Mineral Resources Infrastructure Work

Level - I

Learning Guide -42

Unit of Competence: - Handle Resources and Infrastructure Materials and Safely Dispose of Non-toxic Materials

Module Title: Handle Resources and Infrastructure Materials and Safely Dispose of Non-toxic Materials

LG Code: MIN MRI1 M12 LO1-LG-42

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LO 1: Plan and prepare

Instruction Sheet	Learning Guide - 42

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

- Industry and worksite terminology
- Organizational policies and procedures for planning and preparing work
- Job Safety Analysis(JSA)
- Accessing, interpreting and applying compliance documentation
- Obtaining, confirming and applying
- 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 relevant to the work activity.
- Obtain, confirm and apply Work instructions, quality requirements and operational details relevant to the allotted task in accordance with organizational procedures.
- Obtain and confirm safety requirements relevant to the allotted task from the site safety plan and apply organizational policies and procedures in accordance with organizational procedures.
- Identify and obtain the signage requirements from the project traffic management plan and implement in accordance with relevant regulation.
- Select tools and equipment to carry out tasks consistent with the requirements of the job, and check for serviceability and any faults rectified or reported
- Identify and confirm Environmental protection requirements to allotted task from the project environmental management plan and applied in accordance with regulatory 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. **Industry and 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 trainees are thus advised to become familiar with all the terms used in mining, particularly those that are peculiar to either mines or minerals.
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.
Some terms distinguish various types of mined minerals. Geologically, 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 is 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.

A further subdivision of the types of minerals mined by humankind is also common. 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 are not associated with the production of metals. These include phosphate, potash, halite, trona, 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, coalbed methane, Gilsonite, and tar sands.
The following are also common terms in mining industry working site:
Gloryhole: 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 (Wheelabrator)

A device used to absorb the heat released during the combustion process of burning waste. This combustion produces steam that can be sold or converted into electrical power.

Brownfield Development

EPA 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.” Waste Management has worked with states, communities and other economic development stakeholders to pursue a number of brownfield development projects across the U.S.

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. The entire permitted area will be divided into separate cells for construction.

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 vary in size and type according to the needs of the customer or restrictions of the community. Containers are also referred to as dumpsters.

Chemical Waste Management (CWM)

The operating name of Waste Management's hazardous waste landfills. WM currently owns and operates five hazardous waste landfills in the U.S.

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. (also see Tipping Fee)

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 - ≥ 5 points** **Unsatisfactory - below 5 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-2	Organizational policies and procedures for planning and preparing work

2.1. Concept of organizational policies and procedures

Organizational policies and procedures establish the rules of conduct within an organization, outlining the responsibilities of both employees and employers. Organizational policies and procedures are in place to protect the rights of workers as well as the business interests of employers. Depending on the needs of the organization, various policies and procedures establish rules regarding employee conduct, attendance, dress code, privacy and other areas related to the terms and conditions of employment.

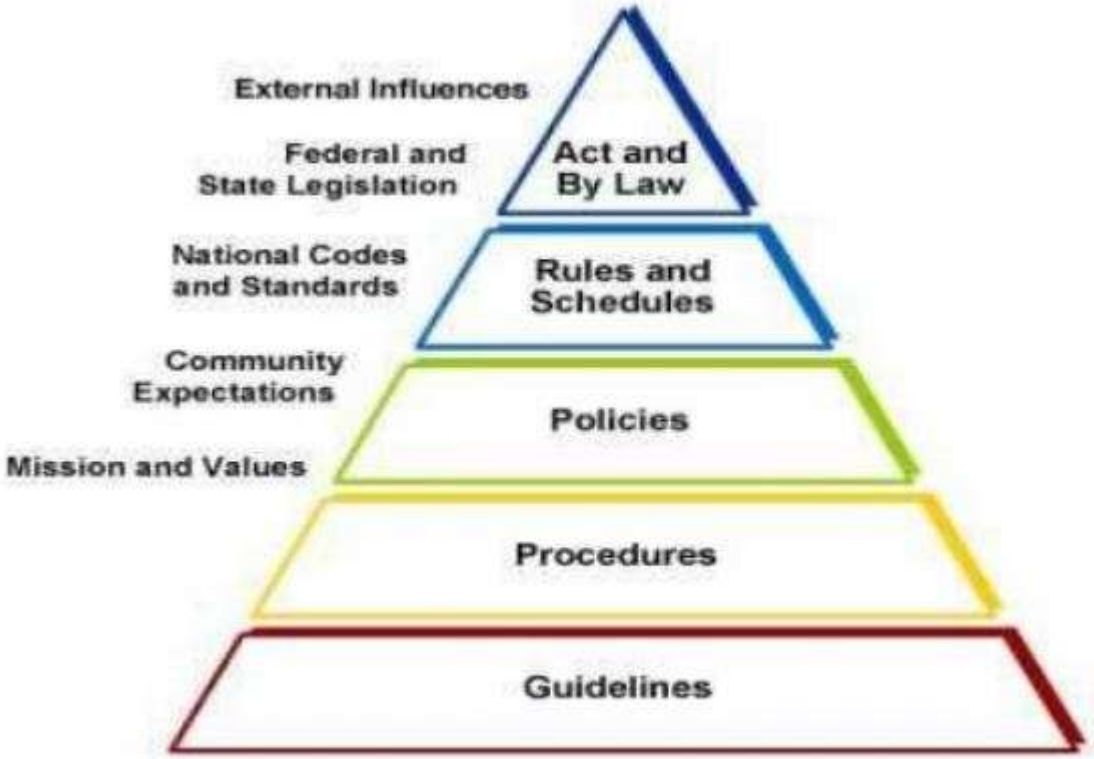


Figure 2.1: General Policies and Procedures for planning work

Employee Conduct Policies

An employee conduct policy establishes the duties and responsibilities each employee must adhere to as a condition of employment. Conduct policies are in place as a guideline for appropriate employee behavior, and they outline things such as proper dress code, workplace safety procedures, harassment policies and policies regarding computer and Internet usage. Such policies also outline the procedures employers may utilize to discipline inappropriate behavior, including warnings or employee termination.

Companies are increasingly paying attention to bullying behavior as a serious issue and beginning to adopt policies in this area as well.

Equal Opportunity Policies

Equal opportunity laws are rules that promote fair treatment in the workplace. Most organizations implement equal opportunity policies – anti-discrimination and affirmative action policies, for example – to encourage unprejudiced behavior within the workplace.

Attendance and Time off Policies

Attendance policies set rules and guidelines surrounding employee adherence to work schedules. Attendance policies define how employees may schedule time off or notify superiors of an absence or late arrival. This policy also sets forth the consequences for failing to adhere to a schedule. For example, employers may allow only a certain number of absences within a specified time frame. The attendance policy discusses the disciplinary action employees face if they miss more days than the company allows.

Substance Abuse Policies

Many companies have substance abuse policies that prohibit the use of drugs, alcohol and tobacco products during work hours, on company property or during company functions. These policies often outline smoking procedures employees must follow if allowed to smoke on business premises. Substance abuse policies also discuss the testing procedures for suspected drug and alcohol abuse.

Workplace Security Policies

Policies on security are in place to protect not only the people in an organization, but the physical and intellectual property as well. Policies may cover entrance to a facility, such as the use of ID cards and the procedures for signing in a guest. Equipment such as a company laptop or smartphone may need to be signed out.

2.2. Planning and preparing work

Planning and organizing work is a necessary part of an efficient and safe workplace. When a job is planned, it will have a better chance of running smoothly. You will regularly receive instructions on the jobs you need to perform.

The main elements of planning and organizing a job include:

- The tasks;
- Who is involved?
- The resources you will need to complete them;
- How long each task should take; and,
- Other information such as safety and advice for task completion.

Planning will assist you to achieve required outcomes and avoid work downtime. Planning and organizing work is the key to ensuring a safe, efficient and effective work output. If you are disorganized, chances are you will feel overwhelmed by your work. Time management is fundamental to organization.

It involves:

- Looking at the task to be completed;
- Working out the time it will take;
- Deciding on the type of equipment and materials to use;
- Delegating parts of tasks / services to others; and,
- Allowing for any possible problems or risks that might occur

Clear purpose

- In any job you must have a clear idea of what you are setting out to achieve.
- Get your priorities clear in your mind and if necessary write them down so you can carry them out easily. When being told what to do, just remember it is...

Setting Priorities

One of the first things you must do when given a work instruction is to be clear about what is required as the outcome. Once you know what you are expected to achieve you can work backwards and plan how to get it done!

As you look 'backwards' at the job, you need to think about what stages or small tasks (often called sub-tasks) need to occur to get the job done.

As you think of the sub-tasks you need to also consider in order or sequence you will complete these in. If you get the sub-tasks right but the order to do them in wrong, the job outcome will not be there! If you miss a sub-task, but get the order right for the ones you have, you'll still get the job wrong.

So, think carefully about what needs to be done in the smallest task possible to complete the job. Now arrange these sub-tasks in the correct sequence to achieve the results you and the boss want.

Self-Check -2	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page (2 points each)

1. List out the main elements of planning and organizing for a job.
2. Briefly explain the advantage of **Setting Priorities for a given work.**
3. One of the following is involved in Planning and preparing for work.

A. Looking at the task to be completed and Working out the time it will take

B. Deciding on the type of equipment and materials to use

C. Delegating parts of tasks / services to others

D Allowing for any possible problems or risks that might occur

E. All

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-3	Job Safety Analysis(JSA)

3.1. 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. In a JSA, each basic step of the job is to identify potential hazards and to recommend the safest way to do the job. Other terms used to describe this procedure are job hazard analysis (JHA) and job hazard breakdown.

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 document, 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." JSAs are not suitable for jobs defined too broadly, for example, "overhauling an engine"; or too narrowly, for example, "positioning car jack."

3.2. 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, this step ensures that the most critical jobs are examined first.

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.

3.3. Break the job into "basic steps"

Once the basic steps have been recorded, potential hazards must be identified at each step. Based on observations of the job, knowledge of accident and injury causes, and personal experience, list the things that could go wrong at each step.

A second observation of the job being performed may be needed. Since the basic steps have already been recorded, more attention can now be focused on each potential hazards. At this stage, no attempt is made to solve any problems which may have been detected.

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?

Potential hazards are listed in the middle column of the worksheet, numbered to match the corresponding job step. For example:

Sequence of Events	**Potential Accidents or Hazards**	**Preventive Measures**
Park vehicle	a) Vehicle too close to passing traffic b) Vehicle on uneven, soft ground c) Vehicle may roll	
Remove spare and tool kit	a) Strain from lifting spare	
Pry off hub cap and loosen lug bolts (nuts)	a) Hub cap may pop off and hit you b) Lug wrench may slip	
And so on.....	a)...	

3.4. 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:

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. Contain the hazard

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

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).

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.

In listing the preventive measures, do not use general statements such as "be careful" or "use caution". Specific statements which describe both what action is to be taken and how it is to be performed are preferable. The recommended measures are listed in the right hand column of the worksheet, numbered to match the hazard in question. For example:

Sequence of Events	**Potential Accidents or Hazards**	**Preventive Measures**
Park vehicle	a) Vehicle too close to passing traffic b) Vehicle on uneven, soft ground c) Vehicle may roll	a) Drive to area well clear of traffic. Turn on emergency flashers b) Choose a firm, level parking area c) Apply the parking brake; leave transmission in PARK; place blocks in front and back of the wheel diagonally opposite to the flat
Remove spare and tool kit	a) Strain from lifting spare	a) Turn spare into upright position in the wheel well. Using your legs and standing as close as possible, lift spare out of truck and roll to flat tire.
Pry off hub cap and loosen lug bolts (nuts)	a) Hub cap may pop off and hit you b) Lug wrench may slip	a) Pry off hub cap using steady pressure b) Use proper lug wrench; apply steady pressure slowly
And so on.....	a)...	a)...

3.4. Making the information available to everyone

JSA is a useful technique for identifying hazards so that workers can take measures to eliminate or control hazards. Once the analysis is completed, the results must be communicated to all workers who are, or will be, performing that job. The side-by-side format

used in JSA worksheets is not an ideal one for instructional purposes. Better results can be achieved by using a narrative-style communication format. For example, the work procedure based on the partial JSA developed as an example in this document might start out like this:

2. Remove spare and tool kit

a) To avoid back strain, turn the spare up into an upright position in its well. Stand as close to the trunk as possible and slide the spare close to your body. Lift out and roll to flat tire.

3. Pry off hub cap, loosen lug bolts (nuts)

a) Pry off hub cap slowly with steady pressure to prevent it from popping off and striking you.

b) Using the proper lug wrench, apply steady pressure slowly to loosen the lug bolts (nuts) so that the wrench will not slip, get lost or and hurt your knuckles.

Appendix A: Sample form for Job Safety Analysis Worksheet

Job Safety Analysis Worksheet		
Job:		
Analysis By:	Reviewed By:	Approved By:
Date:	Date:	Date:
Sequence of Steps	**Potential Incidents or Hazards**	**Preventative Measures**

Appendix B: Sample forms for Tasks and Job Inventory

Tasks with Potential Exposure to Hazardous Products or Physical Agents		
Analysis By:	Reviewed By:	Approved By:
Date:	Date:	Date:
Tasks	**Name of Product or Physical Agent**	**Location**

Job Inventory of Hazardous Products		
Analysis By:	Reviewed By:	Approved By:
Date:	Date:	Date:
Name of Product	**Route of Entry and Physical State**	**Controls**

Self-Check -3	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 supervisors responsible for concerning JSAs? (2 points)
5. What are employees responsible for concerning JSAs? (2 points)

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-4	Accessing, interpreting and applying compliance documentation

4.1. Compliance documentation (Accessing, interpreting and applying)

Compliance documentation are 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.

Examples of compliance documents

Compliance documents that you carry in a person sense would be a driver's license and an Adult Proof of Age Card.

Figure 4.1: Sample compliance documents

On the next two pages are two types of workplace compliance documents.

The first one in purple is a pre-start inspection checklist for dump trucks and other heavy equipment. The second one (dark) is a light vehicle inspection form - this would be used on utes, four wheel drives, etc. Investigate both forms.

BMA

REAR & BELLY DUMP/MOXY/TOW HAUL INSPECTION FORM

Form Number: BMA-RB-

Equipment Owner or Responsible Person	Equipment Type/Make/Model/Shape	Call Sign / Equipment ID

Company / Department (that owns or is responsible for the equip)	Inspected by (Print)	Inspection Company

Declaration Submitted	Meter Reading	First Inspection ☐	Annual Inspection ☐
☐ Yes ☐ No		Random Inspection ☐	Re-inspection ☐

	Pass	Fail	Report	N/A
Positive ID signage	☐	☐	☐	☐
Machine access & egress	☐	☐	☐	☐
Battery isolation & lockout Ground level Red	☐	☐	☐	☐
Jump Start Receptacle	☐	☐	☐	☐
Starter motor isolator Ground level Yellow	☐	☐	☐	☐
Fire extinguishers / suppression	☐	☐	☐	☐
Fire suppression strikers - cab and ground	☐	☐	☐	☐
Exhaust system	☐	☐	☐	☐
Tyres and wheels	☐	☐	☐	☐
Safety guarding	☐	☐	☐	☐
Hand rails and gates	☐	☐	☐	☐
Labelling	☐	☐	☐	☐
Flashing / Rotating Blue light for water truck	☐	☐	☐	☐
Lighting, lights and indicators (must also have front side indicators)	☐	☐	☐	☐
Audible hand brake alarm	☐	☐	☐	☐

	Pass	Fail	Report	N/A
Pressure Vessel	☐	☐	☐	☐
Audible raised body alarm	☐	☐	☐	☐
Water truck: site specific EMG water adaptor	☐	☐	☐	☐
Windscreen, windows, mirrors & wipers	☐	☐	☐	☐
Access for cleaning windscreen, window & mirror	☐	☐	☐	☐
Cabin	☐	☐	☐	☐
Seatbelts & seating	☐	☐	☐	☐
Horn	☐	☐	☐	☐
Reversing alarm	☐	☐	☐	☐
First aid kit	☐	☐	☐	☐
ROPS	☐	☐	☐	☐
FOPS	☐	☐	☐	☐
Wheel chocks	☐	☐	☐	☐
Collision avoidance/extended front bumper/or agreed procedure	☐	☐	☐	☐
Statutory brake check	☐	☐	☐	☐

	Pass	Fail	Report	N/A
Rear under run for mine floats	☐	☐	☐	☐
Rims: unique identification system & register	☐	☐	☐	☐
Hopper door lock links/ pins (belly dump)	☐	☐	☐	☐
Body sling/brackets & pins (rear dumps)	☐	☐	☐	☐
Radiator - Safety pressure relief system	☐	☐	☐	☐
Emergency procedures	☐	☐	☐	☐
Air conditioner	☐	☐	☐	☐
Steering locking device (Articulated type)	☐	☐	☐	☐
Cab & ground level emergency stops	☐	☐	☐	☐
Pre-operation safety check	☐	☐	☐	☐
Height clearance label Working & travelling heights	☐	☐	☐	☐
Condition & housekeeping H / M / L	☐	☐	☐	☐
Maintenance & Inspection	☐	☐	☐	☐
Modified	☐	☐	☐	☐
Two way radio	☐	☐	☐	☐

Result of Inspection	Compliance label issued ☐ Yes ☐ No	Two way type ☐ Ext Aerial ☐ Hand held

Two way channels	Blackwater ☐	Broadmeadow ☐	Pottrel ☐	Sarajl ☐	Hay Point ☐	Goonyella Riverside ☐
Norwich Park ☐	Peak Downs ☐	Gregory / Crinum ☐	South Walker Creek ☐	Daunia ☐	Caval Ridge ☐	

Comments or details of repairs needed

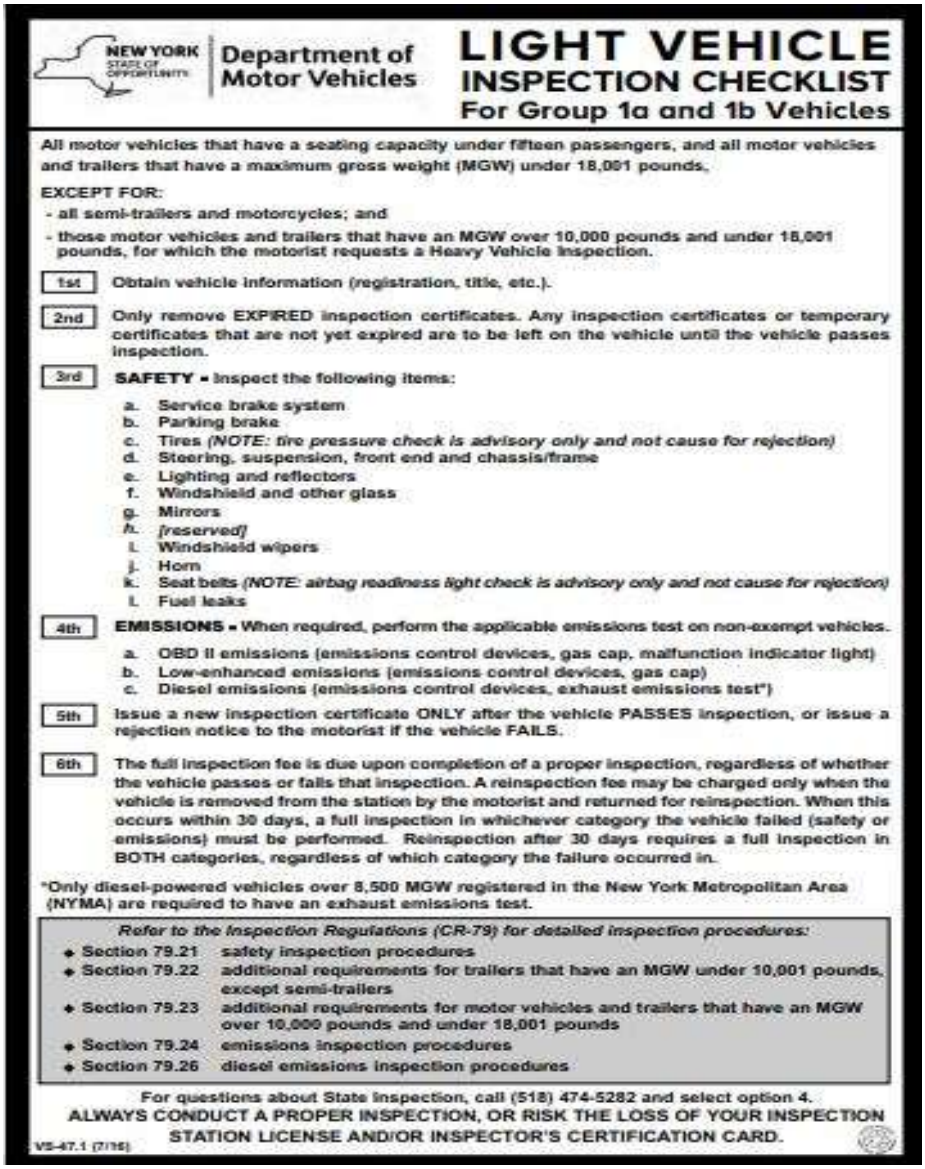
I certify that this report is a true record of the equipment 's compliance with the Inspection standards, based on the Equipment Compliance Annual Inspection Guidelines, at the time of the Inspection.

Signature (Authorised inspector) / / Date

Location of Inspection Station

Original - Equipment Owner / Copy 1 - BMA Safety Dept / Copy - Stay in book

Figure 4.2: Pre-start inspection checklist for dump trucks and other heavy



NEW YORK STATE OF OPPORTUNITY | Department of Motor Vehicles

LIGHT VEHICLE INSPECTION CHECKLIST

For Group 1a and 1b Vehicles

All motor vehicles that have a seating capacity under fifteen passengers, and all motor vehicles and trailers that have a maximum gross weight (MGW) under 18,001 pounds,

EXCEPT FOR:

- all semi-trailers and motorcycles; and
- those motor vehicles and trailers that have an MGW over 10,000 pounds and under 18,001 pounds, for which the motorist requests a Heavy Vehicle Inspection.

1st Obtain vehicle information (registration, title, etc.).

2nd Only remove EXPIRED inspection certificates. Any inspection certificates or temporary certificates that are not yet expired are to be left on the vehicle until the vehicle passes inspection.

3rd **SAFETY** - Inspect the following items:

a. Service brake system
b. Parking brake
c. Tires *(NOTE: tire pressure check is advisory only and not cause for rejection)*
d. Steering, suspension, front end and chassis/frame
e. Lighting and reflectors
f. Windshield and other glass
g. Mirrors
h. [reserved]
i. Windshield wipers
j. Horn
k. Seat belts *(NOTE: airbag readiness light check is advisory only and not cause for rejection)*
l. Fuel leaks

4th **EMISSIONS** - When required, perform the applicable emissions test on non-exempt vehicles.

a. OBD II emissions (emissions control devices, gas cap, malfunction indicator light)
b. Low-enhanced emissions (emissions control devices, gas cap)
c. Diesel emissions (emissions control devices, exhaust emissions test*)

5th Issue a new inspection certificate ONLY after the vehicle PASSES inspection, or issue a rejection notice to the motorist if the vehicle FAILS.

6th The full inspection fee is due upon completion of a proper inspection, regardless of whether the vehicle passes or fails that inspection. A reinspection fee may be charged only when the vehicle is removed from the station by the motorist and returned for reinspection. When this occurs within 30 days, a full inspection in whichever category the vehicle failed (safety or emissions) must be performed. Reinspection after 30 days requires a full inspection in BOTH categories, regardless of which category the failure occurred in.

*Only diesel-powered vehicles over 8,500 MGW registered in the New York Metropolitan Area (NYMA) are required to have an exhaust emissions test.

Refer to the Inspection Regulations (CR-79) for detailed inspection procedures:

- Section 79.21 safety inspection procedures
- Section 79.22 additional requirements for trailers that have an MGW under 10,001 pounds, except semi-trailers
- Section 79.23 additional requirements for motor vehicles and trailers that have an MGW over 10,000 pounds and under 18,001 pounds
- Section 79.24 emissions inspection procedures
- Section 79.26 diesel emissions inspection procedures

For questions about State inspection, call (518) 474-5282 and select option 4.

ALWAYS CONDUCT A PROPER INSPECTION, OR RISK THE LOSS OF YOUR INSPECTION STATION LICENSE AND/OR INSPECTOR'S CERTIFICATION CARD.

VS-47.1 (7/15)

Figure 4.3: Light vehicle inspection form checklist

4.2. Legislation

Legislation are 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

What is the difference between an Act and a Regulation?

An Act is passed by Parliament and provides the ***framework*** which deals with administration, management, inspection, areas of responsibility, duties and penalties, i.e. for Ministers, Inspectors, Mine Managers. Acts are LAW.

Regulations are an Act passed by Parliament and details the specific elements, such as regulations concerning the use and operation of mobile lighting plant, the levels of a specific chemical that can be found in the air within a mine, etc. They are the ***minimum standard*** to be complied with. Regulations are also law.

4.3. Common law

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.

If you act negligently in an inadvertent manner, i.e. you do not think about how you act or the consequences, you will be liable. If you act negligently in a reckless or wilful manner, i.e. you deliberately decide to act in a manner, which is likely or calculated to cause damage/loss, you will be liable, and may be charged with a crime in certain circumstances (insurance does not cover you for such acts).

4.4. Employment conditions

Your employment conditions are set by the award that is used in your 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.

Figure 4.4: Employment condition

4.5. 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.

4.6. Being accountable

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. It is also about being true to yourself and your personal expectations of doing a good job.
Accountability is an individual value. Real accountability cannot be forced; it must be voluntary. Your accountability is really up to you, but you will be judged by other workers and the bosses on how you demonstrate your accountability.

There are three elements to personal accountability:

4.7. Honesty

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

Be clear about the consequences and accept them graciously.

4.8. 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.

It can be hard to take the high road and be accountable for your actions, particularly if others around you don't choose the same path. It is not your place to preach or judge others, but you should act assertively and ask that they take responsibility for their actions.

4.9. Assertiveness

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. Rather, assertive people express their feelings, needs, and opinions in a forthright manner. However, they are not abrasive; that is the hallmark of the aggressive person.

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. They are willing to give others a chance to be reasonable before using less positive tactics. They want to openly discuss problems based on facts and needs. Assertion is based on respect for you and respect for the other person.

4.10. 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. This means that they are judged on their behavior against that which a reasonable person (with such training/and or experience) would consider fair, just and safe.

If you act negligently in a manner without due thought or regard, i.e. you do not think about how you act or the consequences, you could be liable. Being liable means that you are responsible for the damage or hurt that occurs.

If you act negligently in a reckless or wilful manner, i.e. you deliberately decide to act in a manner that leads to injury or damage to others, which is likely or calculated to cause damage/loss, you will be liable, and may be charged with a crime in certain circumstances. Also insurance does not cover you for such acts

Self-Check -4	Written Test

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

1. Discus what compliance documentation is? (4 points)
2. Discuss briefly the consequences of failing to follow and work correctly with compliance documents. (2 points)
3. What is the current legislation that covers the environmental protection within your state or territory? (2 points)
4. What is meant by the term 'obligation'? (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 work instructions and quality requirement

5.1. Work instructions

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.
Example: You are to work on pipes running beside a mine access road. You need to cordon off an area where you will be working. You need to put up signs and barrier fences to warn others about the type of work being done.

5.1.1. 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. It would also include written instructions to the builder for materials, workers or team leader.

What's in a work instruction?

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

Date: 27 August

Task Time line:1000-1145

Employer: Teklebrhan embaye general construction P.L.C

Task: construction of a flat-bottomed, straight side trench to lay 20m of pipeline

Specifications: 110 cm deep x 100 cm wide x 20 m long

Procedures:

- Engineer must be contacted for notification of purposed trench location
- Location has been marked and pegged
- Make sure approval has been given before work commences
- Once finished notify supervisor of completion for inspection and sign off

Safety: Cordon off area, inform all employees of digging times, ensure PPE worn appropriately**.** Backhoe operator must be licensed and a safe distance maintained during operation.

5.1.2. Worksite Issues

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 your 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.

Signs include ones that are permanent or temporary. Signs may define pedestrian and traffic areas or they could be about certain material and help to find out what is hazardous and what is not.

Figure 5.1: Mining Workplace warnings and notices

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.

This common sense requirement of a work site ensures that equipment is ready and useable for the next time it is required. It is also a matter of courtesy to your fellow workers - they do

not want to go to use equipment that you have left broken, in poor condition or unable to be used for the specified task.

Figure 5.2: Equipment maintenance by cleaaning

Types of equipment

Some of the types of equipment that you might use include:

Shovel Broom Pallet trolley Hand truck Flatbed trolley Vacuum cleaner Forklift Water-blaster Brush and pan Bucket	 Water-blaster  Flatbed trolley

5.2. 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.

5.2.1. 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 Subfactors**. Were the quality requirements only based on quality factors (e.g., performance) or were quality subfactors (e.g., jitter, response time, schedulability, and throughput) used to identify subtypes of quality requirements.

5.2.2. Quality of Quality Requirements

Like other requirements, quality requirements should have certain characteristics:

- Is each quality requirement:
  - **Mandatory**:
    - Not just an unintended architecture, design, or implementation constraint?
    - Relevant?
  - **Feasible** given endeavor, technology, and physical limitations? Simple statements of goals such as “The system shall be secure” or “The system shall be reliable” are not good requirements because they are either infeasible because no system is totally secure or reliable or else ambiguous because they do not say how secure or reliable they need to be.
  - **Scalable** so that it is clear just how much quality is required?
  - **Unambiguous** so that all stakeholders and developers will interpret it the same way?
  - **Verifiable** via testing, demonstration, inspection, etc?
  - **Correct** in that it meets some real need of the stakeholders?
  - **Prioritized**, so that it can be allocated to an appropriate build or release?
  - **Traced** to its source?
- Does each quality requirement have an associated:
  - **Rationale?**
  - **Verification method**?

Self-Check -5	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-6	Obtaining, confirming and applying safety requirements

6.1. 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.

6.2. 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.

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 safety requirements at work site. (5 Points)

Note: **Satisfactory rating – 2.5 points** **Unsatisfactory - below 2.5 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-7	Site isolation and traffic control responsibilities and authorities

7.1. 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.

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.

Worksite should be inspected prior to reinstatement, and a sample of such isolation work should be monitored by an independent person.

7.2. 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 who 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 need to stand on their feet for long periods of time and understand how to control traffic to the best of their ability. 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 7.1: 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

Hazards of the Job:

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 but not be limited to:

- 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:

- 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 -7	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)

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-8	Identifying and obtaining signage requirements from the project traffic management plan

8.1. Identifying and obtaining 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	

NOTE

Signs are placed for your protection. Always keep signs clean and in good condition.

Do not remove a sign unless you are authorized to do so.

Reference:

Self-Check -8	**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. (5 Points)

Note: **Satisfactory rating – 2.5 points** **Unsatisfactory - below 2.5 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-9	Selecting tools and equipment

9.1. Selecting 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, but also two utensils that are often used every day as well.

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 and 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, 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 fibre) 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 -9	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 stones and ores? (2 point)

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-10	Checking and reporting serviceability and any faults of tools and equipment

10.1. Checking serviceability of tools and equipment

How serviceable a system is affects how easily, quickly, and frequently you can or will conduct preventive maintenance. For example, as a young boy growing up on a farm, I had to repair a piece of machinery that failed because it was not “greased” properly. In other words, it did not receive proper preventive maintenance.

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.

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.

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.

10.2. 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 -10	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-11	Identifying and confirming environmental protection requirements

11.1. Environmental issues

It is important to be aware of the types of environmental concerns that may impact on your work.

Establishing a good Environmental Management Plan (EMP) is essential when planning and implementing adequate rehabilitation strategies for construction or mining sites.

11.2. Community issues

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

The rights of land holders must be respected at all times.

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.

11.3. Waste management

Waste management (or waste disposal) are 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,

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 or aesthetics.

Waste management practices are not uniform among countries (developed and developing nations); regions (urban and rural areas), and residential and industrial sectors can all take different approaches.

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 -11	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. Discuss why policies and legislations are needed for environmental protection? (5 Points)

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Operation Sheet 1	Organizational policies and procedures for planning and preparing work

Method of Planning and preparing work:

Step 1- Identify the purpose for your work plan. Work plans are written for various reasons.

Step 2- Write the introduction and background.

Step 3 - Determine your goal(s) and objectives.

Step 4 - Consider ordering your work plan by "SMART" objectives. ...

Step 5 - List your resources.

Step 6- Identify any constraints.

Step 7- Who is accountable.

Step 8 - Write your strategy.

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 4 hour.

1. Write the necessary 8 steps for preparing and planning work.

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:
https://www.google.com/search?q=Implement+Traffic+Control+Plans+Skill+Set+RIISS00041&oq=Implement+Traffic+Control+Plans+Skill+Set+RIISS00041&aqs=chrome..69i57j33.1122j0j9&sourceid=chrome&ie=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..gws wiz.....0i71.rk5sXtb6HcU&ved=0ahUKEwjcpOPLlajkAhUTQEEAHVzYAzIQ4dUDCAo&uac=5

11.https://www3.opic.gov/environment/eia/kipeto/EMP/KEL%20Transmission%20Line%20Environment%20Management%20Plan.pdf

Mineral Resources Infrastructure Work Level - I

Learning Guide -43

Unit of Competence: - Handle Resources and Infrastructure Materials and Safely Dispose of Non toxic Materials

Module Title: Handle Resources and Infrastructure Materials and Safely Dispose of Non-toxic Materials

LG Code: MIN MRI1 M12 LO2-LG-43

TTLM Code: MIN MRI1 TTLM 0819 V1

LO 2: Handle and remove waste

Instruction Sheet	Learning Guide - 43

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:

- Comply materials safety data sheets and requirements of regulatory authorities.
- Identify Hazardous materials for separate handling in accordance with OHS regulation requirements
- Use correct procedures to remove non-toxic materials
- Use Dust suppression procedures to minimize health risks to work personnel and others materials from workplace traffic or access.

Learning Instructions:

8. Read the specific objectives of this Learning Guide.
9. Follow the instructions described in number 3 to 7.
10. 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.
11. Accomplish the “Self-check 1-5” in page – 46, 50, 54, 55 and 57**.**
12. 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).
13. 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.
14. 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 question of occupational health and safety, as a global issue, is now taking a new turn. 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. Many of these countries are moving from manual labor to service mechanization in the main productive sectors, such as manufacturing, mining and agriculture, hence the potential occupational health ramifications should be anticipated. Also the insatiable desire of these countries for technical advancement has brought about the importation of sophisticated machinery and pieces of equipment not only into the industrial production sector, but also to services and commerce. This invariably has been associated with a change in the structure of the labour force as a whole including a rise in the employment of women. As to be expected the health problems would also change. For example, more emphasis on ergonomics and occupational psychosocial factors would be needed in the services industry. This obviously would be a new challenge for occupational health and safety practice in most of the African countries because the tool to deal with such a problems and the expertise is not yet advanced when compared to the developed countries.

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.

Each year, work-related injuries and diseases kill an estimated 2 million people worldwide, which is greater than the global annual number of deaths from malaria. Annually, an estimated 160 million new cases of work-related diseases occur worldwide, including

respiratory and cardiovascular diseases, cancer, hearing loss, musculoskeletal and reproductive disorders, mental and neurological illnesses.

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 insomnia, depression and fatigue, and burn-out syndromes, as well as with elevated risks of cardiovascular diseases. Only 5-10% of workers in developing countries and 20-50% of workers in industrial countries (with a few exceptions) are estimated to have access to adequate occupational health services. Even in advanced economies, a large proportion of work sites are not regularly inspected for occupational health and safety.

Occupational Health is a diverse science applied by occupational health professional's engineers, 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

Principles of occupational Health and Safety

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

a) The service must optimally be preventive oriented and multidisciplinary.

b) The service provided should integrate and complement the existing public health service.

c) The service should address environmental considerations
d) The service should involve, participation of social partners and other stakeholders
e) The service should be delivered on panned approach
f) The service should base up to date information, education, training, consultancy, advisory services and research findings
g) 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 a subtype of occupational hazards that involve environmental hazards that can cause harm with or without contact. Physical hazards include ergonomic hazards, 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.
- **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. OCCUPATIONAL HEALTH AND SAFETY PRACTICE IN ETHIOPIA

The attentions to occupational safety and health have been given legal basis in Ethiopia since 1940s when the first legal instrument Proclamation No. 58/1945 was promulgated. The base of this legislation was a result of the introduction of industrialization that took place in the country. This legislation was framed itself on the basic principles underlined by the two notable International Labor Organization (ILO) conventions on Labour Inspection. A more comprehensive legislation on occupational Safety and Health management replaced this in 1964 i.e. Proclamation 232/1964 in order to address the change occurred.

1.3. Importance of occupational Health and Safety (OHS)

Economically, morally, and legally, Occupational safety and health have become important issue in society today.

Work plays a central role in people's lives, since most workers spend at least eight hours a day in the workplace, whether it is on a plantation, in an office, factory, etc. Therefore, work environments should be safe and healthy. Every day workers all over the world face with a multitude of health hazards, such as: dusts, gases, noise, vibration and extreme temperatures. Unfortunately some employers assume little responsibility for the protection of workers' health and safety. In fact, some employers do not even know that they have the moral and often legal responsibility to protect workers. As a result of the hazards and a lack

of attention given to health and safety, work-related accidents and diseases are common in all parts of the world. Due to these and other facts the need of occupational safety and health and its implementation at work place is necessary.

1.4. 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.

If management demonstrates in words and action, through policies, procedures and financial incentives, that it is committed to workers' safety and health, then supervisors and workers will respond by ensuring that work is performed safely throughout the enterprise. Occupational safety and health should be treated not as a separate process, but as one that is integral to the way in which activities take place in the company. In order to achieve the objective of safe and healthy working conditions and environment, employers should institute organizational arrangements adapted to the size of the enterprise and the nature of its activities.

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.

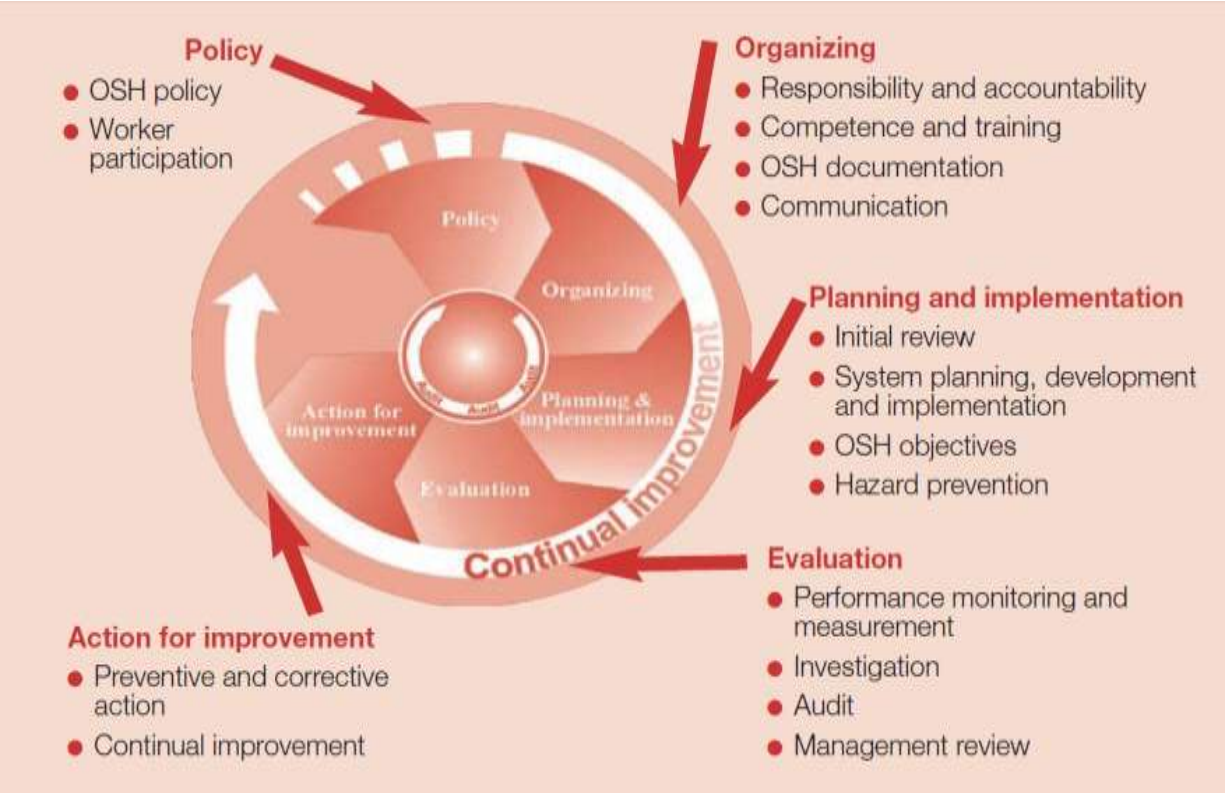


Figure 1.1: above shows the OHS management cycle

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. How can work affect health and health affect work? Give practical examples (2 points)
4. Mention the main roles of Environmental Health Officers in occupational health and safety programs (2 points)
5. What are the criteria to state that substances are hazardous or dangerous? What are the advantages of hazard warning symbols or signs? (2 points)

Note to the Instructor

Please take your students to an occupational setting (industries, factories, workshops, hospitals, classrooms, laboratories etc) and ask them to indicate health and safety hazards in the work environment. Discuss their findings and your observation with the students. The assignment in the setting could be in teams. If so, ask the group leaders to present their findings to a plenary in the classrooms.

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

Some materials that you are asked to handle will have accompanying safety data sheets. It may be that certain material is non-toxic but could still be harmful. For instance dust is generally not regarded as toxic but could cause problems if you inhale it. Safety data sheets can identify if a substance is hazardous.

Information in a safety data sheet helps you to assess the risks to your health from some substances. Without a safety data sheet the user could remain unaware of the harmful risks of a substance and how it could affect their health or safety and those around them and what to do in case of an emergency. If you are unsure about whether a substance is toxic you should request a safety data sheet from your supervisor or find the SDS folder in your workplace.

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

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. The legislation provides for flexibility of design and wording but requires that a minimum number of categories of information be completed and that all hazardous ingredients meeting certain criteria be listed subject to exemptions granted under the Hazardous Materials Information Review Act.

	No SDS? 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. • The supplier is not complying with the law.

The Purpose of the Data Sheet

The data sheet is the second element of the WHMIS information delivery system and is intended to supplement the alert information provided on labels. The third element of the system is the education of employees in hazard information on controlled products, including instruction in the content and significance of information on the material safety data sheet.

Responsibilities Related to the MSDS

Suppliers

1. Develop or obtain a MSDS for each controlled product imported or sold for use in a workplace

2. Ensure the MSDS for the controlled product:

- Discloses information that is current at the time of sale or importation of the product
- Was prepared and dated not more than three years before the date of sale or importation
- Is available in both official languages

3. Ensure the purchaser of the controlled product has a copy of the current MSDS at the time of or prior to the purchaser receiving the controlled product

4. Make available any information that is considered confidential (trade secret) information and therefore exempt from disclosure to any physician or nurse who requests that information for the purpose or making a medical diagnosis or providing medical treatment

Employer

1. Ensures that an up-to-date supplier MSDS is obtained from the supplier the first time a controlled product is received in the workplace

2. Evaluates the data sheet received to determine its date of production. The data sheet must be dated within 3 years of current date

3. Maintains up-to-date MSDSs:

- As soon as practical but no later than 90 days after new hazard information becomes available to the employer
- At least every three years

4. Ensures a copy of all data sheets which are required for the workplace are made readily available at the worksite to:

- Workers who may be exposed to the controlled product
- The occupational health committee (OHC)

Note: The MSDSs may be made available on a computer if the employer takes all reasonable steps to keep the terminal in working order, makes the data sheets readily available to the employee and provides training in accessing the computer stored data to the employee.

5. Ensure that the employee who works with a controlled product or in proximity to a controlled product is instructed in:

- The content required on the MSDS
- The purpose and significance of information contained in it

Instruction must ensure that employees know procedures for the safe use, storage, handling and disposal of controlled products including procedures in the event of an emergency involving a controlled product.

6. Provide confidential (trade secret) information to a doctor or nurse who request this information for purposes of making a medical diagnosis or rendering medical treatment in an emergency

7. The employer can produce data sheets in order to provide additional information or alter the format used as long as there is no less information provided than the original supplier MSDS contained

Worker

Following training by the employer:

1. Follows the safe work or preventative measures as instructed by the employer

2. Knows where the sheets are located and how to find pertinent information on safe use and first aid measures

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.

An MSDS must be reviewed at least every three years. 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 odour and appearance of the product
- The specific gravity, vapour density, evaporation rate, boiling point and the freezing point
- The vapour pressure, the higher the concentration the higher the possible air concentration
- The odour 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

Toxic and Non-toxic

There are many different types of materials and waste handled in the resources and infrastructure industries. This unit specifically deals with the handling and disposing of non-toxic materials.

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
- Acid

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

- Gravel
- Wood
- Water

You must be careful when you decide what is toxic and what isn't. Handling certain material will require particular thought and care. You should always check with your supervisor if you are unsure about whether something is safe to handle or not.

Figure 3.1. Hazardous waste removal and Management

3.1.1. Handling materials

When being given the task of disposing of waste materials always find out the relevant details and what you need to do. A worker might get this information from paperwork or direct instruction from their supervisor.

If at any time you are unsure about any of the procedures when handling materials, ask your supervisor for assistance. It is always better to be safe than sorry after the fact.

The way you handle materials in any industry will depends on the type of work you do and what you are dealing with. For example, the job of moving a pile of gravel will have different requirements to disposing of a stack of corroded steel reinforcing bars.

Basic rules of handling

1. Carry out a risk assessment of the handling job.
2. If materials are too heavy or awkward to lift you should always ask for assistance so you do not cause yourself an injury by over straining.
3. Only handle materials that cannot cause you harm.
4. Always wear the proper protective gear such as gloves, face mask and so on.
5. Always follow the procedures outlined in your workplace policies and environmental plan.

Loads

There is a risk when manually handling loads. When determining whether the nature of the load is a source of risk, you should consider the following points:

1. Large and bulky loads are difficult to handle and often force the worker to go into awkward postures and increase their muscle use. Loads that cannot be held close to the body increase the risk of injury, e.g. lifting lengths of steel over existing work and work benches.

2. As a general rule, the heavier the load, the greater the force required to handle the load. The level of risk is dependent on how the load is handled, for example, a 10kg load held close to the body and transferred from a stack to a bench at waist height poses less risk than a 10kg load lifted from floor to shoulder height. The number of healthy adults who can safely handle heavy loads generally decreases as the weight of the load increases.

3. The harder a load is to grip and control, the greater the force required to handle it. Unwieldy loads without handles or hand holds can also result in the hands and arms being used in awkward postures, e.g., boxes without cut outs for grips or slippery metal parts covered in grease are harder to grip.

4. Loads that are unwieldy, unstable, or move unpredictably will increase the risk to a worker by creating sudden high forces, e.g. animals which move while being handled, or contents of a container such as fluid or loose material that moves to one side suddenly. These loads need special care and often getting assistance in s the best solution.

Figure 3.2. UN safe load Handling

Figure 3.3. safe load Handling

5. Due to the shape and uneven distribution of weight, unbalanced loads are likely to create awkward postures and apply high forces to one area of the body when handled. Example: Lifting a concrete finishing helicopter onto the back of a truck.

6. The lack of information about the contents of packages and containers, including weight and packaging arrangements, can increase risk of injury to workers. This lack of information

may cause the person handling the package/container to overestimate or underestimate the force required to handle it, or to fail to compensate for unbalanced loads.

Manually handle materials

The best way to prevent injuries is to eliminate the manual task by using mechanical aids. Mechanical aids can be used to eliminate or minimize the effort required to handle loads.



Selecting 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 levellers
- 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.

Remember

When a mechanical aid is introduced into the workplace, information, instruction, training and supervision must be provided.

Workers need to know how to operate equipment so that additional risks are not added to the manual task.

Work place procedures also need to be understood by all workers so that changes are promoted, e.g. a forklift appearing should not appear in a work place without warning, appropriate signage and preparation of employees.

Do not handle toxic materials

There are thousands of toxic materials in workplaces, ranging from metal dusts and fumes to cleaning agents. You should mark for separate handling any material that you suspect or know to be hazardous.

You must not handle materials that you are not qualified to handle.

Mishandling toxic materials could lead to serious health problems and long-term damage. Certain hazardous materials must be handled with the utmost care by an experienced person.

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? (3 Points)

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

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. Explain the use of following organization's procedures when during waste disposal? (5 Points)

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

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. 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.

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)
3. List down possible problems that can arise due to dust? (2 Points)
4. Why is dust control important? (2 Points)

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

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

Operation Sheet 1	Handling hazardous materials

Guidelines for handling hazardous materials safely:

Follow all established procedures and perform job duties according to your training.

- Be cautious and plan ahead. Prepare for things that could go wrong and pay close attention to what you're doing while you work.
- Always use appropriate Personal Protective Equipment (PPE). Make sure to inspect it carefully before each use to make sure it's suitable. Replace worn out or damaged PPE that won't provide adequate protection.

- Learn about emergency procedures. Understanding emergency procedures means knowing evacuation procedures, emergency reporting procedures, and procedures for dealing with fires and spills.
- Know what to do in a medical emergency, if a co-worker is injured or overcome by chemicals.
- Keep you and your work area clean. After handling any material, wash your hands thoroughly with soap and water. Clean work surfaces at least once a shift so that contamination risks are minimized.
- Never eat or drink while handling any materials, and if your hands are contaminated, don't use cosmetics or handle contact lenses.

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 --- hour.

1.

List of Reference Materials

1. AsfahiR.andRieske D., 2010, Industrial safety and management, sixty editions, USA: University of Arkansas

2. https://www.ilo.org/wcmsp5/groups/public/@dgreports/@dcomm/@publ/documents/publication/wcms_093550.pdf
3.https://www.cartercenter.org/resources/pdfs/health/ephti/library/lecture_notes/env_occupational_health_students/ln_occ_health_safety_final.pdf

4. https://www.uregina.ca/hr/hsw/assets/docs/pdf/Laboratory-Safety/Material-Safety-Data-Sheet.pdf
5. Mineral Resources & Waste Disposal available on:
http://www.kean.edu/~csmart/Observing/17.%20Mineral%20resources%20and%20waste%20disposal.pdf

Mineral Resources Infrastructure Work

Level - I

Learning Guide -44

Unit of Competence: - Handle Resources and Infrastructure Materials and Safely

Dispose of Non-toxic Materials

Module Title: Handle Resources and Infrastructure Materials and Safely

Dispose of Non-toxic Materials

LG Code: MIN MRI1 M12 LO3-LG-44

TTLM Code: MIN MRI1 TTLM 0819 V1

LO 3: Clean Up

Instruction Sheet	Learning Guide - 44

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 in accordance with manufacturers' recommendations and standard work practices.
- Safely store/stack Unused materials for future use in accordance with OHS regulation requirements
- Clear work area and dispose of or recycle materials in accordance with project environmental management plan.
- Clear work area and disposing or recycling materials

Learning Instructions:

15. Read the specific objectives of this Learning Guide.
16. Follow the instructions described in number 3 to 7.
17. 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.
18. Accomplish the “Self-check 1-4” in page -64, 67, 69 and 72 respectively.
19. 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).
20. 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.
21. 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) 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 Sectoral 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.

1.2. Preparation and implementation of the EMP

When preparing the EMP for a proposed activity, useful background information includes:

- Documents from the EIA process (eg. Final Scoping Report and/or Environmental Impact Report) and Record of Decision, that provide the context for the EMP, and which should include background information on the proposed project, predicted positive and negative impacts, management actions to mitigate negative impacts and enhance positive impacts
- High-level documents that set the framework for environmental management for the proposed activity, such as a Strategic Environmental Assessment (SEA), Strategic Environmental Management Plan (SEMP), over-arching Environmental Management System (EMS), or results from an Integrated Development Planning (IDP) process.
  Local monitoring programs that the EMP would need to take into consideration.
- Sometimes certain monitoring requirements for the project can be served by existing monitoring programs such as those carried out by a local authority.
- Information on existing monitoring and liaison forums that the EMP could link with in terms of communication and reporting, such as an Environmental Monitoring Committee.
- Environmental policies or guidelines from the project proponent that need to be applied to the EMP for a particular activity. This is particularly relevant for international companies.
- Updated project information that may provide more detail than presented for the EIA. The EIA process may lead to more detailed investigations into implementation of certain mitigation actions. The findings of these investigations can be included in the EMP.
- Applicable legislation that would be of relevance to the implementation of the project.

PREPARATION OF AN EMP

It is widely recognized that there is no standard format for EMPs. The format needs to fit the circumstances in which the EMP is being developed and the requirements that it is designed to meet (World Bank, 1999). The level of detail in the EMP may vary from a few pages for a project with low project-related environmental risks; to a substantial document for a large-scale complex project with potentially high environmental risks.

The following sections provide an overview of information that should be included in an EMP, building on the World Bank's (1999) EMP Guidelines, the Department of Water Affairs and Forestry's EMP Guidelines (CSIR, 2002) and South African EMP experience.

- **Overview of the proposed activity and the local context:** In order to place the EMP in context, a brief summary should be given of the proposed development and associated processes involved in both the construction and operational phases.

- **Summary of impacts associated with the proposed activity:** Summarize the predicted negative and positive impacts associated with the proposed project, particularly those presenting impacts of medium to high significance.
- **Project Proponent's environmental management policies and commitments:** summarize the Project Proponent's existing policies, guidelines and commitments relating to health, safety and environment.
- **Institutional arrangements: roles and responsibilities:** Clearly define the responsibilities for management actions contained in the EMP and clarify arrangements for coordination among the role players involved in implementation.
- **Legal requirements:** Identify the legislation, standards, guidelines and associated permits or licenses that apply to the project and are related to management activities specified in the EMP.
- **Implementation programme:** Presents the objectives to be achieved through the EMP and the management actions that need to be implemented in order to mitigate the negative impacts and enhance the benefits of the project. Associated responsibilities, monitoring, criteria/targets and timeframes are clearly specified.

IMPLEMENTATION OF THE EMP

- **Training and environmental awareness:** Training is essential for ensuring that the EMP provisions are implemented efficiently and effectively. Training needs should be identified based on the available and existing capacity of site and project personnel (including the Project Proponent, Contractors and Sub-contractors) to undertake the required EMP management actions and monitoring activities.
- **Documentation and record keeping**: A document handling system must be established to ensure accurate updating of EMP documents, and availability of all documents required for the effective functioning of the EMP.
- **Reporting procedures**: Reporting procedures for conveying information from the monitoring activities must be developed in order to ensure that management is able to take rapid corrective action should certain thresholds be exceeded.
- **Stakeholder engagement**: Specify the stakeholder engagement process to be followed during EMP development, implementation, and revision phases.
- **Auditing:** Environmental audits should be scheduled and conducted by competent auditors, properly recorded, and where corrective actions are undertaken these should be verified.

- **Responding to non-compliance**: The approach to non-compliance (whether based on penalties or incentives) must be described in the EMP and specified, for example, in tender documents and contracts.
- **Transfer of EMP requirements to Contractor, Sub-contractors or other parties** : The actions specified by the EMP must be enforced through the legal standing of the EMP.

Stipulating the requirement for an EMP may ensure its satisfactory development, but does not guarantee its implementation. It is therefore important to ensure that the actions specified by the EMP are enforced through the EMP being given some form of legal standing. This can be achieved through integration of the EMP into the tender documents for a particular project as a set of environmental specifications.

- **Management review and revision of the EMP:** Management reviews should be scheduled at key stages in the life-cycle of the project and the EMP revised accordingly.

EMPs should be dynamic, flexible and subject to periodic review (Hill, 2000). The extent to which EMPs should be reviewed will vary depending on the project or activity. Where the major negative impacts are associated with the construction phase, the EMP may require no, or limited, revision following construction. For projects where the major environmental impacts are associated with the operational phase, the EMP may require regular review and subsequent revision.

1.3. PRINCIPLES UNDERPINNING EMPs

The principles underpinning EMPs can be defined at three levels:

- Principles of sustainable development, which provide the ultimate vision for guiding the preparation and implementation of EMPs;
- Principles for ethics and quality, which relate to the quality of the process, including record keeping and the professional integrity of the authors and implementers of the EMP; and
- Principles specific to EMPs, which relate to the conceptual and actual implementation requirements for meeting best practice in EMPs.

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)? List out the objectives of EMP. (5 Points)
2. Discuss how EMP is prepared and implemented? (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

Preclearing, 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.

Personnel who use equipment during cleaning operations are responsible for properly using 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.

Even the most careful cleaning of any equipment, however, will not guarantee that the equipment is absolutely free of contamination. 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 cleaners

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.

Outcomes required

The overall intention is to raise awareness of using faulty tools or equipment and that all are aware of their duty of care to themselves and others of ensuring they do not. Also the empowerment they have in not conducting unsafe acts by using and also in confidently raising with management issues with equipment and tools supplied by the company.

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.

Example: Good practices for mechanical room

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.	

Use bins for storing small parts	
Consider making an individual (or individuals) responsible for the good maintenance of tools and parts.	

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

How?

✓ Workshop staff identify tools, parts and equipment

✓ Workshop staff 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. Why Store/Stack Regulations Are Important?

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, 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.

As a nation, we are generating more garbage and we don't know what to do with it. Ineffective or irresponsible disposal of this waste can pollute the environment and pose a public health risk. We are running out of space in existing landfills. Citizens are discovering that there is no easy way to get rid of the garbage they once assumed could be buried or burned and forgotten.

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:** In order to utilize these recycled materials, manufacturing facilities will emerge to find uses for them. As more recycling plants are

built and more products are manufactured, we will gain a greater understanding of the entire process.

- **Recycling creates jobs:** recycling 10,000 tons of materials would create 36 jobs compared to six for landfilling the same amount.
- **Cost avoidance of recycling:** For years, recycling has been hampered by the belief that it should make money. That may be true for some recyclables, but not for others. Rather, recycling should be thought of as a cost-effective disposal option. It usually requires fewer government subsidies than landfilling or incineration. It saves natural resources and helps protect the environment. Lower taxes, energy savings, and a cleaner environment are the real “bottom lines” in favor 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 – 4.5 points** **Unsatisfactory - below 4.5 points**

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

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