

Penaung
Datin Maharam bt. Jusoh
(Timbalan Ketua Pengarah
(Operasi))

Penasihat
Ahmad Ridzuan bin Ibrahim
(Timbalan Ketua Pengarah
(Dasar))

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Globally Harmonized System (GHS) Part 3: Safety Data Sheet

The safety data sheet (The GHS has dropped the word “material” from material safety data sheet. It will now be called the safety data sheet or SDS) is specifically aimed at use in the workplace. It should provide comprehensive information about the chemical product that allows employers and workers to obtain concise, relevant and accurate information that can be put in perspective with regard to the hazards, uses and risk management of the chemical product in the workplace.

The SDS should contain 16 sections. While there were some differences in existing industry recommendations, and requirements of countries, there was widespread agreement on a 16 section SDS that includes the following headings in the order specified:

1. Identification
2. Hazard(s) identification
3. Composition/ information on ingredients
4. First-aid measures

5. Fire-fighting measures
6. Accidental release measures
7. Handling and storage
8. Exposure control/ personal protection
9. Physical and chemical properties
10. Stability and reactivity
11. Toxicological information
12. Ecological information
13. Disposal considerations
14. Transport information
15. Regulatory information
16. Other information.

The primary difference between the GHS requirements in terms of headings and sections and the international industry recommendations is that sections 2 and 3 have been reversed in order. The GHS SDS headings, sequence and content are similar to the ISO, EU and ANSI MSDS/SDS requirements. The SDS should provide a clear description of the data used to identify the hazards.

A table comparing the content and format of a current MSDS/SDS versus the GHS SDS are tabulate as follows:

MSDS Comparison		
MSDS Sections	GHS SDS	OSHA MSDS
1. Product and company identification	<ul style="list-style-type: none"> ▪ GHS product identifier. ▪ Other means of identification. ▪ Recommended use of the chemical and restrictions on use. ▪ Supplier's details (including name, address, phone number etc). ▪ Emergency phone number. 	<ul style="list-style-type: none"> ▪ Product identity same as on label. ▪ Name address and telephone number of the manufacturer, distributor, employer or other responsible party.

MSDS Comparison		
MSDS Sections	GHS SDS	OSHA MSDS
2. Hazards identification	<ul style="list-style-type: none"> GHS classification of the substance/mixture and any regional information. GHS label elements, including precautionary statements. (Hazard symbols may be provided as a graphical reproduction of the symbols in black and white or the name of the symbol, e.g., flame, skull and crossbones). Other hazards which do not result in classification (e.g., dust explosion hazard) or are not covered by the GHS. 	<ul style="list-style-type: none"> health hazards including acute and chronic effects, listing target organs or systems. signs & symptoms of exposure. conditions generally recognized as aggravated by exposure. primary routes of exposure. if listed as a carcinogen by OSHA, IARC, NTP. physical hazards, including the potential for fire, explosion, and reactivity.
3. Composition/ information on ingredients	<p>Substance</p> <ul style="list-style-type: none"> Chemical identity Common name, synonyms, etc. CAS number, EC number, etc. Impurities and stabilizing additives which are themselves classified and which contribute to the classification of the substance. <p>Mixture</p> <ul style="list-style-type: none"> The chemical identity and concentration or concentration ranges of all ingredients which are hazardous within the meaning of the GHS and are present above their cut-off levels. Cut-off level for reproductive toxicity, carcinogenicity and category 1 mutagenicity is ³ 0.1%. Cut-off level for all other hazard classes is ³ 1%. <p>Note: For information on ingredients, the competent authority rules for CBI take priority over the rules for product identification.</p>	<ul style="list-style-type: none"> Chemical and common name of ingredients contributing to known hazards. For untested mixtures, the chemical & common name of ingredients at 1% or more that present a health hazard and those that present a physical hazard in the mixture. Ingredients at 0.1% or greater, if carcinogens.

MSDS Comparison		
MSDS Sections	GHS SDS	OSHA MSDS
4. First-aid measures	<ul style="list-style-type: none"> Description of necessary measures, subdivided according to the different routes of exposure, i.e., inhalation, skin and eye contact and ingestion. Most important symptoms/effects, acute and delayed. Indication of immediate medical attention and special treatment needed, if necessary. 	<ul style="list-style-type: none"> emergency & first aid procedures.
5. Firefighting measures	<ul style="list-style-type: none"> Suitable (and unsuitable) extinguishing media. Specific hazards arising from the chemical (e.g., nature of any hazardous combustion products). Special protective equipment and precautions for fire-fighters. 	<ul style="list-style-type: none"> generally applicable control measures flammable property information such as flashpoint. physical hazards including the potential for fire, explosion, and reactivity.
6. Accidental release measures	<ul style="list-style-type: none"> Personal precautions, protective equipment and emergency procedures. Environmental precautions. Methods and materials for containment and cleaning up. 	<ul style="list-style-type: none"> procedures for clean up of spills and leaks.
7. Handling and storage	<ul style="list-style-type: none"> Precautions for safe handling. Conditions for safe storage, including any incompatibilities. 	<ul style="list-style-type: none"> Precautions for safe handling & use, including appropriate hygienic practices.
8. Exposure controls/personal protection	<ul style="list-style-type: none"> Control parameters (e.g., occupational exposure limit values or biological limit values). Appropriate engineering controls. Individual protection measures, such as personal protective equipment. 	<ul style="list-style-type: none"> General applicable control measures. appropriate engineering controls and work practices. protective measures during maintenance & repair. personal protective equipment. permissible exposure levels, threshold limit values, listed by OSHA, ACGIH, or established company limits.

MSDS Comparison		
MSDS Sections	GHS SDS	OSHA MSDS
9. Physical and chemical properties	<ul style="list-style-type: none"> ▪ Appearance (physical state, colour, etc.) ▪ Odour. ▪ Odour threshold. ▪ pH. ▪ melting point/freezing point. ▪ initial boiling point and boiling range. ▪ flash point: ▪ evaporation rate. ▪ flammability (solid, gas). ▪ upper/lower flammability or explosive limits. ▪ vapour pressure. ▪ vapour density. ▪ relative density: ▪ solubility(ies). ▪ partition coefficient: n-octanol/water. ▪ auto-ignition temperature. ▪ decomposition temperature. 	<ul style="list-style-type: none"> ▪ characteristics of hazardous chemicals such as vapor pressure & density. ▪ physical hazards including the potential for fire, explosion, and reactivity.
10. Stability and reactivity	<ul style="list-style-type: none"> ▪ Chemical stability. ▪ Possibility of hazardous reactions. ▪ Conditions to avoid (e.g., static discharge, shock or vibration). ▪ Incompatible materials, ▪ Hazardous decomposition products. 	<ul style="list-style-type: none"> ▪ organic peroxides, pyrophoric, unstable # (reactive), or water-reactive hazards. ▪ physical hazards, including reactivity and hazardous polymerization.
11. Toxicological information	<ul style="list-style-type: none"> ▪ Concise but complete and comprehensible description of the various toxicological (health) effects and the available data used to identify those effects, including: ▪ Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact); ▪ Symptoms related to the physical, chemical and toxicological characteristics; ▪ Delayed and immediate effects and also chronic effects from short- and long-term exposure;. ▪ Numerical measures of toxicity (such as acute toxicity estimates). 	<ul style="list-style-type: none"> ▪ See also Section 2 [health hazards Including acute and chronic effects, listing target organs or systems. ▪ signs & symptoms of exposure. ▪ primary routes of exposure. ▪ if listed as a carcinogen by OSHA, IARC, NTP].

MSDS Comparison		
MSDS Sections	GHS SDS	OSHA MSDS
12. Ecological information	<ul style="list-style-type: none"> ▪ Ecotoxicity (aquatic and terrestrial, where available). ▪ Persistence and degradability. ▪ Bioaccumulative potential. ▪ Mobility in soil. ▪ Other adverse effects. 	<ul style="list-style-type: none"> ▪ No present requirements.
13. Disposal considerations	<ul style="list-style-type: none"> ▪ Description of waste residues and information on their safe handling and methods of disposal, including any contaminated packaging. 	<ul style="list-style-type: none"> ▪ No present requirements. ▪ See section 7,
14. Transport information	<ul style="list-style-type: none"> ▪ UN number. ▪ UN Proper shipping name. ▪ Transport Hazard class(es). ▪ Packing group, if applicable. ▪ Marine pollutant (Y/N). ▪ Special precautions which a user needs to be aware of or needs to comply with in connection with transport or conveyance either within or outside their premises. 	<ul style="list-style-type: none"> ▪ No present requirements.
15. Regulatory information	<ul style="list-style-type: none"> ▪ Safety, health and environmental regulations specific for the product in question. 	<ul style="list-style-type: none"> ▪ No present requirements.
16. Other information	<ul style="list-style-type: none"> ▪ Other information including information on preparation and revision of the SDS. 	<ul style="list-style-type: none"> ▪ Date of preparation of MSDS or date of last change

Accident Investigation (Part 1)

What is an accident and why should it be investigated?

The term "accident" can be defined as an unplanned event that interrupts the completion of an activity, and that may (or may not) include injury or property damage.

An incident usually refers to an unexpected event that did not cause injury or damage this time but had the potential. "Near miss" or "dangerous occurrence" are also terms for an event that could have caused harm but did not.

Please note: The term incident is used in some situations and jurisdictions to cover both an "accident" and "incident". It is argued that the word "accident" implies that the event was related to fate or chance. When the root cause is determined, it is usually found that many events were predictable and could have been prevented if the right actions were taken -- making the event not one of fate or chance (thus, the word incident is used). For simplicity, we will use the term accident to mean all of the above events.

The information that follows is intended to be a general guide for supervisors or joint occupational health and safety committee members. When accidents are investigated, the emphasis should be concentrated on finding the root cause of the accident rather than the investigation procedure itself so you can prevent it from happening again. The purpose is to find facts that can lead to actions, not to find fault. Always look for deeper causes. Do not simply record the steps of the event.

Reasons to investigate a workplace accident include:

- Most importantly, to find out the cause of accidents and to prevent similar accidents in the future
- To fulfill any legal requirements
- To determine the cost of an accident
- To determine compliance with applicable safety regulations
- To process workers' compensation claims (if necessary)

Incidents that involve no injury or property damage should still be investigated to determine the hazards that should be corrected. The same principles apply to a quick inquiry of a minor incident and to the more formal investigation of a serious event.

Who should do the accident investigating?

Ideally, an investigation would be conducted by someone experienced in accident causation, experienced in investigative techniques, fully knowledgeable of the work processes, procedures, persons, and industrial relations environment of a particular situation.

Some jurisdictions provide guidance such as requiring that it must be conducted jointly, with both management and labour represented, or that the investigators must be knowledgeable about the work processes involved.

In most cases, the supervisor should help investigate the event. Other members of the team may include:

- Employees with knowledge of the work
- Safety officer
- Safety and health committee
- Union representative (if applicable)
- Employees with experience in investigations
- "Outside" expert
- Representative from local government

Should the immediate supervisor be on the team?

The advantage is that this person is likely to know most about the work and persons involved and the current conditions. Furthermore, the supervisor can usually take immediate remedial action. The counter argument is that there may be an attempt to gloss over the supervisors shortcomings in the accident. This situation should not arise if the accident is investigated by a team of people, and if the worker representative(s) and the members review all accident investigation reports thoroughly.

Why look for the "root cause"?

An investigator who believes that accidents are caused by unsafe conditions will likely try to uncover conditions as causes. On the other hand, one who believes they are caused by unsafe acts will attempt to find the human errors that are causes. Therefore, it is necessary to examine some underlying factors in a chain of events that ends in an accident.

The important point is that even in the most seemingly straightforward accidents, **seldom, if ever, is there only a single cause.** For example, an "investigation" which concludes that an accident was due to worker carelessness, and goes no further, fails to seek answers to several important questions such as:

- Was the worker distracted? If yes, why was the worker distracted?
- Was a safe work procedure being followed? If not, why not?
- Were safety devices in order? If not, why not?
- Was the worker trained? If not, why not?

An inquiry that answers these and related questions will probably reveal conditions that are more open to correction than attempts to prevent "carelessness".

What are the steps involved in investigating an accident?

The accident investigation process involves the following steps:

- Report the accident occurrence to a designated person within the organization
- Provide first aid and medical care to injured person(s) and prevent further injuries or damage
- Investigate the accident
- Identify the causes
- Report the findings
- Develop a plan for corrective action
- Implement the plan
- Evaluate the effectiveness of the corrective action
- Make changes for continuous improvement

As little time as possible should be lost between the moment of an accident or near miss and the beginning of the investigation. In this way, one is most likely to be able to observe the conditions as they were at the time, prevent disturbance of evidence, and identify witnesses. The tools that members of the investigating team may need (pencil, paper, camera, film, camera flash, tape measure, etc.) should be immediately available so that no time is wasted.

What should be looked at as the cause of an accident?

Accident Causation Models

Many models of accident causation have been proposed, ranging from Heinrich's domino theory to the sophisticated Management Oversight and Risk Tree (MORT).

The simple model shown in Figure 1 attempts to illustrate that the causes of any accident can be grouped into five categories (task, material, environment, personnel, and management). When this model is used, possible causes in each category should be

investigated. Each category is examined more closely below. Remember that these are *sample* questions only: no attempt has been made to develop a comprehensive checklist.

Figure 1: Accident Causation



Task

Here the actual work procedure being used at the time of the accident is explored. Members of the accident investigation team will look for answers to questions such as:

- Was a safe work procedure used?
- Had conditions changed to make the normal procedure unsafe?
- Were the appropriate tools and materials available?
- Were they used?
- Were safety devices working properly?
- Was lockout used when necessary?

For most of these questions, an important follow-up question is "If not, why not?"

Material

To seek out possible causes resulting from the equipment and materials used, investigators might ask:

- Was there an equipment failure?
- What caused it to fail?
- Was the machinery poorly designed?
- Were hazardous substances involved?
- Were they clearly identified?
- Was a less hazardous alternative substance possible and available?
- Was the raw material substandard in some way?
- Should personal protective equipment (PPE) have been used?
- Was the PPE used?
- Were users of PPE properly trained?

Again, each time the answer reveals an unsafe condition, the investigator must ask **why** this situation was allowed to exist.

Environment

The physical environment, and especially sudden changes to that environment, are factors that need to be identified. The situation at the time of the accident is what is important, not what the "usual" conditions were. For example, accident investigators may want to know:

- What were the weather conditions?
- Was poor housekeeping a problem?
- Was it too hot or too cold?
- Was noise a problem?

- Was there adequate light?
- Were toxic or hazardous gases, dusts, or fumes present?

Personnel

The physical and mental condition of those individuals directly involved in the event must be explored. The purpose for investigating the accident is **not** to establish blame against someone but the inquiry will not be complete unless personal characteristics are considered. Some factors will remain essentially constant while others may vary from day to day:

- Were workers experienced in the work being done?
- Had they been adequately trained?
- Can they physically do the work?
- What was the status of their health?
- Were they tired?
- Were they under stress (work or personal)?

Management

Management holds the legal responsibility for the safety of the workplace and therefore the role of supervisors & and higher management and the role or presence of management systems must always be considered in an accident investigation. Failures of management systems are often found to be direct or indirect factors in accidents. Ask questions such as:

- Were safety rules communicated to and understood by all employees?
- Were written procedures and orientation available?
- Were they being enforced?
- Was there adequate supervision?
- Were workers trained to do the work?
- Had hazards been previously identified?
- Had procedures been developed to overcome them?
- Were unsafe conditions corrected?
- Was regular maintenance of equipment carried out?
- Were regular safety inspections carried out?

This model of accident investigations provides a guide for uncovering all possible causes and reduces the likelihood of looking at facts in isolation. Some investigators may prefer to place some of the sample questions in different categories; however, the categories are not important, as long as each pertinent question is asked. Obviously there is considerable overlap between categories; this reflects the situation in real life. Again it should be emphasized that **the above sample questions do not make up a complete checklist, but are examples only.**

Sub Topic in coming Issue:

- How are the facts collected?
 - Injured workers(s)
 - Physical Evidence
 - Eyewitness Accounts
 - Interviewing
- Background Information
- What should I know when making the analysis and conclusions?
- Why should recommendations be made?
- The Written Report
- What should be done if the investigation reveals "human error"?
- How should follow-up be handled?

Minggu OSH Ibu Pejabat bagi tahun 2010 telah diadakan pada 11 – 15 Oktober 2010 dan telah dirasmikan oleh Ketua Pengarah Kimia Malaysia En. N. Hithaya Jeevan. Setelah perasmian, satu taklimat ringkas tentang tanggungjawab, peranan dan tugas-tugas ahli JKK telah diberikan kepada Ahli JKK yang baru dilantik bagi sesi Julai 2010 hingga Jun 2012.

MINGGU OSH IBU PEJABAT TAHUN 2010

Antara aktiviti yang telah dijalankan sepanjang Minggu OSH ini berlangsung adalah Kempen Derma Darah, Ceramah, Mesyuarat OSH Manager, Demonstrasi Tumpahan Kimia oleh HAZMAT, BOMBA dan Kuiz OSH.

- Pusat Darah Negara telah dijemput untuk menjayakan Kempen Derma Darah ini. Hasil kempen ini Pusat Darah Negara dapat mengumpulkan sebanyak 50± kampil darah. Mengikut senarai nama, seramai 80± telah datang mendaftar untuk menderma tetapi terdapat sebahagian kakitangan tidak melepasi peringkat saringan

untuk menderma. Walaubagaimanapun, diucapkan ribuan terima kasih kepada semua kakitangan yang telah menjayakan kempen ini.

Antara ceramah yang diadakan adalah seperti berikut:

- Senario Dadah Semasa oleh Pn. Siti Azura Mohd Saad dari Agensi Anti Dadah Kebangsaan
- Darah Tinggi, Sakit buah Pinggang, Stroke dan Cancer oleh Dr Shahrizal



TERENGGANU

OSH
WEEK
13-16/7/2010



GAMBAR KENANGAN MINGGU OSH

Gambar pada hari pertama Minggu OSH, masing-masing mengenakan pakaian 'casual'. Program pada hari pertama agak santai dengan dimulainya dengan acara 'Treasure Hunt' dan pada sebelah petang 'refreshment course' pertolongan cemas. Masing-masing agak teruja dengan kelainan program pada tahun ini.

MINGGU OSH 2010, Kimia Terengganu

Program selama 4 hari telah dirangka dengan sedikit kelainan dari tahun-tahun lepas. Di antara program yang dijalankan ialah 'Treasure Hunt', First Aid Refreshment Course, ceramah Diet dan Kesihatan, ceramah Stress Management, Pemeriksaan Kesihatan, ceramah Keselamatan Kebakaran dan Latihan Memadam Kebakaran.

HARI PERTAMA 13/7/2010

Aktiviti Hari Pertama : Treasure Hunt & first aid refreshment course (in-house)



Majlis perasmian disempurnakan oleh Hj Abdullah.



Peserta sibuk mencari jawapan berdasarkan petunjuk yang diberikan semasa program 'treasure hunt'



Di antara model-model mangsa kecederaan...masing-masing mempraktikkan ilmu yang ada bagi merawat mangsa yang cedera.

HARI KEDUA 14/7/2010

Aktiviti: Ceramah Diet dan Kesihatan Oleh Pn Ramlah (Pegawai Dietetik HSNZ KT)



Pn. Ramlah menyampaikan ceramah yang informatif, sambutan para peserta juga amat menggalakkan.

Aktiviti: Ceramah "Stress Management" Oleh Pn Rozita Jayus (Kaunselor UMT)



LPPKN Negeri Terengganu

HARI KETIGA 15/7/2010



Di antara poster pameran yang di bawa oleh LPPKN Terengganu. Maklumat yang cukup infomatif bagi kakitangan Kimia Terengganu.

Aktiviti: Pemeriksaan Kesihatan oleh LPPKN Terengganu



Pemeriksaan kesihatan yang diberikan secara percuma oleh LPPKN dapat membantu kakitangan mengetahui tahap kesihatan masing. Pemeriksaan tekanan darah, kandungan gula dan kolesterol dalam darah serta penentuan BMI telah dijalankan.

Aktiviti: Senamrobik

HARI KEEMPAT 16/7/2010



Jurulatih Kecergasan dari luar dijemput bagi menunjuk ajar teknik dan langkah-langkah senamrobik dengan betul. Masing-masing ceria dan bersemangat semasa bersenamrobik.

Aktiviti: Ceramah Memadam Kebakaran



En. Mustafa dari Jabatan Bomba dan Penyelamat Negeri Terengganu menyampaikan ceramah beliau.

Tahniah Kepada Para Pemenang...



Hadiah kepada para pemenang disampaikan oleh DMR OSH Terengganu, Puan Siti Redzoh. Tahniah diucapkan kepada Kumpulan yang menang.



MINGGU OSH MELAKA TAHUN 2010

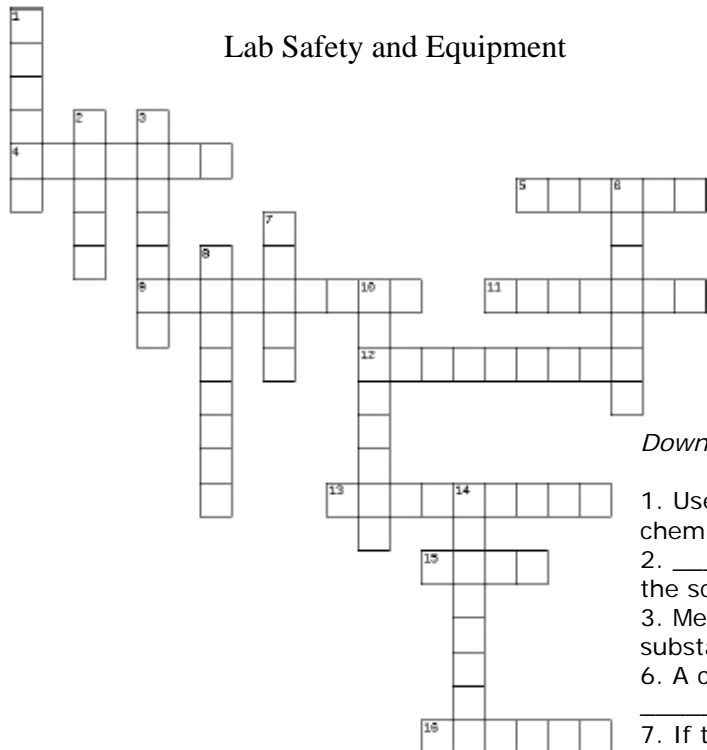
Seperti tahun-tahun sebelumnya, Minggu OSH 2010 di JKM Melaka telah diadakan pada 15-16/11/2010 yang dirasmikan oleh Tuan

Pengarah Kimia Melaka. Sebanyak 9 aktiviti telah dijalankan semasa minggu tersebut iaitu:

1. Ceramah PPE dan Pengendalian Tumpahan Bahan Kimia oleh wakil daripada 3M, Encik Hazlan Bin Bahaudin.
2. Demonstrasi dan Latihan kepada Pasukan Tumpahan Bahan Kimia tentang cara-cara pengendalian Tumpahan Bahan Kimia.
3. Ceramah "Job Safety Analysis" oleh Pengurus OSH JKM Melaka, Encik S. Gaureswaran.
4. Pertandingan Kuiz OSH yang melibatkan semua kakitangan JKM Melaka.
5. Ceramah "Amalan Gaya Hidup Sihat" oleh Dr. Faezhanim daripada Poliklinik Komuniti Ayer Keroh, Melaka.
6. Pemeriksaan Kesihatan telah diberikan oleh Jururawat Terlatih daripada Poliklinik Komuniti Ayer Keroh, Melaka.
7. Ceramah "Pengendalian Bahan Kimia Berbahaya" oleh Setiausaha JKPP Melaka, Cik Norleen Bt. Abd. Manaf.
8. Pertandingan "Treasure Hunt OSH" yang melibatkan semua kakitangan JKM Melaka.
9. Pertandingan Kebersihan yang melibatkan semua makmal, setor dan pejabat. Program-program Minggu OSH tahun ini telah mendapat sambutan yang amat mengalakkan daripada semua kakitangan JKM Melaka. Disertakan beberapa gambar sepanjang aktiviti Minggu OSH 2010.



Lab Safety and Equipment

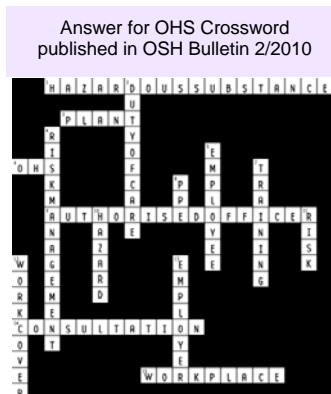


Across Clues

- 4. You must rinse your eyes at the _____ station for 15 min if you get chemicals in your eye
- 5. Students must follow all _____ procedures in the lab
- 9. _____ must be used with caution
- 11. Eye protection
- 12. A needle that contains the blood of a person infected with HIV is an example of a _____
- 13. A toxic chemical that cause death if ingested
- 15. A substance that is flammable can cause a _____
- 16. _____ glassware cannot be disposed of in the regular garbage container

Down Clues

- 1. Used when handling chemicals
- 2. _____ eat or drink in the science lab
- 3. Measures the mass of a substance
- 6. A compressed gas can _____
- 7. If there is a _____ you must notify your teacher and use a spill kit for proper clean up
- 8. Used to hold small amounts of a chemical
- 10. Used to protect you from chemical spills
- 14. A substance that increases the severity of a fire



LAB SAFETY TIPS

- 1 | THINK SAFETY FIRST**
- 2 | KNOW EMERGENCY RESPONSES**
- 3 | KNOW WHAT YOU'RE WORKING WITH**
- 4 | USE THE SMALLEST POSSIBLE AMOUNT**
- 5 | FOLLOW ALL SAFETY PROCEDURES**
- 6 | REPORT DANGEROUS ACTIVITIES OR SITUATIONS**
- 7 | STORE AND HANDLE HAZARDOUS MATERIALS SAFELY**
- 8 | IF YOU DON'T KNOW... ASK!**

WORKING WITH HAZARDOUS MATERIALS

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