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information Sheet-3	**Accessing, interpreting and applying compliance documentation**

3.1. Compliance documentation (Accessing, interpreting and applying)

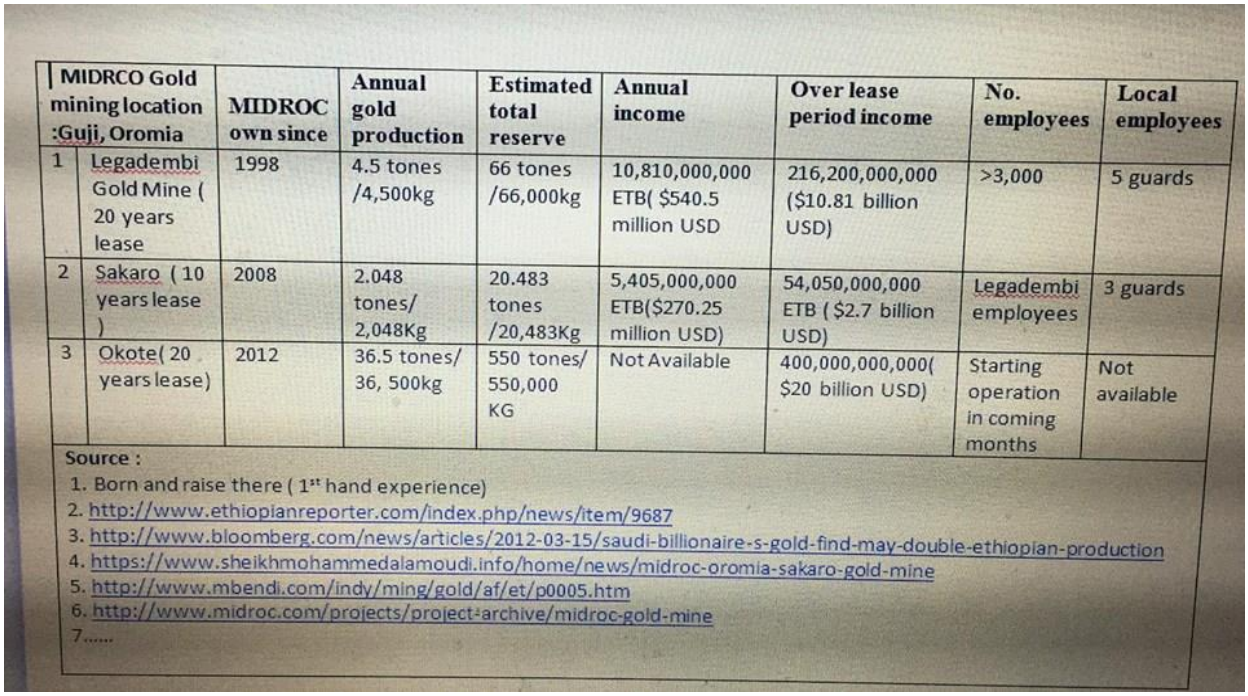
Compliance documentation is the documents that must be completed in a job. These documents are required to show that the workplace is following the established **laws**, **set practices** and **standards** that must be in place.

Hence, Compliance documentation" means specific documents or information including records, reports, observations and verbal responses required to verify compliance with standards by a facility or program.

It is not about you might complete; it is not about you will finish them later; it is not about you will work on it if you have time! Compliance documents are documents that must be read and followed and in some cases completed by you.

Failing to follow and work correctly with compliance documents may lead you to lose your job. In workplaces where there are inherent dangers around you, if you do not follow the rules you can expect to be looking for another line of work.

Example of compliance document



	MIDRCO Gold mining location :Guji, Oromia	MIDROC own since	Annual gold production	Estimated total reserve	Annual income	Over lease period income	No. employees	Local employees
1	Legadembi Gold Mine (20 years lease	1998	4.5 tones /4,500kg	66 tones /66,000kg	10,810,000,000 ETB($540.5 million USD	216,200,000,000 ($10.81 billion USD)	>3,000	5 guards
2	Sakaro (10 years lease)	2008	2.048 tones/ 2,048Kg	20.483 tones /20,483Kg	5,405,000,000 ETB($270.25 million USD)	54,050,000,000 ETB ($2.7 billion USD)	Legadembi employees	3 guards
3	Okote(20 years lease)	2012	36.5 tones/ 36, 500kg	550 tones/ 550,000 KG	Not Available	400,000,000,000($20 billion USD)	Starting operation in coming months	Not available

Source :
1. Born and raise there (1st hand experience)
2. http://www.ethiopianreporter.com/index.php/news/item/9687
3. http://www.bloomberg.com/news/articles/2012-03-15/saudi-billionaire-s-gold-find-may-double-ethiopian-production
4. https://www.sheikhmohammedalamoudi.info/home/news/midroc-oromia-sakaro-gold-mine
5. http://www.mbendi.com/indy/ming/gold/af/et/p0005.htm
6. http://www.midroc.com/projects/project-archive/midroc-gold-mine
7.....

Fig 3.1 compliance document

3.1.1 Accessing compliance documentation; is a means of approaching, entering, exiting, communicating with, or making use of different kinds of documents or information related to the work to be performed.

3.1.2 Interpreting compliance documentation is explained the meaning of (information or actions) collected and accessed.

3.1.3 Applying compliance documentation is to make use of the above mentioned Accessing and interpreting specific documents or information for a practical purpose.

Self-Check 3	Written Test

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

1. Define compliance document? (2 point)
2. What is the difference between Accessing compliance documentation and Interpreting compliance documentation? (2 point)

Note: **Satisfactory rating - 2 points** **Unsatisfactory – below 2 points**

Answer Sheet

Score = _____
Rating: _____

Name: _____ Date: _____

Information Sheet-4	Obtaining, confirming and applying work instructions and quality requirement

4.1. Work instructions are also work guides documents that clearly and precisely describe the correct way to perform certain tasks that may cause inconvenience or damage if not done in the established manner.

When planning any work you must take into account your duty of care obligations and the policy and procedures of your workplace.

You must make sure your conduct is safe and does not place others at risk.

The task requirements will be outlined in your work instructions for that job. Generally these instructions will be provided by your immediate supervisor, the team leader, site manager or other person in direct authority.

4.2. Forms of instruction

Work instructions can be received by you or your work team in several different ways. **The most common ways of receiving work instructions in a mining or construction workplace are:**

- **Written documentation**

  A written document means a document with text that provides information on an official work related matter. It may include reports, memos, letters, manuals, service standards and directives.

- **Verbal instructions**

  Verbal instructions are the instructions, directions and orders that are given to you through voice, i.e. the boss tells you what to do!
- **Team meetings**

  A team meeting is when the members of your work team are gathered together to receive instructions about the work tasks, report back on the team's progress on various jobs and to learn about what is happening in the immediate future on the work site.
- **Plans / specifications**

All the drawings and documents detailing a job including the construction, mechanical and electrical drawings as well as a list of all the materials required.

Work instructions should provide employees with the following basic information:

- The purpose of the job
- The work activity to be done and sequence of tasks
- Hazard assessment
- Emergency requirements
- PPE requirements
- Time frames
- Priorities

4.3 Worksite Issues

4.3.1 Workplace warnings and notices

Signs are often used to notify workers of where materials should be placed or disposed of, depending on what it is.

For example, at workplace there may be several recycling bins for different materials such as plastic, steel, wood and paper. If the materials to be recycled, you need to make sure it is placed in the correct area.

It is your responsibility to pay close attention to any signs in the workplace. It is also your responsibility to erect appropriate signage and barricades to isolate stored materials where necessary.

They could be about certain material and help to find out what is hazardous and what is not.


DANGER
FALLING
ROCKS


DANGER
QUARRY
FACE
KEEP
AWAY

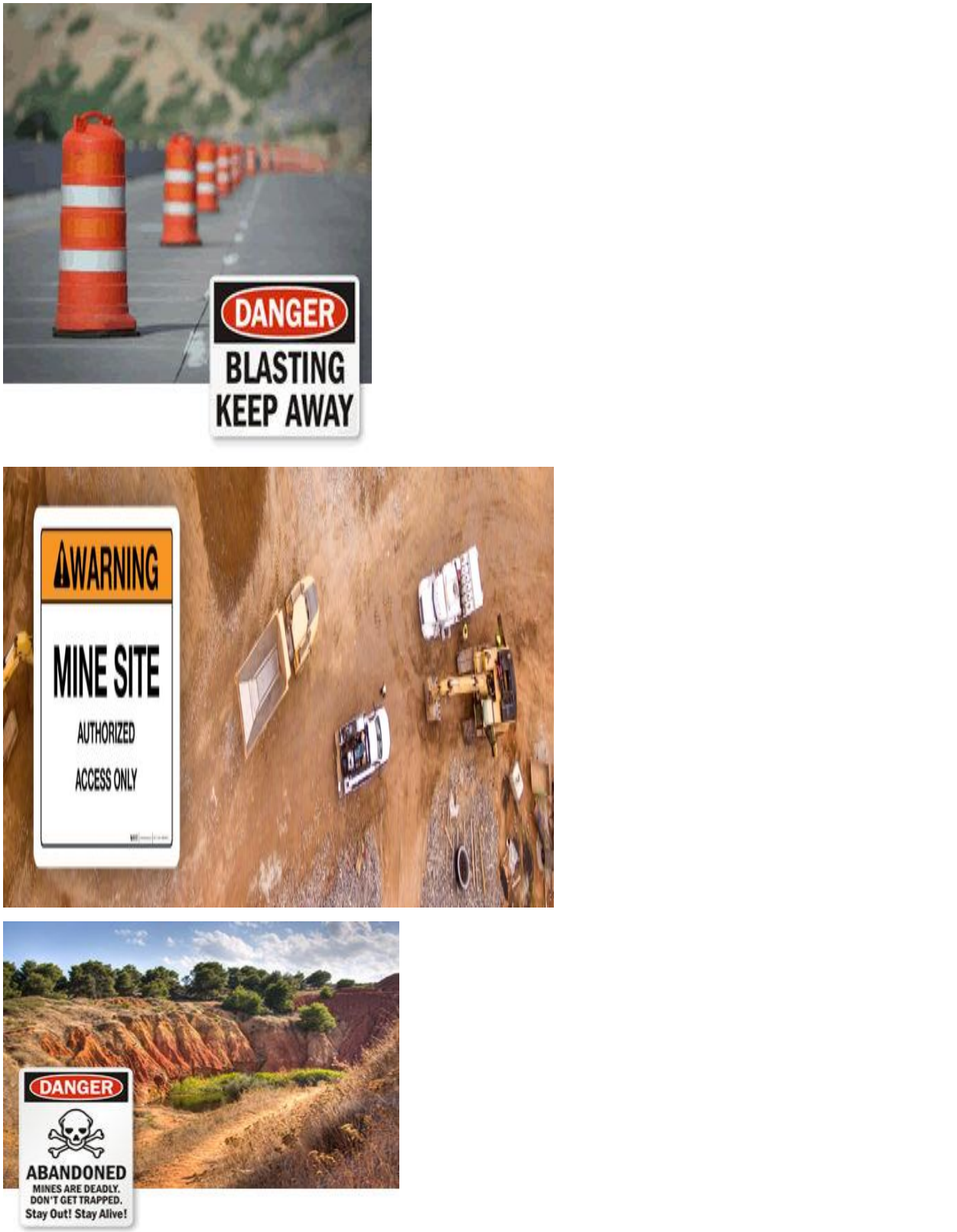


Figure 4.1: Mining Workplace warnings and notices

4.4. Quality requirement

It is a condition or capability that will be used to assess conformance by validating the acceptability of an attribute for the quality of a result.

4.4.1. Types of Quality Requirements

- **Quality Model**. Has an appropriate quality model been used as a basis for identifying the types of quality requirements?
- **Standard**. Was the quality model taken from an international standard, national standard, military standard, industry standard or was it an ad hoc quality model developed specifically for the endeavor?
- **Completeness**. Was the quality model sufficiently complete to capture all relevant types of quality requirements?
- **Quality Factors or Sub factors**. Were the quality requirements only based on quality factors (e.g., performance) or were quality sub factors (e.g., jitter, response time schedule ability, and throughput) used to identify subtypes of quality requirements.

Self-Check -4	**Written Test**

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

1. List at least four forms of instruction and discuss for each. (4 points)
2. List some basic information that work instruction should provide to employee. (4 points)
3. Define what quality requirement mean? List the types of quality requirement. (2 points)

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-5	**Obtaining, confirming and applying safety requirements**

5.1. Safety

Safety is the state of being safe, the condition of being protected from harm or other non-desirable outcomes. Safety can also refer to the control of recognized hazards in order to achieve an acceptable level of risk.

5.2. Concept of safety Requirement

As per the competency standard, all operations are subject to the required Workplace Health and Safety requirements and these are not to be compromised at any time. Where there is an apparent conflict between performance criteria and Workplace Health and Safety requirements, the Workplace Health and Safety requirements take precedence.

All Workplace Health and Safety requirements are to be demonstrated at all times. Being safe at work is important. It is a responsibility shared by both the employer and the employee. For employers, one of the fundamental principles of workplace health and safety is risk assessment which identifies all the hazards and potential for harm whilst working.

While at work a worker must: take reasonable care for their own health and safety. Take reasonable care for the health and safety of others. Comply with any reasonable instructions, policies and procedure given by their employer, business or controller of the workplace

Legislation is the formal rules and laws set by governments.

The following regulations, procedures, standards and safety considerations may apply to planning and organize your work activities:

- Mining Act and Regulations
- Environmental Protection Act
- Equal Employment Opportunity and Disability Discrimination legislation
- Employment and workplace relations legislation
- Duty of care
- Code of Practice
- Occupational Health and Safety legislation
- Ethiopian Standards
- Manufacturer's specifications and recommendations
- Site specific regulations and procedures

Common law is the set of laws that are formed, not from government (i.e. statute law), but from past judgments in courts and judicial decisions. The major common law that affects us all is that about individual obligation.

Every person owes an obligation. To discharge their obligation, each person must act in a manner, which shows consideration to other people and property, i.e. to act in a manner, which a reasonable person (with such training/and or experience) would consider fair, just and safe.

Employment conditions are set by the award that is used in the industry. The award outlines your hours of work, pay rates, leave entitlements, allowances, etc. Your position description will also outline what your employer's expectations are of you.

These are valuable sources of information during the planning phase of a work task ensure that you are working within your parameters of your obligations.

Employment condition includes

- Safety of work,
- working condition,
- pay and wages,
- job security, work benefit and
- Recognition of effects.

Duties of workers

Through the awards, regulations and other forms of law broad expectations or duties of workers have been set. Any worker however regardless of the industry they work in or where they are working, has a common set of duties:

- Take reasonable care for his or her own health and safety.
- Take reasonable care that his or her acts or omissions do not adversely affect the health and safety of other persons.
- Comply so far as the worker is reasonably able, with any reasonable instruction that is given by the person conducting the business or undertaking to allow the person to comply with the relevant legislation.
- Co-operate with any reasonable policy or procedure of the person conducting the business or undertaking relating to health or safety at the workplace that has been notified to workers.
- Identify and report risks and hazards.
- Use or wear appropriate personal protective equipment.
- Not intentionally misuse or cause damage to equipment.

Accountability is defined as “being responsible to somebody or for something”.

In a work sense, accountability is about being true to your word and meeting all of your responsibilities

Honesty

Be honest with yourself about your reasons and motivations for your actions.

Responsibility

Once you have gotten a handle on being accountable to yourself, begin accepting responsibility when and where it is deserved. At the same time, do not be afraid to assign responsibility if it truly belongs to someone else.

Assertiveness is a word we tend to use without really understanding what it means. We sometimes picture assertive people as being inconsiderate and very demanding. Assertiveness is behavior that allows a person to express honest feelings in a straightforward way and to exercise personal rights without changing the rights of others. Assertive people feel positive about themselves and others.

Addressing your obligation

Every person owes an obligation to others under common law. To carry out their obligation, each person must act in a manner, which shows consideration to other people and property.

Self-Check -5	**Written Test**

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

1. Define safety (3 point)?

2. Discus on the importance of understanding safety requirements at work site. (5 Points)

Note: **Satisfactory rating – 4 points** **Unsatisfactory - below 4 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-6	**Site isolation and traffic control responsibilities and authorities**

6.1. Site isolation

Isolation is the key to safety on site. It provides guidance on how to isolate plant and equipment safely, and how to reduce the risk of releasing hazardous substances during intrusive activities such as maintenance and sampling operations. It includes a methodology for selecting 'baseline' process isolation standards and outlines preventive and risk reduction measures.

The importances of understanding site isolation in mining work site are:

- Identify and control potential exposures of hazards energy ,
- Ensure that entry to a restricted area is tightly controlled.
- It also to ensure the isolation of any unsafe machinery/equipment from potential uncontrolled energy source during repair, services or maintenance work.

Basic principles of management isolation are to:

- avoid risk wherever possible;
- carry out risk assessment to evaluate risks that cannot be avoided;
- take action to reduce risks; and
- Reduce risks at source wherever possible.

6.2. Traffic control responsibilities and authorities

Traffic Control Persons (TCP's) are the people on work sites who control traffic. They are the men and women along roads and highways that help traffic keep flowing through a work site zone, despite a shutdown of lanes. TCP's often work in teams, with each person controlling the flow of traffic in a certain direction.

TCP's may put out traffic cones and use signs and hand signals to communicate with motorists. TCP's need to be confident enough to stand in front of cars, sometimes in blazing heat, sometimes in the middle of the night, to make sure that traffic runs as smoothly as it can. If motorists do not obey the signs, TCP's may record license plates to report to the police.

Figure 6.1: Site isolation and traffic control.

Responsibilities:

- For directing traffic to protect the safety of the work crew
- To direct the actions of motoring and pedestrian traffic for their safety and the safety of the work crew
- For looking after their own safety so that they can effectively look after their duties to protect the safety of the work crew and the public

Traffic control people have the right to know what the **hazards of the job** are. Before starting the job a hazard assessment should be done. Things to look for would include:

- Traffic volumes
- Speed limits
- Sight distances
- Work process
- The presence of pedestrian traffic
- The tools and equipment including the signs
- Communications
- Proximity to other workers (working alone)
- Road surface
- Environmental conditions
- Proximity of heavy equipment

- Noise
- Training competencies for traffic control persons

Safe Work Practices: are generally written methods outlining how to perform a task with minimum risk to people, equipment, materials, and processes.

- Pre plan all traffic control sites
- Plan an escape route
- Stand alone
- Never leave the station unattended
- Never wave the paddle
- Keep signs clean and in good condition
- Remove or cover signs when not in use
- Never stand or walk in the path of moving vehicles
- No personal radios or other distractions at traffic control sites
- Know what is happening
- Check to make sure your signs are in place
- Use eye contact to get driver's attention
- Stay alert

Self-Check -6	Written Test

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

1. Discus on the importance of understanding site isolation in mining work site? (5 Points)
2. List at least three traffic Control Persons Responsibilities? (3 Points)
3 What are the Basic principles of management isolation are? (2 point)

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Question

Information Sheet-7	**Identifying and obtaining signage requirements from the project traffic management plan**

7.1. Signage requirements from the project traffic management plan

A sign displays a distinct message about how to protect personnel from exposure to hazards. A sign displaying a safety message carries the same authority as a direct instruction from your supervisor.

Failure to obey a sign can result in disciplinary action, injury or death.

The following table displays a sample of each type of sign along with a brief description.

Description	Example	Description	Example
Mandatory Signs Indicate an instruction that must be carried out.		**Prohibitory Signs** Indicate an action or activity that is not permitted.	
Warning Signs Indicate a hazard or hazardous condition that is not likely to be life threatening.		**Danger Signs** Warn of a hazard or hazardous condition that is likely to be life threatening.	

Description	Example	Description	Example
Emergency Information Signs Indicate the location of, or direction to, emergency related facilities such as exits, safety equipment or first aid facilities.		**Fire Related Signs** Indicate the location of fire alarms and fire fighting equipment and facilities.	
Traffic Signs Indicate speed limits, road conditions and road rules.		**Hazard and barrier tape** temporarily identifies safety hazards, or defines an area into which you should not enter. **Demarcation tape** is used to permanently define the boundaries of areas	

Fig 7.1.Signage requirements from the project traffic management plan

Self-Check -7	**Written Test**

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

1. Explain briefly why signage is required in traffic management plan. (6 Points)

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-8	**Selecting tools and equipment**

8.1. Tools and equipment

Tools and equipment are terms that are often used interchangeably without knowing the actual difference between tools and equipment, but in fact, they have different

definitions. Tools and equipment are not only two words that are often used in day to day life.

A tool can be any item that is used to achieve a goal. Equipment usually denotes a set of tools that are used to achieve a specific objective.

Work equipment must be suitable for the purpose for which it is used or provided, and used only for operations for which it is suitable.

In selecting work equipment, employers must take account of:

- the working conditions
- risk to health and safety from the premises it will be used in
- who will use the equipment
- the work equipment itself

Some of the most useful Tools and equipment's are listed in the table below.

Types of Tools and equipment's	Picture
• **Brooms**- is a cleaning tool consisting of usually stiff fibers (often made of materials such as plastic, hair, or corn husks) attached to and roughly parallel to a cylindrical handle and the broomstick.	
• **Hoses**- Hoses are used to carry fluids through air or fluid environments, and they are typically used with clamps, spigots, flanges, and nozzles to control fluid flow.	
• **Shovels**- A shovel is a tool for digging, lifting, and moving bulk materials, such as soil, coal, gravel, snow, sand, or ore.	
• **Rakes**- A rake is a broom for outside use; a horticultural implement consisting of a toothed bar fixed transversely to a handle, or tines fixed to a handle, and used to collect leaves, hay, grass, etc.	

• **wet and dry industrial vacuum cleaners:** Wet / Dry Vacuums are incredibly versatile and allow you to simultaneously clean up wet and dry waste.	
• **Wheelbarrows:** It is a small hand-propelled vehicle, usually with just one wheel, designed to be pushed and guided by a single person using two handles at the rear or by a sail to push the ancient wheelbarrow by wind.	
• **Pallet trolley**: is a wheeled trolley designed to lift and transport pallets.	
• **Materials hoists**: A hoist is a device used to lift or move material. The lifting force is provided by a drum (or wheel) on which wraps a rope (wire or fibber) or a chain.	
• **Forklifts:** is a powered industrial truck used to lift and move materials over short distances.	
• **Excavator:** Excavators are used in many ways: Digging of trenches, holes, foundations, Material handling, Brush cutting with hydraulic saw and mower attachments.	

Self-Check -8	Written Test

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

1. What kind of equipment do you work on? (2 point)
2. What equipment is used in mining? (2 point)
3. What tool is used to mine rocks and ores? (2 point)

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-9	**Checking and reporting serviceability and any faults of tools and equipment**

9.1. Checking serviceability of tools and equipment

Serviceability is the measure of and the set of the features that support the ease and speed of which corrective maintenance and preventive maintenance can be conducted on a system.

Equipment

When removing waste from work sites you will use a variety of equipment depending upon the size, complexity and waste product.

This equipment may range from a front-end loader (i.e. removing waste spill from a processing plant) to a broom and brush (i.e. cleaning work benches and workshop floors).

Any tools and equipment that are used in cleaning and removing waste materials will require cleaning and maintenance after each use.

The complex equipment (e.g. front-end loader) will have workplace documentation on when equipment is to be serviced or checked for quality while the simpler equipment (broom and brush) will be checked and cleaned by the worker as a matter of workshop routine.

Maintenance

Basic maintenance requires that equipment is cleaned and checked for any faults and that these are reported to your supervisor. By cleaning equipment after use you will not only maintain its condition but also have a greater chance of noticing any defects and any maintenance required. After you have finished with equipment, always return it to its allocated place so it can be easily found when required.

Figure 9.1: Equipment maintenance by cleaning

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Preventive Maintenance (PM) includes all the actions taken to replace, service, upgrade, or patch a system to retain its operational or available state and prevent system failures. Mean Preventive Maintenance Time (MPMT), a measure commonly

used to quantify the time required to perform PM, is also used in determining a system's availability.

Corrective Maintenance (CM) includes all the actions taken to repair a failed system and get it back into an operating or available state. The failure can be unexpected or expected, but it is usually an unplanned outage. Mean Time to Repair (MTTR), the measure used to quantify the time required to perform CM, is also used in determining a system's availability.

9.2. Reporting any faults of tools and equipment

Fault Reporting is a maintenance concept that increases operational availability and that reduces operating cost through three mechanisms.

- Reduce labor-intensive diagnostic evaluation
- Eliminate diagnostic testing down-time
- Provide notification to management for degraded operation

Self-Check -9	**Written Test**

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

1. Discus why Checking serviceability of tools and equipment is needed? (5 Points)

2. Explain why reporting any faults of tools and equipment is required? (5 Points)

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-10	**Identifying and confirming environmental protection requirements**

10.1 Environmental issues it is important to be aware of the types of environmental concerns that may impact on work. Establishing good Environmental Management Plan issue (EMP) is essential when Planning and implementing adequate rehabilitation strategies for mining sites or construction.

Environmental impacts of mining can occur at local, regional and global scale through direct and indirect mining practices. Impacts can results in

- erosion
- sinkholes
- loss of biodiversity
- the contamination of soil, ground water, and surface water by chemical emitted from mining processes

10.2. Community issues

Consulting the local community is an excellent way of identifying solutions of conservation that will benefit everyone.

Requirements of cultural areas, recreation and conservation areas must be observed.

A key aim of the planning is to work out a way of allowing the project to proceed while minimizing disturbance to, or taking steps to conserve the environment.

If any indigenous cultural sites are discovered or uncovered during your work you must report these to your supervisor. The supervisor will report these to the community liaison officer or appropriate authority.

10.3. Waste management

Waste management (or waste disposal) is the activities and actions required to manage waste from its inception to its final disposal. This includes the collection, transport, treatment and disposal of waste, together with monitoring and regulation of the waste management process.

Waste can be solid, liquid, or gaseous and each type has different methods of disposal and management. Waste management deals with all types of waste, including industrial, mining site biological and household. In some cases, waste can pose a threat to human health.

Waste is produced by human activity, for example, the extraction and processing of raw materials. Waste management is intended to reduce adverse effects of waste on human health, the environment.

A large portion of waste management practices deal with municipal solid waste (MSW) which is the bulk of the waste that is created by household, industrial, and commercial activity.

Self-Check -10	**Written Test**

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

1. Discus briefly the importance of consulting local community on environmental protection? (5 Points)
2. What are the impacts of mining on the environment?(5 point).

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

LG #43	LO #2- Handle and remove waste

Instruction sheet

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

- OHS regulation requirements
- Complying with materials safety data sheets and regulatory requirements
- Handling hazardous materials
- Using correct procedures to remove non-toxic materials
- Using dust suppression procedures to minimize health risks.

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:

- Apply OHS regulation requirements
- Comply materials safety data sheets and of regulatory requirements.
- Handily Hazardous materials
- Use correct procedures to remove non-toxic materials
- Use Dust suppression procedures to minimize health risks

Learning Instructions:

1. , Read the specific objectives of this Learning Guide.
2. Follow the instructions described in number 3 to 7.
3. Read the information written in the “Information Sheets”. Try to understand what are being discussed. Ask you teacher for assistance if you have hard time understanding them.
4. Accomplish the “Self-check 1-5” in page – 46, 50, 54, 55 and 57**.**
5. Ask from 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 each Self-checks).
6. If you earned a satisfactory evaluation proceed to the next “Information Sheet”. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Learning Activity mentioned above.
7. Submit your accomplished Self-check. This will form part of your training

portfolio.

Information Sheet-1	OHS regulation requirements

1.1. Introduction

Occupational health and safety is one of the most important aspects of human concern. It aims an adaptation of working environment to workers for the promotion and maintenance of the highest degree of physical, mental and social wellbeing of workers in all occupations. The main contributory factors towards this idiosyncrasy seem to be due to the rapid industrial and agricultural development that are taking place in the developing countries, and the emergence of new products and product processes from these places. Making working conditions healthy and safe is in the interest of workers, employers and governments as well as the public at large. Although it seems simple and obvious, this idea has not yet gained meaningful universal recognition. Hundreds of millions of people throughout the world are employed today in conditions that breed ill health and/or are unsafe.

An increasing number of workers in industrial countries complain about psychological stress and overwork. These psychological factors have been found to be strongly associated with, depression and fatigue, and burn-out syndromes, as well as with elevated risks of cardiovascular diseases.

Occupational Health is a diverse science applied by occupational health professional's engineers, geologists, environmental health practitioners, chemists, toxicologists, doctors, nurses, safety professionals and others who have an interest in the protection of the health of workers in the workplace.

The discipline covers the following key components:

- the availability of occupational health and safety regulations at workplace
- the availability of active and functional occupational health and safety committee at workplace
- monitoring and control of factory hazards to health
- supervision and monitoring of hygiene and sanitary facilities for health and welfare of the workers
- inspection of health safety of protective devices
- Pre-employment, periodical and special health examination.

- performance of adaptation of work to man
- provision of First Aid
- health education and safety training to the worker
- Advice to employers on the above mentioned items
- Reporting of occupational deaths, diseases, injuries, disabilities ,hazards and their related preventive measures at working

There are safety rule of mines 10 tips to improve mine health and safety

- Respiratory protection
- Hazard communication
- Changing work place awareness
- explosive safety,
- Fall protection,
- Electric safety,
- Fire safety
- Cave collapses

Principles of occupational Health and Safety

The basic principles for the development of occupational health and safety services are as follows:

- The service must optimally be preventive oriented and multidisciplinary.
- The service provided should integrate and complement the existing public health service.
- The service should address environmental considerations
- The service should involve, participation of social partners and other stakeholders
- The service should be delivered on panned approach
- The service should base up to date information, education, training, consultancy, advisory services and research findings
- The service should be considered as an investment contributing positively towards ensuring productivity and profitability.

Classifications of occupational health and safety hazards

The various hazards which give rise to occupational injuries, diseases, disabilities or death through work may be classified as: -

- **Physical Hazards**: are subtypes of occupational hazards that involve environmental hazards that can cause harm with or without contact. Physical hazards include ergonomic hazards, dust, noise, ionizing radiation, heat and cold stress, vibration hazards, and noise hazards.
- **Mechanical Hazards:** are created as a result of either powered or manual (human) use of tools, equipment or machinery and plant.vibrations,fires
- **Chemical Hazards:** Chemical hazards are a subtype of occupational hazards that involve dangerous chemicals. Exposure to chemicals in the workplace can cause acute or long-term detrimental health effects.
- **Biological Hazards:** are organic substances that pose a threat to the health of humans and other living organisms.
- **Ergonomic Hazards:** An ergonomic hazard is a physical factor within the environment that harms the musculoskeletal system.
- **Psychosocial Hazards:** is any occupational hazard that affects the psychological and physical well-being of workers, including their ability to participate in a work environment among other people.

1.2. Management of occupational safety and health

The protection of workers from occupational accidents and diseases is primarily a management responsibility, on a par with other managerial tasks such as setting production targets, ensuring the quality of products or providing customer services.

Occupational safety and health management should not be treated as a separate process, but be integrated into other workplace activities. Its various unction’s and procedures should be embedded in other management system and business processes in the enterprise, as well as within comparable structures in the community.

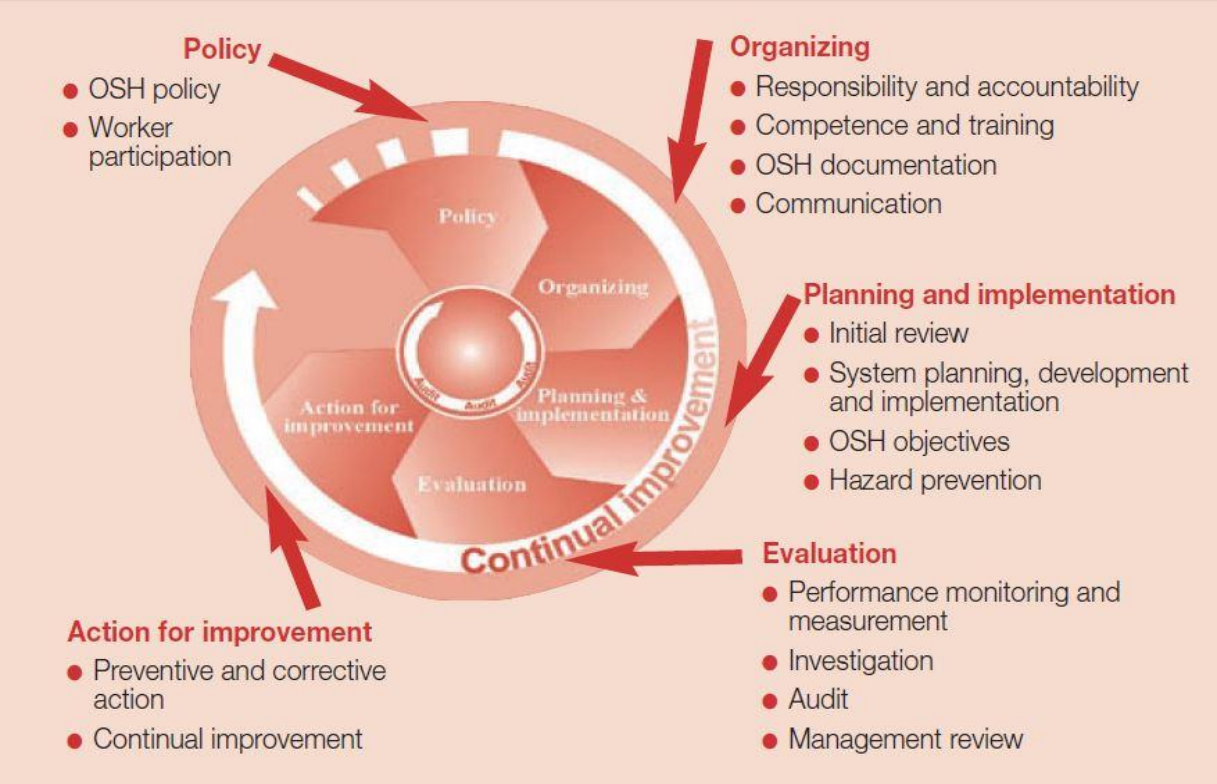

Figure 1.1: OHS management cycle

Self-Check -1	**Written Test**

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

1. What are the challenges for the development of occupational health and safety? (2 points)

2. Why is occupational health considered as one part of preventive medicine? (2 points)

3. Mention the main roles of Environmental Health Officers in occupational health and safety programs (2 points)

4, what are the criteria to state that substances are hazardous or dangerous? (2 points)

.

Note: **Satisfactory rating – 4 points** **Unsatisfactory - below 4 points**

Answer Sheet

Score = _____
Rating: _____

Name: _____ **Date:** _____

Short Answer Questions

Information Sheet-2	**Complying with materials safety data sheets and regulatory requirements**

2.1. Materials safety data sheets (MSDS)

A material safety data sheet is a technical document which provides detailed and comprehensive information on a controlled product related to:

- health effects of exposure to the product
- hazard evaluation related to the product's handling, storage or use
- measure to protect workers at risk of exposure
- emergency procedures

Some materials that you are asked to handle will have accompanying safety data sheets.

The data sheet may be written, printed or otherwise expressed, and must meet the availability, design and content requirements of Workplace Hazardous Materials Information System (WHMIS) legislation.

If there is no safety data sheet it may be because:

- The substance is old stock and is no longer produced.
- The substance is a mixture that contains hazardous substance(s) but the proportion is below the cut off limit used to determine whether the mixture is harmful.
- The substance is not classified as harmful

. Fig 2.1 Safety Data Sheet

Material Safety Data Sheet Content

A supplier material safety data sheet must provide at least nine categories or sections of content and approximately sixty items of information distributed among those categories.

The categories must have the following similar headings:

I. Hazardous Ingredients

This section will include:

- The chemical names and concentrations concerning the hazardous ingredients

II. Preparation Information

This section includes:

- The name address and telephone number of who prepared the MSDS

III. Product Information

This section:

- Identifies the product by the name on the supplier label
- Provides the chemical name, family and formula (including molecular weight)

IV. Physical Data

This section includes information indicating how it looks and how it will behave when it is used, stored, spilled and how it will react with other products indicated through:

- The state it is in e.g. liquid
- The odor and appearance of the product
- The specific gravity,vapour density, evaporation rate, boiling point and the freezing point
- The vapor pressure, the higher the concentration the higher the possible air concentration
- The odor threshold, which is the lowest airborne concentration of a chemical that can be perceived by smell
- The pH reflecting the corrosive or irritant nature of the product

V. Fire and Explosion Hazard

This section describes:

- The temperature and conditions that can cause the chemical to catch fire or explode
- Means of extinction including the type of fire extinguisher required
- Personal Protective Equipment required for fire fighting
- Some of the storage requirements however more of this information is found in the reactivity data section

VI. Reactivity Data:

This section describes:

- The chemical stability of the product and its reactions to light, heat, moisture, shock and incompatible materials
- Storage requirements based on the reactivity or instability of the product
- Incompatible products that must not be mixed or stored near each other
- The need for disposal before they become extremely reactive

VII. Toxicology Properties:

This section describes:

- The harmful effects of exposure
- How the product is likely to enter the body and what effects it has on the organs in the body
- The short-term (acute) and long-term (chronic) health effects from exposure to the product

VIII. Preventative Measures:

This section provides:

- Instruction for the safe use, handling and storage of the product
- The personal protective equipment or safety devices required
- The steps for cleaning up spills
- Information on the waste disposal requirements

IX. First Aid Measures:

This section describes:

- Specific first aid measures related to acute effects of exposure to the product
- First aid steps in the correct sequence
- Information to assist in planning for emergencies

Self-Check -2	Written Test

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

1. What is the purpose of material safety data sheets? (5 Points)
2. Discuss briefly on the Material Safety Data Sheet Content. (5 Points)

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-3	Handling hazardous materials

3.1. Handle and Remove Waste

A toxic material is a hazardous substance that can have a harmful effect on the human body, animals or the environment by physical contact, ingestion (swallowing) or inhalation (breathing in). It includes substances such as:

- Cleaning agents
- Petrol and kerosene
- Acid
- Solvent-based paints

.

Non-toxic material; will not have an adverse effect on the condition of the human body. It includes substances such as:

- Gravel
- Wood
- Water

.

Figure3.1. Hazardous waste removal and Management

3.1.1. Handling materials

Handling refers to the activities associated with managing solid waste until they are placed in the containers used for their storage before collection or return to drop off and recycling centers

Basic rules of handling

- Carry out a risk assessment of the handling job

- If materials are too heavy lift you should always ask for assistance so you do not cause yourself an injury by over straining.
- Only handle materials that cannot cause your harm.
- Always wear the proper protective gear such as gloves, face mask and so on.
- Always follow the procedures outlined in your workplace policies and environmental plan.

Fig 3.2 unsafe load waste material

Fig 3.3 safe load waste material

Mechanical aids: Mechanical aids should be

- Designed to suit the load and the work being done.
- As light as their function will allow.
- Easy to use.
- Located close to the work area so they are readily available but do not cause an obstruction.
- In full working order.
- Introduced with suitable instruction and training in their use (and supporting maintenance procedures).

Types of mechanical aids

Mechanical aids include:

- Conveyors such as roller conveyors, elevating conveyors, belt conveyors, chutes monorails or trolley conveyors
- Cranes and hoists such as overhead travelling cranes, gantry cranes or jib cranes, mobile or fixed
- Hoists, stacker cranes, industrial manipulators and articulating arms
- Loading dock levelers
- Turntables
- Springs or gas struts mechanical devices such as hand winches, hydraulic pumps, and battery powered motors
- Forklifts, platform trucks, tractor-trailer trains, tugs and pallet trucks.

.

Fig 3.4 Mechanical aids

Self-Check -3	**Written Test**

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

1. Discus why must waste be handled and disposed of correctly? (3 Points)
2. Explain how do you properly dispose of waste? (3 Points)
3. How do you dispose of different types of waste? (2 Points)

Note: **Satisfactory rating – 4 points** **Unsatisfactory - below 4 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-4	**Using correct procedures to remove non-toxic materials**

4.1. Safely disposing of non-toxic materials

Some non-toxic materials can be disposed of on-site (i.e. at your work site) while other materials will need to be taken off-site and disposed of at a special sites, e.g. local council tips.

Where materials are disposed of will depend on the type of waste.

Waste material can be organic such as plant matter, or inorganic such as plastics and general rubbish.

The type of waste that you will need to dispose of will vary from general rubbish such as lunch wrappers and drink containers to waste such as off-cuts from a building project like steel and wood.

Always follow your organization's procedures when it comes to waste disposal.

Procedures to remove non-toxic materials

- Evaluate waste
- Store waste
- Label the waste,
- Plan for emergency,
- Train personal and keep records.
- Transport and dispose waste properly

Self-Check -4	**Written Test**

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

1. What is considered non-hazardous waste? (5 Points)
2. What are Procedures to remove non-toxic materials? (5 Points)

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

Answer Sheet

Score = _____
Rating: _____

Name: _____ Date: _____

Information Sheet-5	**Using dust suppression procedures to minimize health risks.**

5.1. Dust suppression

Dust can be a major source of irritation and cause problems with:

- The respiratory system
- Eye irritation
- Skin irritation

Depending on the work you are doing, you might need to suppress or control dust. Sometimes it is not possible to suppress all the dust produced.

It is best practice to wear a breathing mask and goggles in any case and, if possible to remove any dust produced.

The three basic type of dust control system currently used in minerals extraction and processing area;

Dust collection. Use ventilation principles to capture the dust-filled airstream and carry it away through ductwork to the collector.

Wet dust suppression: techniques use water sprays to wet the fugitive material so that it generates less dust.

Airborne dust capture: when the dust particles are collides with the water droplets they agglomerate and rapidly settle out due to their increased size.

You can hose an outside area down with water or use a vacuum indoors. For example, if you are building a road, water will generally be used to stop any dust from being produced by keeping the ground damp.

Fig 5.1 Dust suppression

Self-Check -5	Written Test

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

1. What is dust suppression? (2 Points)
2. How do you control dust during demolition? (2 Points)

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Note: **Satisfactory rating – 2 points** **Unsatisfactory - below 2 points**

LG #44	LO #3- Clean Up

Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:-

- Project environmental management plan
- Cleaning, checking, maintaining and storing tools and equipment
- Storing/stacking unused materials safely
- Clearing work area and disposing or recycling materials

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:

- Clean, check, maintain and store Tools and equipment.
- Safely store/stack unused materials.
- Clear work area and dispose of or recycle materials.
- Clear work area and disposing or recycling materials.

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described in number 3 to 7.
3. Read the information written in the “Information Sheets”. Try to understand what are being discussed. Ask you teacher for assistance if you have hard time understanding them.
4. Accomplish the “Self-check 1-4” in page -64, 67, 69 and 72 respectively.
5. Ask from 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 each Self-check).
6. If you earned a satisfactory evaluation proceed to the next “Information Sheet”. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to the above Learning Activity.

Submit your accomplished Self-check. This will form part of your training

portfolio.

Information Sheet-1	Project environmental management plan (EMP)

1.1 Environmental management plan

The Environment Management Plan (EMP) is a site specific plan developed to ensure that the project is implemented in an environment sustainable manner where all contractors and subcontractor, including consultants, understand the potential environment risk arising from the proposed project and take appropriate actions to properly manage that risk.

The Environment Management Plan (EMP) would consist of all mitigation measures for each component of the environment due to the activities increased during the construction, operation and the entire life cycle to minimize adverse environmental impacts resulting from the activities of the project. It would also delineate the environmental monitoring plan for compliance of various environmental regulations. It will state the steps to be taken in case of emergency such as accidents at the sites including fire. The detailed EMP for the complex is given below.

The EMP is generally

- Prepared in accordance with rules and requirements of the Environmental Protection Authority and the Environmental Units of Competent Sectorial Agencies
- To ensure that the component of facility are operated in accordance with the design
- A process that confirms proper operation through supervision and monitoring
- A system that addresses public complaints during construction and operation of the facilities and
- A plan that ensures remedial measures is implemented immediately.

The key benefits of the EMP are that it offers means of managing its environmental performance there by allowing it to contribute to improved environmental quality. The other benefits include cost control and improved relations with the stakeholders.

The objectives of the EMP are to:

- Identify a range of mitigation measures which could reduce and mitigate the potential impacts to minimal or insignificant levels;
- To identify measures that could optimize beneficial impacts;

- To create management structures that address the concerns and complaints of stakeholders with regards to the development;
- To establish a method of monitoring and auditing environmental management practices during all phases of development;
- Ensure that the construction and operational phases of the project continues within the principles of Integrated Environmental Management;
- Detail specific actions deemed necessary to assist in mitigating the environmental impact of the project;
- Ensure that the safety recommendations are complied with;
- Propose mechanisms for monitoring compliance with the EMP and reporting thereon; and
- Specify time periods within which the measures contemplated in the final environmental management plan must be implemented, where appropriate.

Self-Check -1	**Written Test**

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

1. Explain what Environment Management Plan mean (EMP)?(.5point)
2. List out the objectives of EMP?(5 Points)

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-2	**Cleaning, checking, maintaining and storing tools and equipment**

2.1. Cleaning tools and equipment

Equipment of all types should be cleaned at the location of last use before being moved to a new location.

Different types of materials require different cleaning methods

Pre clearing, by removing heavy accumulations of soil and debris with appropriate tools, will save water during later washing operations.

Effective cleaning to eliminate invasive species materials and prevent their spread can be accomplished by thoroughly removing soil and debris using pressurized water.

In certain situations, cleaning with compressed air, rather than water, could prevent damage to certain equipment areas such as engine wiring systems and vehicle cabs.

Personal Protective Equipment (PPE) that is appropriate to the cleaning activity. Using cleaning and disinfectant chemicals, power washers, air compressors, and other types of cleaning equipment may present unique working hazards.

PPE items may be required to protect hearing, skin, eyes, respiration, and other body resources. For example, certain types of cleaning equipment may require electrical power and may present electrical hazards to the operator.

Successful cleaning is dependent upon many factors, such as the amount of care taken during the cleaning operation, the type of cleaning equipment being used, the level of training of the cleaning operator, the type of equipment being cleaned, and the particular invasive species.

After decontamination, equipment should be handled only by personnel wearing clean gloves to prevent re-contamination. In addition, the equipment should be moved away (preferably upwind) from the decontamination area to prevent re-contamination.

If the equipment is not to be immediately re-used it should be covered with plastic sheeting or wrapped in aluminum foil to prevent re-contamination.

The area where the equipment is kept prior to re-use must be free of contaminants.

Figure 2.1 mining & oil wash systems

Figure 2.2.Conveyor Belt cleaner

2.2. Checking of Equipment and Tools

This is designed to encourage all staff to check equipment and tools regularly for faults and condition and report defects to Management immediately and not to use defective tools or equipment.

2.3. Equipment maintenance

Tools and equipment must be maintained if they are to be operated in a safe and effective manner.

Elements of good maintenance requirements include:

- **Inspection of the tools and equipment at must occur checkout or start-up of the job.** This can include such items as a visual inspection of the power cord to make sure it is not damaged, visual inspection to make sure equipment parts are securely attached, and inspection for cleanliness.
- **Inspection of tools and equipment must also occur at check in or at completion of the job**. This should include cleaning the tools after use, reporting any problem with the tool or equipment while in use, draining any excess fuel or flammable fluids from the equipment.
- **Routine maintenance as per the manufacturer's requirements should be carried out.**

2.4. Proper Storage of Tools and Equipment:

To ensure that tools and equipment remain in good condition and last for a long time, store them properly. Properly stored tools and equipment will be easy to find when needed and are less likely to be lost.

Parts should be properly stored and labeled	

Tools should be properly placed on the board, and labeled. Consider drawing the shapes of the tools on the board so that they always get put back in the same position.	 shutterstock.com · 1578802510
Use bins for storing small parts	 shutterstock.com · 1892736112

2.4.1. Benefits of Proper Storage of Tools and Equipment:

- Tools and parts are kept in good condition and are easy to find
- Costs are reduced
- Productivity is increased because time is not lost looking for tools, parts and equipment
- Workshop staff develop a sense of responsibility and pride in their work(identify tools, parts and equipment and develop a system for labeling and storing tools, parts and equipment

Self-Check -2	Written Test

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

1. Discus why Cleaning tools and equipment is important? (3 Points)
2. Discuss importance of checking for defects prior to use. (3 Points)

3. What is Equipment maintenance mean? Discuss why is needed? (2 Points)

4. Discuss briefly on the benefits of Proper Storage of Tools and Equipment's. (2 Points)

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-3	**Storing/stacking unused materials safely**

3.1. General Requirements for Storage of Materials

Material management can be defined as a process that coordinates planning, assessing the requirement, sourcing, purchasing, transporting, storing and controlling of materials, minimizing the wastage and optimizing the profitability by reducing cost of material.

- Store materials in a planned and orderly manner that does not endanger employee safety.
- Ensure stacks, tiers, and piles are stable and stacked to aid safe handling and loading.
- Store hazardous materials in accordance with the individual requirements.
- Store all materials on pallets to discourage rodent infestation.
- Immediately clean up spills and leaks that create such rodent habitat.

Figure: 3.1. Mineral Mining storage

3.2. Storing/stacking unused materials safely

Properly Storing or Stacking items and materials is a fundamental part of almost every business. It is important to train employees on the proper storage of unused materials and equipment. In addition, operators should designate storage areas close to each work area. This will help ensure the work area itself does not become a storage area.

Take unused materials back to storage areas rather than leaving them lying around. Segregate any materials which could contaminate each other or be dangerous if stored close together, e.g. unused explosive material should be transferred to a protected location, as soon as practicable after charging is completed.

3.3. Importance of Store/Stack Regulations

As a business owner, it's important that you understand these regulations in order to keep your employees safe. If an employee gets injured on the job due to your

negligence, it could lead to a costly fine or lawsuit. Accidents like these can even be fatal, which could ruin your company's reputation for years to come. They can also lower the morale of your team. These accidents are often preventable and learning about these regulations can help you avoid them. It is your duty to provide a safe working environment for your team.

Self-Check -3	**Written Test**

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

1. Discus briefly on the need of Storing/stacking unused materials? (5 Points)
2. Discuss on how you can store unused hazardous materials safely? (5 Points)

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-4	Clearing work area and disposing or recycling materials

4.1. Clearing work area:

Clearing work area is the term used to describe the process of keeping your working area clean and tidy.

Work area clearing on the job means cleaning up scrap and debris, putting it in containers, and making sure the containers are emptied regularly. It also means proper storage of materials and equipment.

Poor clearing work area on the job site is a frequent cause of workplace incidents and worker injuries. These types of incidents can be easily prevented by keeping the workplace clear. Good Clearing of work area makes jobs more efficient and safe.

Clearing work area tips

It is important to remember the following when on site:

- Many injuries that occur from poor Clearing work area are caused my materials, scrap, debris and trash left lying around the job site.

- Anything left lying around becomes a slip or trip hazards.
- Keep all of the materials stored on the job site in a neat and orderly way.
- Clear up scraps, debris, and trash as the work progresses.
- Focus on keeping walkways, ramps, ladder platforms, scaffolds and stairways free from materials, scrap and debris.
- If you are not using tools and equipment at the time, do no leave them lying around.
- Keep hoses, power cords and welding leads from lying across heavily travelled areas.
- Dispose of greasy, oily rags and other flammable materials in approved containers.

The main purpose of clearing work area could be to remove existing buildings, waste, vegetation and, most importantly, the surface layer of soil referred to as topsoil.

4.2. Recycling or disposing materials

Waste disposal: Removing and destroying or storing damaged, used or other unwanted domestic, mining industry, agricultural or industrial products and substances. Disposal includes burning, burial at landfill sites or at sea, and recycling.

When waste material is disposed of properly, it helps to prevent additional pollution which can improve public health. Polluted air increases the risk of respiratory illness. Waste that is properly disposed of has a lesser chance of getting into the water supply and causing illness.

Recycling: is environmentally friendly to reuse the wastes instead of adding them to nature.

Another way that waste is treated is by reclaiming the raw materials within the waste stream and reusing them to make new products. When discarding your waste, find ways to recycle it instead of letting it go to landfill.

Recycling reduces the amount of waste that must be burned or buried. It also takes pressure off of the environment by reducing the need for new resources, such as paper and metals. The overall process of creating a new process from a reclaimed, recycled material also uses less energy than the creation of a product using new materials.

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Current disposal methods threaten our health, safety, and environment, and pose additional indirect costs to society. Most industrial, commercial, and household waste is now being placed in landfills or surface impoundments. Waste treated in this manner may contaminate groundwater, rivers, and streams. When waste is burned, it releases hazardous gases into the air and leaves toxic residues in the form of ash. These hazardous waste byproducts find their way into humans and animals in one form or another.

Figure 4.1. Recycling waste materials in mining industry

The main benefits of recycling are:

- Recycling generates industry
- Recycling creates jobs:
- Cost avoidance of recycling.
- To Make Environment Clean
- Conservation of Materials
- To Save Energy
- Reduce Garbage in Landfills

Self-Check -4	Written Test

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

1. Discus briefly why clearing work area is important? (3 Points)
2. Discuss briefly what recycling is? Explain its Advantage. (3 Points)
3. Explain the difference between Reuse and Recycling of waste. (3 Points)

Note: **Satisfactory rating – 5 points** **Unsatisfactory - below 4.5 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

List of Reference Materials

1. Introduction to mining Available on: https://www.google.com/search?q=Mine%3A+an+excavation+made+in+the+earth+to+extract+minerals.&oq=Mine%3A+an+excavation+made+in+the+earth+to+extract+minerals.&aqs=chrome..69i57j69i58.1995j0j7&sourceid=chrome&ie=UTF-8

2. Job Safety Analysis available on: file:///C:/Users/user/Downloads/108874-Job_Safety_Analysis_Guide%20(1).pdf

3. Traffic control person available on: https://www.google.com/search?q=traffic+control+person&oq=Traffic+Control+Person&aqs=chrome.0.0l6.1618j0j4&sourceid=chrome&ie=UTF-8

4. Implement Traffic Control Plans Skill set available on: ans+Skill+Set+RIISS00041&aqs=chrome..69i57j33.1122j0j9&sourceid=chrome&iehttps://www.google.com/search?q=Implement+Traffic+Control+Plans+Skill+Set+RIISS00041&oq=Implement+Traffic+Control+Pl=UTF-8

5. Handle resources and infrastructure materials and safely dispose of nontoxic materials available on:

6.https://www.google.com/search?q=Handle+resources+and+infrastructure+materials+and+safely+dispose+of+nontoxic+materials+RIISAM201&oq=Handle+resources+and+infrastructure+materials+and+safely+dispose+of+nontoxic+materials+RIISAM201&aqs=chrome..69i57.774j0j7&sourceid=chrome&ie=UTF-8

7. https://www.paus.de/en/solutions/mining-tools-and-equipment/ https://www.google.com/search?ei=QLtnXYO9CIz2gAbKrbzAAQ&q=tools+and+equipment+in+mining&oq=tools+and+equipment+in+mining++&gs_l=psy-ab.1.0.0i30.14980.30996..33247...0.2..0.423.4807.2-10j5j1.....0....1..gws-wiz.....0i71j35i304i39j0i13j0j0i8i7i30.k96QMqwZZ7Y

8. https://en.m.wikipedia.org/wiki/Fault_reporting

9. Guideline for the preparation of environmental management plan prepared by the federal democratic republic of Ethiopia environmental protection authority.

10.https://www.google.com/search?ei=x9BnXZylIZOAhbIP3LCPkAM&q=project+environmental+management+plan&oq=project+environmental+management+plan&gs_l=psy-ab.3..0l2j0i22i30l3.549580.549580..550739...0.3..0.307.307.3-1......0....2j1..gwswiz.......0i71.rk5sXtb6HcU&ved=0ahUKEwjcpOPLlajkAhUTQEEAHVzYAzIQ4dUDCAo&uac5

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Acknowledgement

We would like to express our appreciation to the TVET instructors and experts of Amhara Regional TVET Bureau, Oromia Regional TVET Bureau, TVET College/institutions, Geological survey of Ethiopia, Ministry of Mines and Petroleum and Federal Technical and Vocational Education and Training Agency (FTA) who made the development of this training materials with required standards and quality possible.

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