Mineral Resources Infrastructure Work

NTQF Level -1

Learning Guide -47

Unit of Competence: - Read and Interpret Laboratory Procedures and Specifications

Module Title: - Reading and interpreting laboratory procedures and specifications

LG Code: **MIN MRI1 M13 LO1-LG-47**

TTLM Code: **MIN MRI1 TTLM 0819v1**

LO No3: Recognize commonly used symbols and abbreviations

Instruction Sheet	**Learning Guide 47**

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

- Recognizing laboratory symbols and abbreviations
- Locating and interpreting symbols and abbreviations on procedures using legend

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 –**

- recognize Laboratory symbols and abbreviations.
- interpret, locate and correct Legend on procedures symbols and abbreviations.

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described in number 2 to 7.
3. Read the information written in the "Information Sheets 1". Try to understand what are being discussed. Ask you teacher for assistance if you have hard time understanding them.
4. Accomplish the "Self-check 1 in page 5 and self check in page 11"**.**
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 the Self-check 1).
6. If you earned a satisfactory evaluation proceed to "Information Sheet 2". However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Learning Activity #1.
7. Submit your accomplished Self-check. This will form part of your training portfolio.

Information Sheet-1	Recognizing laboratory symbols and abbreviations

1.Introduction There are many terms and expressions unique to mining that characterize the field and laboratory identify the user of such terms as a ‘‘mining person’’ The student of mining is thus advised to become familiar with all the terms used in mining laboratory , particularly those that are peculiar to either mines or minerals. Most of the mining terminology is introduced in this sections where they are most applicable. Some general terms are best defined at the outset.

The Regulations require employers to ensure that safety signs are provided (or are in place) and maintained in circumstances where there is a significant risk to health and safety that has not been removed or controlled by other methods. This is only appropriate where use of a sign can further reduce the risk. The other methods may include engineering controls or safe systems of work and may be required under other relevant legislation. Safety signs are not a substitute for those other methods of control

1.1 Laboratory symbols and abbreviation there are different types of laboratory symbols some of the symbols defining with writing and the other is figure. Generally ensure that accident prevention warning signs of laboratory in respective areas are up to date, visible, and in good condition. Ensure that students and employees recognize and understand the meaning of accident prevention signs.

PPE personal protective equipment

SOP Standard operating procedures

EHS Environment, Health, and Safety

SDS safety data sheet

Depending on the level of radiation present in the lab , the following signage may be used:

• **Caution – X-ray.** This warning sign is used to indicate use of radiation producing machine in that location.

• **Caution – Radioactive Materials.** This warning sign is used to indicate that radioactive materials are used or stored in this lab or area.

• **Caution – Radiation Area** This warning sign is used to indicate areas where radiation levels may exist that are in excess of 5 mill ram (mram) per hour at a distance of 30 centimeters (cm) from the source of radiation or from any surface that the radiation penetrates.

• **Caution – High Radiation Area** This warning sign is used to indicate areas where radiation levels may exist that are in excess of 100 mram per hour at a distance of 30 cm from the source of radiation or from any surface that the radiation penetrates.

• **Radiation Warning Labels** Use radiation warning labels to mark containers and equipment used to manipulate or store radioactive materials, contaminated items, or other sources of ionizing radiation.

Entry: An entry is a horizontal mine passageway or room that is formed as a result of room-and pillar mining operation. The passageway or room varies in height, width, and length,

Face: The face is the working area in from the last open crosscut in an entry or a room. Crosscuts in room-and-pillar mining result from piercing of pillars at regular intervals for the purpose of haulage and ventilation.

Prohibitory signs

Mandatory signs

Warning signs

Emergency escape or first aid signs

Radiation

Self-Check 1	Written Test

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

Part1 :- define the following questions

1. write the abbreviation of listed below /4points/.

A. PPE

B. SOP

C. SDS

D.EHS

2. define radiation warning labels in mining/2points/.

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

Score = _____

Rating: _____

Information Sheet-2	Locating and interpreting symbols and abbreviations on procedures using legend

2. Interpreting symbols and abbreviation:-

It is important that employers ensure that their employees are aware of and understand the meaning of laboratory safety signs and signals either seen or heard during their work, including providing training where necessary. Although most laboratory safety signs are self-explanatory, employees (particularly new, young or inexperienced ones) may be unfamiliar with the meaning of some of the less commonly used signs. It is therefore important that the meaning of any sign is clearly explained, and that employees are aware of the consequences of not following the warning or instruction given by the sign. Text supplementing the sign may have a useful role here.

Example locating layout of gold mining laboratory with legend

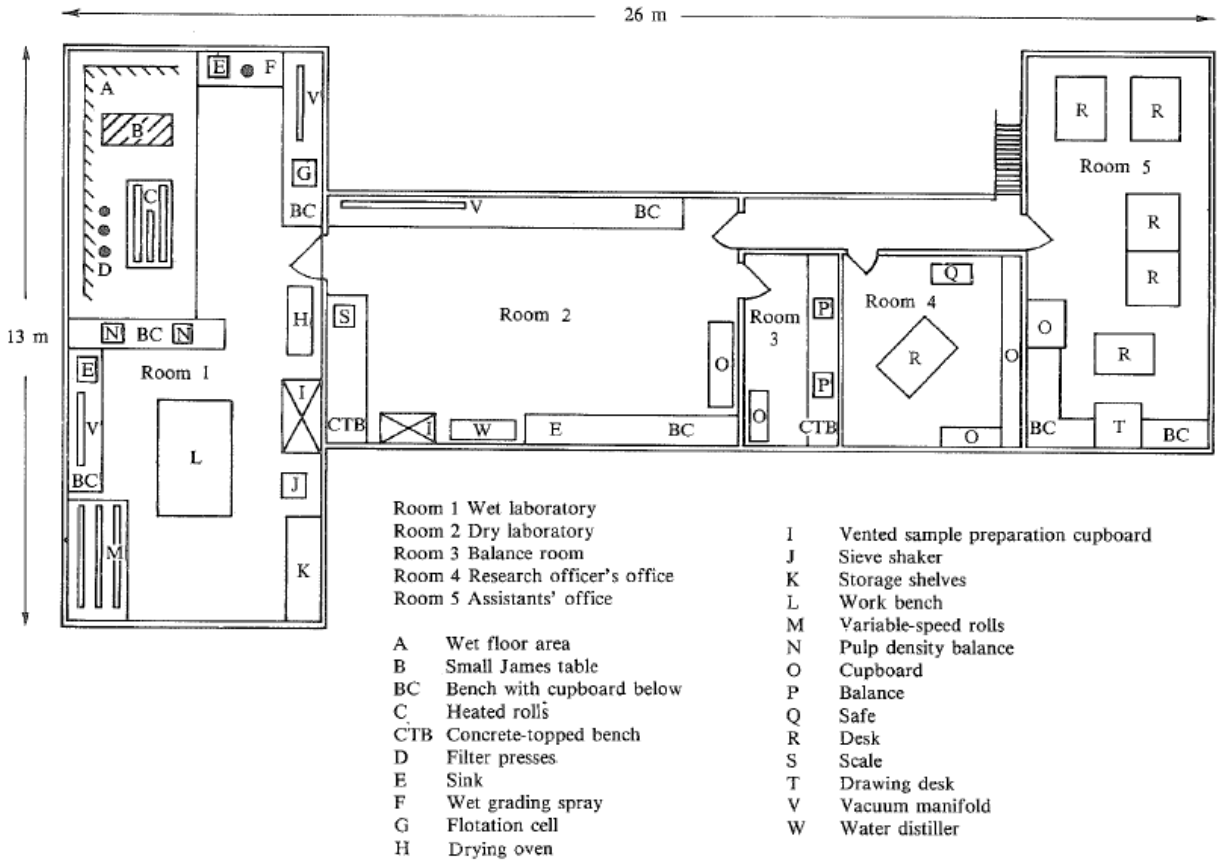

Fig 2.1 Example of lay out laboratory

For example Know where the accident and safety equipment are located:

- First Aid Kit – Next left of the main exit door
- Safety Shower – Next left of the main exit door
- Eye Wash Stations – Next left of the main exit door
- Chemical Response Spill Kits – On the bench, right next to balance

- Chemical Fume hoods – Right side of the exit door
- Fire Extinguishers – Next left of the main exit door
- Fire Alarms – Next left to the inside door of Building Exit, across from room __XXX___.
- Emergency Shut-off on Equipment – Follow the manual of each system
- Location of Emergency Telephone numbers and telephones. – In the hallway,
- across from room __XXX___.

A. Toxic and Corrosive Materials (acids and alkali)

Fig **2.2(a) Toxic or Poison Hazard** **(b)Corrosive Hazard**

B. Carcinogens All laboratory chemicals identified as carcinogens must be labeled carcinogen. When working with these substances, protective clothing and gloves should be worn.

Fig 2.3 Carcinogens

C. Flammable Compounds and Compressed Gases All flammable reagents should be kept in the flammable storage facilities (closet or refrigerator) at all times when not in use. The storage of all compressed gases shall be in containers designed, constructed, tested and maintained in accordance with Specifications and Regulations.

Fig 2.4 flammable compound

2.1 <u>locating different signs of laboratory mining</u>:- the most clear sign is figure if apply this type of sign any laboratory technician and trainees easily understand. there are four types of sign are listed below.

Fig 2.5 example laboratory signs

<u>2.1.1 Prohibitory signs</u> Intrinsic features Round shape black pictogram on white back ground and diagonal line/the red part of take up at least 35% of the area of the sign

Fig 2.6 prohibition signs

<u>2.1.2. Warning signs</u> Intrinsic features Triangular shape black pictogram on a yellow back ground with black edging/the yellow part to take up at least 50% of the area of the sign

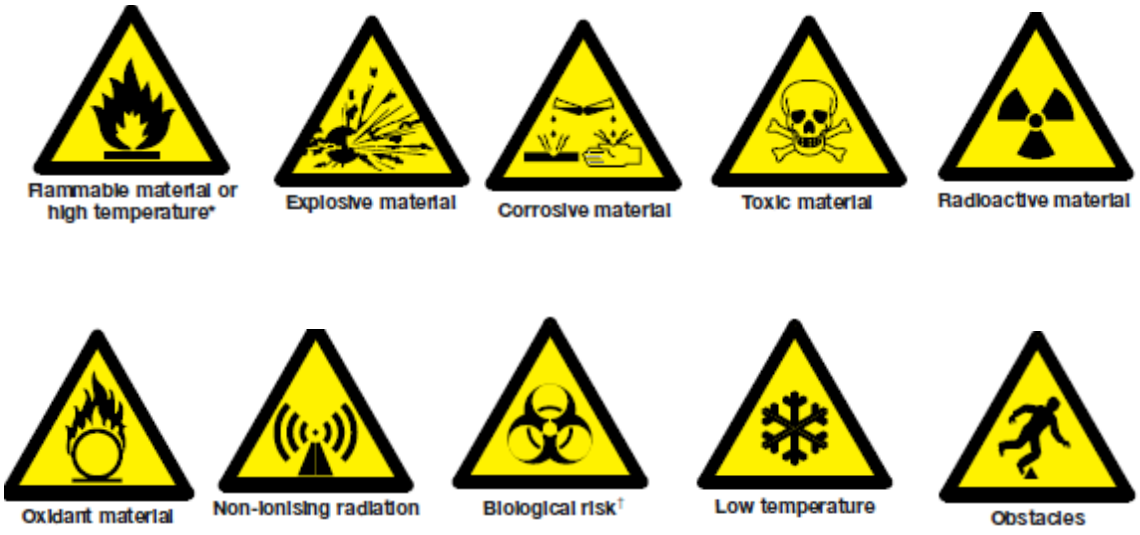

Fig 2.7 warning signes

<u>2.1.3.Mandatory signs</u> Intrinsic features Round shape white pictogram on a blue back ground/ the blue part to take up at least 50% of the area of the sign

Fig 2.8 mandatory signs

2.1.4.Emergency escape or first aid signs Intrinsic features rectangular or square shape white pictogram on a green back ground /the green part to take up at least 50% of the area of the sign

Figb2.9 emergency signs

2.1.4.1.First aid signs in the mining laboratory

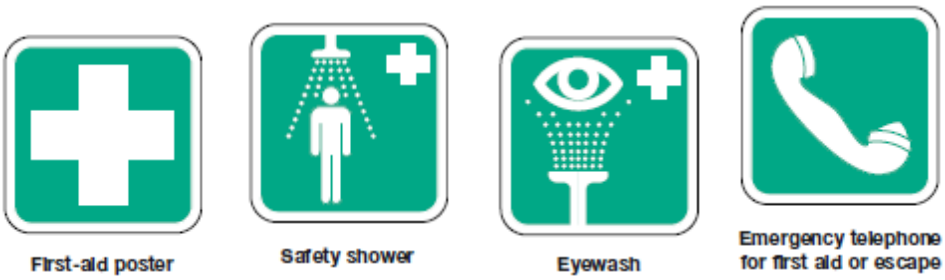

Fig 2.10 first aid signs

2.4.4.2.Fire fighting signs in mining laboratory

Fig 2.11 fire fighting signs

2.2. Radiation Safety in mining working area

No eating, drinking, smoking permitted Radioactive material should be labeled as radioactive and stored in a proper container so as to prevent spillage or leakage. These materials must be handled carefully, Remember the amount of radiation exposure decreases with distance**.**

Fig2.12 radiation safety

2.3 Fire Safety:- Know where all fire exits, fire extinguishers and Fire alarms are located Know how to properly operate appropriate fire Alarms and fire safety equipment. Portable fire extinguishers are classified by their ability to handle specific classes of fires For burning combustible materials Recommended for all types of fire. Most common extinguisher found in most mining laboratories.

Fig 2.13 fire safety

2.4. Posting the Sign :-After completing all information on the sign, Install the sign on the wall by the entrance to the room or laboratory. The sign should hang at eye level and do not install on the door.

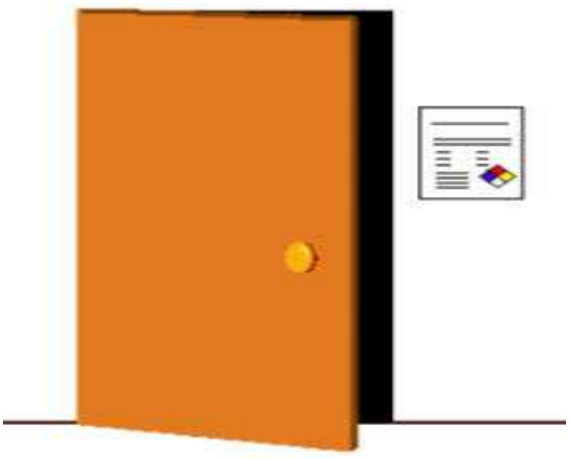

Fig 2.14 posting of sign

Self-Check 2	Written Test

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

Name _____ **Date**_____

Part1 :- define the following questions each 2 points

1. write symbol of figure below

A._____ B._____

Part2:- true or false the following questions

_____1. After completing all information on the sign, Install the sign on the wall by the entrance to the room or laboratory

_____2. When working with these substances, protective clothing and gloves should be worn.

_____3. Most laboratory safety signs are self-explanatory

Note: **Satisfactory rating - 6 points** **Unsatisfactory - below 6point**

Score = _____

Rating: _____

List of Reference Materials

1. safety and health in open cast mines international labor office Geneva
2. Draft code of practice on safety and health in opencast mines (Geneva, 16–20 October 2017)
3. www.resourcesandenergy.nsw.gov.au/safety
4. WA Department of Mines and Petroleum www.dmp.wa.gov.au
5. California Institute of Technology Laboratory and Workplace Safety Signs
6. U.S. Geological Survey www.usgs.gov
7. Energy Information Administration,U.S. Department of Energywww.eia.doe.gov
8. National Institute of Occupational Safety and Health www.cdc.gov/niosh/homepage.html
9. Mine Safety and Health Administration www.msha.gov
10. Society for Mining, Metallurgy, and Exploration, Inc. www.smenet.org
11. Office of Surface Mining,Department of the Interior www.osmre.gov