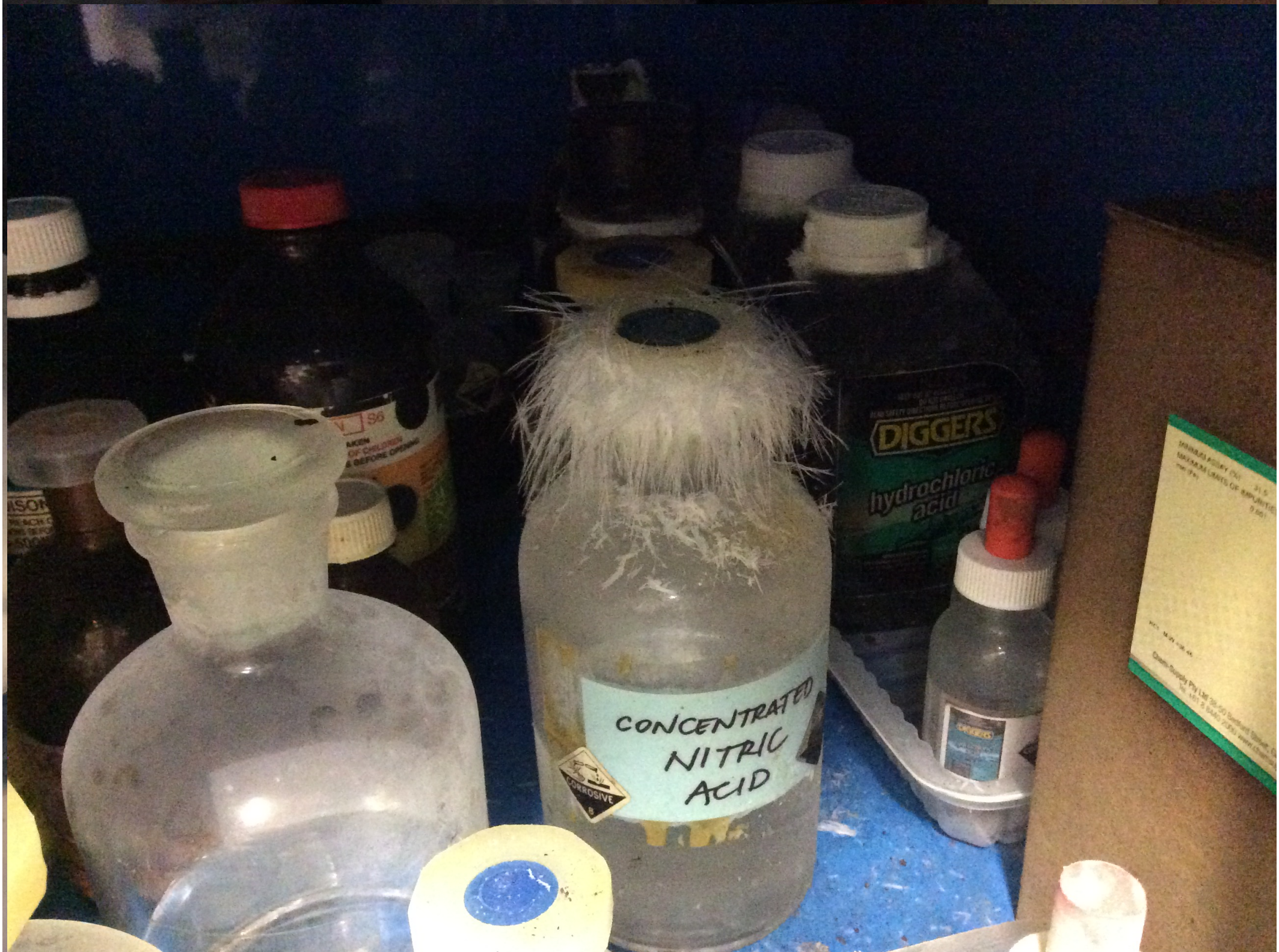
Michael Pola Envirostore Chemical Consulting
sales@envirostore.com.au 0419 566 129


DIGGERS
hydrochloric acid
CONCENTRATED NITRIC ACID
CORROSIVE
8


CONCENTRATED
Hydrochloric Acid
HCl
Corrosive. Wear protective
Rinse affected areas with
water. Give water to drink if
Seek medical assistance
Class 8
Concentrated

- school labs have special problems not usually found in other laboratories; the age and inexperience of the students and many labs are multi functional eg food science, biology, chemistry, environmental science etc
- there are exemptions to some legislation applying to the school lab.,such as the dangerous goods (storage and handling) regulations but the occupational health and safety regulations do apply. What does this mean for schools?

- the OH and S regulations introduced the hazardous substances regulations and for school laboratories this entails keeping a hazardous chemical register or manifest, doing risk assessments and risk controls and keeping material safety data sheets on file for those chemicals handled in the laboratory.
- additionally we recommend that good chemical management addresses the following:

1-correct storage and labelling of your chemicals. A knowledge of the chemical properties and how to segregate within your store. These are the dangerous goods requirements which apply to storage and transport , not to actually using(and being exposed to) the chemicals which is covered by the hazardous substances requirements.The dg code provides guidance for correct and safe storage based on the chemical and physical properties of the chemicals, ie flammable, toxic, radioactive, corrosive etc


TOXIC
6


FLAMMABLE
LIQUID
3


OXIDIZING
AGENT
5.1


DANGEROUS WHEN
WET
4


NON-FLAMMABLE
NON-TOXIC
GAS
2


CORROSIVE
8


FLAMMABLE
SOLID
4


MISCELLANEOUS
DANGEROUS
GOODS
9


EXPLOSIVE
1


TOXIC GAS
2


ORGANIC
PEROXIDE
5.2


SPONTANEOUSLY
COMBUSTIBLE
4

for the Transport of

Dangerous Goods

by Road & Rail

Table 9.1 Incompatibility based on Classification

Goods are considered incompatible if, in this table, any of the following conditions are met:

(a) the primary hazard of one is incompatible with the primary hazard of the other; or

(b) the primary hazard of one is incompatible with a subsidiary risk of the other; or

(c) a subsidiary risk of one is incompatible with a subsidiary risk of the other.

CLASS or DIVISION	1	2.1	2.2	2.3	3	4.1	4.2	4.3	5.1	5.2	6	7 (7)	8	9	Food or Food empties	Fire-risk substances or Combustible liquids
1 Explosives	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
2.1 Flammable gas	(1)	0	0(3)	0	0(2)	N	N	N	N	N	0	N	0	0	0	0
2.2 Non-flammable non-toxic gas	(1)	0(3)	0	0(4)	0	0	N	0	0	N	0	0	0	0	0	0
2.3 Toxic gas	(1)	0	0(4)	0	N	0	N	0	N	N	0	0	0	0	N(8)	0
3 Flammable liquids	(1)	0(2)	0	N	0	0	N	0	N	N	0(6)	N	0	0	0	0
4.1 Flammable solids	(1)	N	0	0	0	0	N	0	N	N	0	N	0	0	0	0
4.2 Spontaneously combustible	(1)	N	N	N	N	N	0	0	N	N	0	N	0	0	0	0
4.3 Dangerous when wet	(1)	N	0	0	0	0	0	0	N	N	0	N	N	0	0	0
5.1 Oxidizing substances	(1)	N	0	N	N	N	N	N	0(6)	N	0(5)	N	N	0(5)	0	N
5.2 Organic peroxides	(1)	N	N	N	N	N	N	N	N	0	0(5)	N	N	0(5)	0	N
6 Toxic or Infectious substances	(1)	0	0	0	0(5)	0	0	0	0(5)	0(5)	0	0	0(6)	0	N(8)	0
7 Radioactive material (7)	(1)	N	0	0	N	N	N	N	N	N	0	0	N	0	N(8)	0
8 Corrosive substances	(1)	0	0	0	0	0	0	N	N	N	0(6)	N	0(6)	0	N(8)	0
9 Miscellaneous dangerous goods	(1)	0	0	0	0	0	0	0	0(5)	0(5)	0	0	0	0	0	0

IN THIS TABLE:

0 means compatible unless a numbered exception applies.

N means incompatible unless a numbered exception applies.

Exceptions:

(1) Explosives are incompatible in transport with all other dangerous goods in all quantities except as provided in the Australian Explosives Code or, for Division 1.4S, where 9.1.2.2.2 applies.

(2) Division 2.1 and Class 3 are incompatible in transport if both are in tanks or other receptacles with a capacity individually exceeding 500 L.

(3) Division 2.1 is incompatible in transport with gases of Division 2.2 that have a subsidiary risk 5.1 except when all are packed in cylinders or pressure drums not exceeding 500 L capacity.

(4) Division 2.3 is incompatible in transport with gases of Division 2.2 that have a subsidiary risk 5.1 except when all are packed in cylinders or pressure drums not exceeding 500 L capacity.

(5) Class 5 is incompatible with those Class 6 or Class 9 materials that are fire-risk substances.

(6) Some specific examples of these Classes or Divisions are incompatible —see Table 9.2.

(7) See the Code of Practice for the Safe Transport of Radioactive Substances regarding the compatibility of Class 7 with undeveloped photographic film, personnel and mail.

(8) Food and food packagings are incompatible with these classes in all quantities, except where

2- good housekeeping. Manifests or registers as required ,spill kits and safety gear, keeping eg msds(now just Safety Data Sheets) and risk assessments. A typical chemical manifest is shown which will cover the requirements. It should be updated each time stocks change and may be asked for by a WorkCover inspector. He may also wish to see the SDS register. This can be kept as hard copy or on a computer but must be readily available.Where the site has dangerous goods a manifest which is more detailed is required.The register is a list of the haz substances and msds

Dangerous Goods, Hazardous Substances and Chemical Inventory

Cas No.	Product Name	Class	MSDS Date	Qty Kg/l	Package Group	Sub risk	UN No.	Hazsub Y/N	Poison Schedule	AQIS	Hazchem	Carcinogen
64-19-7	Acetic acid	8	1/98	2.5l	II	3	2789	Y	5		2P	
50-78-2	Acetyl salicylic acid	NA	5/00	3				Y				
7664-41-7	Ammonia (gas)	2.3	1/98	R cyl	NA	8	1005	Y	5 or 6		2PE	
	Ammonia solution	8	1/98	5l	III		3672	Y<10%			2P	
71-43-2	Benzene	3	1/98	2.5l	II		1114	Y	7		3WE	Class 1
10043-52-4	Calcium chloride	NA						N				
630-08-0	Carbon monoxide (gas)	2.3	1/98	D cyl	NA	2.1	1016	Y			2SE	
67-66-3	Chloroform	6	1/98	2.5l	II		1888	Y	2 or 4 or 7		2Z	
50-99-7	D-Glucose	NA	1/98	10 kg				N				
3615-56-3	D-Sorbose	NA	2/00	1 kg				N				
7664-39-3	Hydrofluoric acid	8	1/98	1l	I	6.1	1790	Y	5 or 6 or 7		4WE	
1333-74-0	Hydrogen (gas)	2.1	1/98	Gcyl	NA		1049	N			2SE	
7722-84-1	Hydrogen peroxide	5.1	1/98	0.5l	II	8	2014	Y	5 or 6		2P	
87-79-6	L-Sorbose	NA	11/99	0.25 kg				N				
74-82-8	Methane (gas)	2.1	1/98	D cyl	NA		1971	N			2SE	
7783-54-2	Nitrogen trifluoride	2.2	1/98	Lec bot	NA	5.1	2451	Y			2PE	
7647-14-5	Sodium chloride	NA	1/98	50 kg				N				

Laboratory / Section / Workshop:

Supervisor:

Date:

3- good waste disposal procedures. Often overlooked but the chemical properties of waste chemicals are identical with the normal chemicals and the requirements for correct storage and handling apply equally.Chemical waste includes empty containers that have held chemicals, spill clean up materials such as rags or used absorbents, old and out of date chemicals or bottles without labels. Labelling of containers used to accumulate wastes eg solvent wastes, heavy metal wastes etc are often inadequate. Remember the label MUST be unambiguous and tell the full "story"


Zone O
Zone O
Zone O
Glucod
UNILAB
MSD
McKENZIE'S


STORE AT 2-8°C
SIGMA
"ALBUMINS"
"DO NOT PINCH ANY PLEASE".
TANYA
CORROSIVE
JULIE
DEAE-Sepharose
ALEX
Sepharose 4B

These three broad rules (storage, housekeeping and disposal habits) are the key to good practice in the chemical laboratory. Some working laboratories are shown next and we will flesh out some of the points raised.


WARNING
ICE5
ICC6
Methanol

- The Safety Data Sheet aka the MSDS. Before you can do any risk assessments or labelling compliant with the GHS, you need to know what chemical you will potentially be exposed to and what are the actual risks and potential hazards. The GHS aims to communicate chemical hazards in an internationally consistent manner and this information is obtained from the SDS.

- The importance of the SDS will grow once the GHS becomes implemented which is from 1/1/2017.

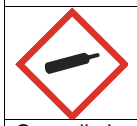
- Examples of SDS which have incorporated GHS requirements are shown next as well as an example of an old MSDS which is patently wrong . Unfortunately the level of compliance of both MSDS and SDS remains hit and miss as does the actual information they contain. Consider the MSDS to be pre GHS and the SDS to comply with GHS

- The GHS requirements do seem to have reduced some of the more spurious claims on a safety data sheet as the actual hazards statements and associated precautional statements are now stipulated in much more detail and can't be omitted or reduced. Lets have a look at the GHS

APPENDIX F – HAZARD PICTOGRAMS

The nine hazard pictograms that are representative of the physical, health and/or environmental hazards are shown below:

Pictogram	Hazard
	- Explosive
Exploding bomb	
	- Flammability
Flame	
	- Oxidising
Flame over circle	
	- Chronic Health hazards
Health hazard	
	- Environmental hazard
Environment	

Pictogram	Hazard
	- Gases under pressure
Gas cylinder	
	- Corrosive
Corrosion	
	- Acute toxicity
Skull and crossbones	
	- Certain health Hazards (e.g. sensitisers)
Exclamation mark	

Chronic health hazards include carcinogens, reproductive toxins, mutagens, specific target organ toxicants, and aspiration toxicants.

The Globally Harmonised System of Classification and Labelling of Chemicals-what is it and what parts will apply to schools

-it will be introduced on a State basis from 1/1/2017. Some States have yet to mandate the GHS (Victoria for example) but still require the communication of chemical hazards.

-it introduces, via the SDS, signal words, hazard statements and precautionary statements that replace the risk ® and safety phrases in use on the MSDS.

-there are nine pictograms to be used in place of the dangerous goods diamonds (if the chemical was a dangerous good) They refer to environmental, physical and health hazards

-it does not replace the dg system for transport of chemicals and the dg classification remains in place and is still a valuable tool to use for safe storage of laboratory chemicals.

-you will NOT have to replace or dispose of chemicals in your laboratory that are labelled under the old system

-it is incumbent on manufacturers, importers and suppliers to supply a GHS compliant safety data sheet, a determination if a chemical is hazardous, classification according to the GHS and correctly labelled hazardous chemicals

-from 1/1/2017 suppliers must supply hazardous chemicals which have been classified and users must only accept correctly labelled and classified chemicals.

-pictograms OR dg diamonds can be used but not on the same label

-precautionary statements address prevention, response, storage, disposal and a general statement as required

-there is a signal word for each label, either danger or warning

- the minimum information that has to appear on a label for small (< 500mL) containers is the chemical name or product identifier, a pictogram or hazard statement. Guidance for this is provided in the Code of Practice for labelling

- reduced labelling is also permitted for wastes although it is recommended to have as much information as is relevant to the hazards

- of the nine hazard classes as listed by the pictograms, there are further hazard categories within some of the classes-see Appendix D of the above referenced Code of Practice. For each hazard category within each hazard class the relevant signal word, pictogram, hazard statement and precautionary statements are provided in this Appendix.

- there are additional non GHS hazard statement for physical and health hazards which are used in Australia. These are in Appendix D at the end. They are to be used as applicable and include such hazards as explosive when dry, react violently with water and contact with water liberates a flammable gas

Some useful references:

ADG Code 7th edition http://www.ntc.gov.au/ViewPage.aspx?documentid=01147

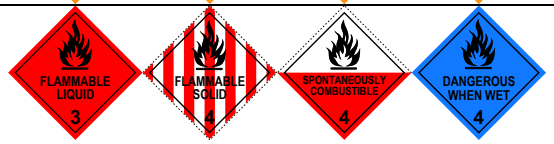
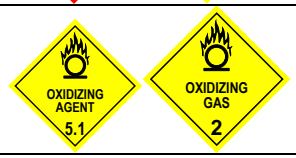
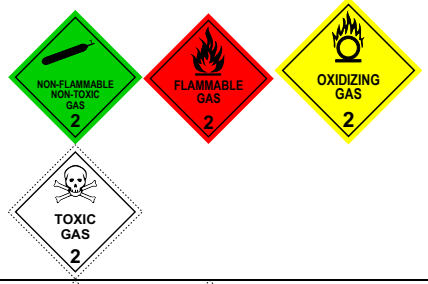
GHS revision 3 official text-this is the current version
http://www.unece.org/trans/danger/publi/ghs/ghs_welcome_e.html

GHS pictograms for download:
www.unece.org/trans/danger/publi/ghs/pictograms.html

The best reference of all is www.safeworkaustralia.gov.au . The above Code of Practice for Labelling and there is also one for preparation of Safety Data Sheets are also found here within the WHS section. This site is a wealth of information and has a list of the actual hazardous substances, the hazardous substances information service or HSIS for download. The HSIS can be downloaded with a search function and is the first port of call to see if a particular chemical is on the list.

APPENDIX G – COMPARISON OF HAZARD PICTOGRAMS WITH ADG CODE CLASS LABELS

The table below compares hazard pictograms from the GHS with the corresponding ADG Code class labels.

Hazard Pictograms	GHS Hazard	Dangerous Goods class labels (pictograms)	Dangerous goods classes
	Explosives Self-reactives Organic peroxides		Explosive
	Flammables Self-reactives Pyrophorics Self-heating Emits flammable gas in contact with water Organic peroxides	 	• Flammability (Liquid, Solid or Gas) • Pyrophoric, • Emits Flammable Gas • Organic Peroxide
	Oxidisers		• Oxidiser • Oxidising gas
	Gases under pressure		Non-toxic non-flammable gas, flammable gas, oxidising gas, toxic gas
	Acute toxicity		• Acute toxicity • Acute Toxic gas
	Acute toxicity Skin irritants Eye irritants Skin sensitisers	No equivalent	

	Carcinogens Respiratory sensitisers Reproductive toxicants Target organ toxicants Germ cell mutagens	No equivalent	
	Eye corrosion Skin corrosion Corrosive to metal		Corrosive to metals
	Aquatic toxicity. Not covered within the scope of workplace hazardous chemicals requirements		Environmental hazard
No equivalent hazard pictogram			Miscellaneous dangerous goods
Not covered within the scope of workplace hazardous chemicals requirements			Infectious
Not covered within the scope of workplace hazardous chemicals requirements			Radioactive

- Some examples of safety data sheets using the GHS are shown and the differences in compliance can be seen. Treat any sds with a critical eye although these examples are an improvement on some MSDS we have seen in the past, many would be better described as works of fiction or worse.

- The first is an example of a wrong MSDS

Section 1 - Identification of The Material and Supplier

J.C. & A.T. Searle Pty Ltd
4914 D'aguilar Highway (PO Box 183)
Kilcoy, Qld 4515

Phone: +61 7 5422 3000 (BH)
Fax: +61 7 5497 1997
www.searles.com.au

Chemical nature: Elemental sulfur.
Trade Name: **Searles Sulphur Powder**
Product Use: Soil amendment/fungicide for gardens and other horticultural purposes.
Creation Date: **August, 2007**
This version issued: **August, 2010** and is valid for 5 years from this date.

Section 2 - Hazards Identification

Statement of Hazardous Nature

This product is classified as: F, Flammable. Not classified as hazardous according to the criteria of SWA.

Dangerous according to the Australian Dangerous Goods (ADG) Code.

Risk Phrases: R10. Flammable.
Safety Phrases: S16, S22, S25. Keep away from sources of ignition - No smoking. Do not breathe dust. Avoid contact with eyes.
SUSDP Classification: None allocated.
ADG Classification: Class 4.1: Flammable solids.
UN Number: 1350, SULPHUR

Emergency Overview

Physical Description & Colour: Yellow powdered solid.
Odour: Mild sulfurous odour.
Major Health Hazards: no significant risk factors have been found for this product.

Potential Health Effects

Inhalation:

Short Term Exposure: Long term inhalation of high amounts of any nuisance dust may overload lung clearance mechanism. Available data indicates that this product is not harmful. However product may be mildly irritating, although unlikely to cause anything more than mild transient discomfort.
Long Term Exposure: No data for health effects associated with long term inhalation.

Skin Contact:

Short Term Exposure: Available data indicates that this product is not harmful. It should present no hazards in normal use. In addition product is unlikely to cause any discomfort in normal use.
Long Term Exposure: No data for health effects associated with long term skin exposure.

Eye Contact:

Short Term Exposure: This product may be mildly irritating to eyes, but is unlikely to cause anything more than mild discomfort which should disappear once product is removed.
Long Term Exposure: No data for health effects associated with long term eye exposure.

Ingestion:

Short Term Exposure: Significant oral exposure is considered to be unlikely. This product is unlikely to cause any irritation problems in the short or long term.
Long Term Exposure: No health effects associated with long term minor ingestion.

Carcinogen Status:

SWA: No significant ingredient is classified as carcinogenic by SWA.
NTP: No significant ingredient is classified as carcinogenic by NTP.
IARC: No significant ingredient is classified as carcinogenic by IARC.

Incompatibilities: Sulphur may be explosive on contact with oxidising agents. Will corrode damp steel. Reacts violently with finely divided metals, alkalis metals and mineral acids.
Fire Decomposition: Oxides of sulfur (sulfur dioxide is a respiratory hazard) and other sulfur compounds. Most will have a foul odour.
Polymerisation: This product will not undergo polymerisation reactions.

Section 11 - Toxicological Information

Local Effects:
Target Organs: There is no data to hand indicating any particular target organs.

Classification of Hazardous Ingredients

Ingredient	Risk Phrases

No ingredient mentioned in the HSIS Database is present in this product at hazardous concentrations.

Section 12 - Ecological Information

This product is unlikely to adversely effect the environment. Sulfur is found naturally in many parts of the world.

Section 13 - Disposal Considerations

Disposal: There are many pieces of legislation covering waste disposal and they differ in each state and territory, so each user must refer to laws operating in their area. In some areas, certain wastes must be tracked. The Hierarchy of Controls seems to be common - the user should investigate: Reduce, Reuse, and Recycle and only if all else fails should disposal be considered. Note that properties of a product may change in use, so that the following suggestions may not always be appropriate. The following may help you in properly addressing this matter for this product. This product may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. If it has been contaminated, it may be possible to reclaim the product by filtration, distillation or some other means. If neither of these options is suitable, consider controlled incineration, or landfill.

Section 14 - Transport Information

ADG Code: 1350, SULPHUR
Hazchem Code: 1Z
Special Provisions: 242
Limited quantities: ADG 7 specifies a Limited Quantity value of 5 kg for this class of product.
Dangerous Goods Class: Class 4.1, Flammable solids.
Packaging Group: III
Packaging Method: IBC08, LP02

Class 4.1 Flammable Solids shall not be loaded in the same vehicle or packed in the same freight container with Classes 1 (Explosives), 2.1 (Flammable Gases), 4.2 (Spontaneously Combustible Substances), 5.1 (Oxidising Agents), 5.2 (Organic Peroxides), or 7 (Radioactive Substances). They may however be loaded in the same vehicle or packed in the same freight container with Classes 2.2 (Non-Flammable, Non-Toxic Gases), 2.3 (Toxic Gases), 3 (Flammable liquids), 4.3 (Dangerous When Wet Substances), 6 (Toxic Substances), 8 (Corrosive Substances) 9 (Miscellaneous Dangerous Goods) , Foodstuffs and foodstuff empties.

* **NB**: Special Provision (SP) 242 of the Australian Dangerous Goods Code states that sulfur is not subject to the provisions of the Code when transported in quantities of less than 400kg per package or when it has been formed to a specific shape (eg prills, granules, pellets, pastilles or flakes).

Section 15 - Regulatory Information

AICS: This product is compliant with NICNAS regulations.

Section 16 - Other Information

This MSDS contains only safety-related information. For other data see product literature.

Acronyms:

ADG Code	Australian Code for the Transport of Dangerous Goods by Road and Rail, 7th Edition
AICS	Australian Inventory of Chemical Substances
SWA	Safe Work Australia, formerly ASCC and NOHSC
CAS Number	Chemical Abstracts Service Registry Number

Cas No	Substance Name	Classification	Labelling	Cut Offs	Source	Standard Name	TWA ppm	TWA mgm3	STEL ppm	STEL mgm3	Carcinogen Category	Notices
9014-01-1	Subtilisins [(Proteolytic enzymes)]	Xi; R 37/38 R41 Xn; R42	Xn ; R: 37/38 - 41 - 42, S: (2) - 22 - 24 - 26 - 36/37/39	Conc>=20%: Xn; R42; R37/38; R41 >=10%Conc<20%: Xn; R42; R41 >=5%Conc<10%: Xn; R42; R36 >=1%Conc<5%: Xn; R42	Eu	-	-	-	-	-	-	-
108-30-5	Succinic anhydride	Xn; R22 Xi; R36/37	Xn R: 22-36/37 S: (2-)25-46	Conc>=5%: Xn; R22; R36/37 >=1%Conc<5%: Xi; R36/37	Eu	-	-	-	-	-	-	-
95-06-7	Sulfallate (ISO) [2-Chlorallyl N,N-dimethyldithiocarbamate]	Carc. Cat. 2; R45 Xn; R22 N; R50-53	T ; N ; R: 45 - 22 - 50/53, S: 53 - 45 - 60 - 61; Note: E	Conc>=25%: T; R45, R22 >=0.1%Conc<25%: T; R45	Eu	-	-	-	-	-	-	-
260408-02-4	4,4'-Sulfonylbisphenol, polymer with ammonium chloride(NH4Cl), pentachlorophosphorane and phenol	R53	R: 53 S: 61		Eu	-	-	-	-	-	-	-
141776-32-1	Sulfosulfuron [1-(4,6-Dimethoxypyrimidin-2-yl)-3-(2-ethylsulfonylimidazo[1,2-a]pyridin-3-yl)sulfonylurea]	N; R50-53	N R: 50/53 S: 60-61		Eu	-	-	-	-	-	-	-
3689-24-5	Sulfotep (ISO) [O,O,O,O-Tetraethyl dithiopyrophosphate; TEDP]	T+; R27/28 N; R50-53	T+; N R: 27/28-50/53 S: (1/2-)23-28-36/37-45-60-61	Conc>=7%: T+; R27/28 >=1%Conc<7%: T; R24/25 >=0.1%Conc<1%: Xn; R21/22	Eu; A	Sulfotep	0.007	0.1	-	-	-	Sk
7704-34-9	Sulfur	Xi; R38	Xi R: 38 S: (2-)46	Conc>=20%: Xi; R38	Eu	-	-	-	-	-	-	-
7446-09-5	Sulfur dioxide [Sulphur dioxide]	T; R23 C; R34	T R: 23 - 34 S: (1/2) - 9 - 26 - 36/37/39 - 45	Conc>=20%: T; R23; R34 >=5%Conc<20%: C; R20; R34 >=0.5%Conc<5%: Xi; R36/37/38	Eu; A	Sulphur dioxide	2	5.2	5	13	-	-
5329-14-6	Sulphamic acid [Sulfamic acid; Sulphamidic acid]	Xi; R36/38 R52-53	Xi ; R: 36/38 - 52/53, S: (2) - 26 - 28 - 61	Conc>=20%: Xi; R36/38	Eu	-	-	-	-	-	-	-

safe work australia

Hazardous Substances Information System

Consolidated Lists

Alphabetical Index

Issued 10 May 2013.

This list reflects the entries in the HSIS database at
http://hsis.safeworkaustralia.gov.au/HazardousSubstance

696 pages

SAFETY DATA SHEET

1. Identification

Product identifier **Dextroamphetamine Sulfate**

Other means of identification

Catalog number	1180004
Chemical name	Benzeneethanamine, alpha-methyl-, (S)-, sulfate (2:1)
Synonym(s)	Dexamphetamine sulfate

Recommended use Specified quality tests and assay use only.

Recommended restrictions Not for use as a drug. Not for administration to humans or animals.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company name	U. S. Pharmacopeia	
Address	12601 Twinbrook Parkway Rockville MD 20852-1790 United States	
Telephone	RS Technical Services	301-816-8129
Website	www.usp.org	
E-mail	RSTECH@usp.org	
Emergency phone number	CHEMTREC within US & Canada	1-800-424-9300
	CHEMTREC outside US & Canada	+1 703-527-3887

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards

Acute toxicity, oral	Category 2
Reproductive toxicity	Effects on or via lactation
Specific target organ toxicity, single exposure	Category 1 (Central Nervous System, Cardiovascular system)

Environmental hazards Not classified.

OSHA defined hazards Not classified.

Label elements

Signal word	Danger
Hazard statement	Fatal if swallowed. May cause harm to breast-fed children. Causes damage to organs (Central Nervous System, Cardiovascular system).

Precautionary statement

Prevention	Obtain special instructions before use. Avoid contact during pregnancy/while nursing. Wash thoroughly after handling.
Response	If swallowed: Immediately call a poison center/doctor. Rinse mouth. If exposed: Call a poison center/doctor. If exposed or concerned: Get medical advice/attention.
Storage	Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC) Not classified.

Other hazards which do not result in classification None known.

3. Composition/information on ingredients

Substance

- the safe work australia web site is safeworkaustralia.gov.au

- the site has a chemical look up function and the requirements for safety data sheets and many more useful resources.

SAFETY DATA SHEET

Section 1 - Identification of The Material and Supplier

Landmark Operations Ltd
24-26 Hydrive Close
Dandenong, Vic 3175
Phone: (03) 9799 9929 (office hours)
Fax: (03) 9799 9939

Chemical nature: Water solution of magnesium sulfate.
Trade Name: **Magsulf**
Product Use: Magnesium sulfate injection. For animal use only.
Creation Date: **May, 2013**
This version issued: **May, 2013** and is valid for 5 years from this date.

Section 2 - Hazards Identification

Statement of Hazardous Nature

This product is classified as: Not classified as hazardous according to the criteria of SWA.

Not a Dangerous Good according to the Australian Dangerous Goods (ADG) Code.

Risk Phrases: Not Hazardous - No criteria found.
Safety Phrases: S25. Avoid contact with eyes.
SUSMP Classification: None allocated.
ADG Classification: None allocated. Not a Dangerous Good under the ADG Code.
UN Number: None allocated

GHS Signal word: NONE. Not hazardous.

PREVENTION

P102: Keep out of reach of children.

RESPONSE

P353: Rinse skin or shower with water.
P301+P330+P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P332+P313: If skin irritation occurs: Get medical advice.
P337+P313: If eye irritation persists: Get medical advice.
P370+P378: Not combustible. Use extinguishing media suited to burning materials.

STORAGE

P402+P404: Store in a dry place. Store in a closed container.
P411+P235: Store at temperatures not exceeding 30°C. Keep cool.

DISPOSAL

P501: Dispose of small quantities and empty containers by wrapping with paper and putting in garbage. For larger quantities, if recycling or reclaiming is not possible, use a commercial waste disposal service.

Emergency Overview

Physical Description & Colour: Clear, colourless liquid.
Odour: No odour.
Major Health Hazards: no significant risk factors have been found for this product.

Potential Health Effects

SAFETY DATA SHEET

ARYSTA LIFESCIENCE COPPER OXYCHLORIDE 50 WP FUNGICIDE/BACTERICIDE

Version	Revision Date:	MSDS Number:	Country: AU
1.6	16.03.2016	000000037354	Language: EN

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : ARYSTA LIFESCIENCE COPPER OXYCHLORIDE 50 WP FUNGICIDE/BACTERICIDE

Product code : 000000037354

Details of the supplier of the safety data sheet

Company: Arysta LifeScience Australia Pty Ltd
c/o Level 7, 435 King William Street
Adelaide SA
Australia
5000
Telephone : + 61 8 8112 0900

Prepared by sds.request@arysta.com

Further information for the safety data sheet :
sds.request@arysta.com

1.4 Emergency telephone number

Emergency telephone number: +61 2801 44558, ORICA : 1800 033 111 (24 hr Service)
For advice, contact a Poisons Information Centre (Phone: Australia 131 126 or New Zealand 0800 764 766) or a doctor at once.
For additional emergency telephone numbers see section 16 of the Safety Data Sheet.

Recommended use of the chemical and restrictions on use

Recommended use : Fungicide

Restrictions on use : Agriculture
For professional users only.
APVMA No: 66415

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Acute toxicity (Inhalation) : Category 4

GHS Label element

Hazard pictograms :

Signal word : Warning

Hazard statements : H332 Harmful if inhaled.

Precautionary statements : **Prevention:**
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P271 Use only outdoors or in a well-ventilated area.
Response:
P304 + P340 + P312 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.

Other hazards which do not result in classification

Hazardous substance
Dangerous goods
Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature : Fungicide

Hazardous components

Chemical Name	CAS-No.	Concentration (% w/w)
Copper chloride, Mixture with copper oxide (CuO), Hydrate	1332-40-7	>= 60 - <= 100

SECTION 4. FIRST AID MEASURES

General advice :
For advice, contact a Poisons Information Centre (Phone: Australia 131 126 or New Zealand 0800 764 766) or a doctor at once.

If inhaled : Remove victim to fresh air and keep at rest in a position comfortable for breathing.
If not breathing, give artificial respiration.
Call a physician or poison control centre immediately.
If breathing is difficult, give oxygen.
Keep respiratory tract clear.

ACUTE TOXICITY - INHALATION

Symbol
Exclamation mark

Hazard category	Signal word	Hazard statement
4	Warning	H332 **Harmful if inhaled**

Precautionary statements			
Prevention	**Response**	**Storage**	**Disposal**
P261 **Avoid breathing dust/fume/gas/mist/ vapours/spray.** Manufacturer/supplier or the competent authority to specify applicable conditions. P271 **Use only outdoors or in a well-ventilated area.**	P304 + P340 **IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.** P312 **Call a POISON CENTER or doctor/physician if you feel unwell.**		

SAFETY DATA SHEET

ARYSTA LIFESCIENCE COPPER OXYCHLORIDE 50 WP FUNGICIDE/BACTERICIDE

Version	Revision Date:	MSDS Number:	Country: AU
1.6	16.03.2016	000000037354	Language: EN

SECTION 15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

R-phrase(s)	:	R20	Harmful by inhalation.
		R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
S-phrase(s)	:	S22	Do not breathe dust.
		S57	Use appropriate container to avoid environmental contamination.
		S60	This material and its container must be disposed of as hazardous waste.
Standard for the Uniform Scheduling of Medicines and Poisons	:	Schedule 6	
Prohibition/Licensing Requirements	:	There is no applicable prohibition or notification/licensing requirements, including for carcinogens under Commonwealth, State or Territory legislation.	

SECTION 16. OTHER INFORMATION

Pfaltz & Bauer
RARE AND FINE CHEMICALS
www.pfaltzandbauer.com

SAFETY DATA SHEET

SECTION 1: CHEMICAL PRODUCT and COMPANY IDENTIFICATION

Product Name:	Lead phosphite dibasic
Product Code:	L02060
Supplier:	Pfaltz & Bauer, Inc. 172 E. Aurora Street Waterbury, CT 06708 USA
Phone:	203 574-0075
Fax:	203 574-3181
Emergency Phone:	CHEMTREC, US: 1-800-424-9300 CHEMTREC, International: 1-703-527-3887

SECTION 2: HAZARDS IDENTIFICATION

Statements of Hazard:	Flammable solid, Toxic, Irritant
Acute Health Hazard:	Irritant to eyes, skin, mucous membranes and respiratory system. Toxic if swallowed. May be harmful by inhalation or skin absorption.
Chronic Health Hazard:	Target organ effect
HMIS Rating:	H:3 F:2 P:2
NFPA Rating:	H:3 F:2 R:2

To the best of our knowledge, the toxicological properties of this chemical have not been thoroughly investigated. Use appropriate procedures and precautions to prevent or minimize exposure.

Pictogram:

Signal Word: Danger

Hazard Statement(s):

H228 Flammable solid.
H372 Causes damage to organs through prolonged or repeated exposure.
H360 May damage fertility or the unborn child.
H301 Toxic if swallowed.
H312 Harmful in contact with skin.
H315 Causes skin irritation.
H319 Causes serious eye irritation.

H332 Harmful if inhaled.
H335 May cause respiratory irritation.

Precautionary Statement(s): **P210** Keep away from heat/sparks/open flames/hot surfaces. –No smoking.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical/ventilating/lighting equipment.
P270 Do not eat, drink, or smoke when using this product.
P260 Do not breath dust/ fume/ gas/ mist/ vapors/ spray.
P264 Wash skin thoroughly after handling.
P314 Get medical advice/attention if you feel unwell.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician if you feel unwell.
P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P332+P313 If skin irritation occurs: Get medical advice/ attention.

SECTION 3: COMPOSITION/INFORMATION on INGREDIENTS

Chemical Name:	Lead phosphite dibasic
Synonyms:	Trilead dioxide phosphonate; Plumbous phosphite
CAS Number:	12141-20-7
MDL Number:	MFCD00049644
EINECS Number:	235-252-2
Beilstein Registry Number:	Not Available
Molecular Formula:	HO_5PPb_3
Molecular Weight:	733.58
Content:	95 – 100%
Notes:	Not Available

SECTION 4: FIRST AID MEASURES

Eye Contact: Flush eyes with large amounts of water for fifteen minutes. Separate eyelids with fingers. If irritation persists, seek medical attention.

Skin Contact: Wash skin with soap and water. If irritation persists,

the sulphur msds may well have been prepared with all good intentions but the mistakes are there and will cause confusion to anyone using it to prepare a risk assessment. The bottom line is to look at an msds/sds critically and don't just accept it. If a msds shows R and S phrases then it is a hazardous substance. If an SDS has a GHS pictogram with H and P phrases it is also a hazardous substance. You need a valid and hopefully compliant SDS to enable you to prepare risk assessments- a pro forma is provided

Risk Assessment Record for Chemicals – Hazardous Substances/Dangerous Goods

Management Representative:
Health and Safety Representative: Date:

Premises/area/process assessed
Substances assessed

UN Number
MSDS
COMPANY

Hazchem Code
DATE

Relevant Properties[1]
- ☐ Volatility
- ☐ PH
- ☐ Odour

Form
- ☐ Solid
- ☐ Liquid
- ☐ Gas

Classification ☐ Dangerous goods ☐ Hazardous Goods ☐ Other

Description

Brief description (Include how the job is done; whom or what may be exposed to substances; how often and how often they may be exposed

Tasks (steps) involved
- ☐ preparation
- ☐ mixing
- ☐ spraying
- ☐ applying
- ☐ clean up
- ☐ storage

Hazardous Substances
Exposure routes
- ☐ Inhalation
- ☐ Skin
- ☐ Eye
- ☐ Ingestion
- ☐ Injection

Dangerous Substances
Type of hazard
- ☐ Fire
- ☐ Explosion
- ☐ Corrosion
- ☐ Spontaneously Combustion
- ☐ Other

Have any accidents, incidents, near misses or symptoms occurred? ☐ Yes ☐ No *If YES, provide details (substances involved, asks, action taken)*

Is there a risk to people or property? ☐ Yes ☐ No ☐ Not sure

If NO, Reasons
- ☐ existing safety measures and their effectiveness.
- ☐ quantity, concentration, frequency and duration of use/storage
- ☐ observations/results of any tests
- ☐ nature of work and form, and product properties or ingredients
- ☐ incidents, symptoms reported
- ☐ Other – please specify

If YES, there is a risk - refer to risk control worksheet and retain both sheets together.

[1] Relevant properties are properties that may result in risk e.g. volatility (i.e. evaporates readily); pH (corrosive, acid, caustic); odour.
If assessing dangerous goods requirements at the same time, record **all** chemical properties associated with the substance and assess risks associated with these properties.

Risk Control Worksheet

Hazardous / Dangerous Goods

Management Representative:

Health and Safety Representative: Date:

General Information

Plant/area/location:

Substance(s) or job/process/task:

Job/process/task(s):

Person(s) to be responsible:

Safety measure	Action	Term
Elimination		
Substitution		
Isolation		
Engineering		
Administration	Reduce the amount of property or the number of employees exposed Reduce the duration and/or frequency of exposure e.g. through job rotation Reduce the amount of goods/products stored and used Ensure safe interim storage of wastes/products Vacuum or wet sweep to suppress dust being generated Cover containers and make sure lids are attached Clean up spills immediately (includes provision of suitable aids and equipment) Ensure there is no eating, drinking or smoking in areas where substances are used Provide suitable washing facilities Provide First Aid facilities Instruct employees on how to use substances/ equipment safely Other	
Personal protective Equipment	Overalls, aprons, gowns, chemical resistant suits Footwear (enclosed shoes, safety boots) Gloves Chemical resistant glasses (safely glasses) Face shields/masks, respirators (full/partial) Head protection Other	

Definition of Safety Measures (in order of hierarchy)

Elimination.	Eliminate the use of the substance by using a physical process instead of a chemical process
Substitution.	Use a safer substance or a safer form of the substance.
Isolation.	Separate people or property from the substance by distance or barriers.
Engineering.	Use physical controls (such as plant/equipment) that eliminate or reduce the generation of substances; suppress or contain substances; or limit the area of contamination in the event of spills and leaks.
Administration.	Use safe work practices including good housekeeping.
Personal Protective Equipment (PPE)	Provide protective clothing and equipment for employees, supervisors and visitors. NB: items must be compatible with chemicals being used/stored.

NOTES

- This Form can be used to record safety measures to reduce risks with individual substances; or for safety i-neasures to reduce risks associated with an entire job, process or task, or a number of tasks.
- Refer to the risk assessment worksheet/record to assess which substances/jobs/processes/tasks require measures to be implemented.
- Indicate whether safety measures to be put in place are immediate (IM), short term/interim (INT) or long-term (LT) controls.

- Spills and spill kits. One of the most important proactive steps for good laboratory management is to address the question of spills and how you will deal with them. They will happen and can be a simple dropped bottle or splash or more serious like a shelf falling of a wall or a chemical reaction resulting in chemical exposure to personnel.

- Your risk controls must include the facility to adequately deal with chemical spills.

A) INORGANIC MINERAL BASED ABSORBENTS

These include Vermiculite, Attapulgite, Saponite, Kitty Litter, Perlite, Gypsum, Diatomaceous Earth.

These are all non-reactive, inert, inorganic, and generally able to absorb virtually any liquid spill except elemental mercury (see below).

Advantages and disadvantages: vermiculite is light and bulky, attapulgite and similar can get soggy with aqueous liquids and may react with strong mineral acids. Gypsum (calcium sulphate) is best for paints and the heavier organic liquids but is best applied as granules. Diatomaceous earth (aka kieselguhr) can be dusty.

Perlite is an excellent soaker and in combination with vermiculite for example, provides the best all round choice.

B) OTHER INORGANIC ABSORBENTS

Examples of these include activated charcoal, sand, soil and activated alumina.

Charcoal is more of an adsorbent (liquids adhere to the surface of the solid) so you may be able to recover the liquid. These are generally not good all-rounders and usually expensive and more of use as deodorisers. Alumina (aluminium oxide activated or not) is good as an inorganic solid diluent and is good for metal powders to reduce their reactivity (aluminium, magnesium, iron etc)

Sand is a poor absorber and of little use other than for damming a spill. It will usually just make a bigger mess. Same goes for soil and earth.

C) ORGANIC ABSORBENTS

Examples are coconut coir, polypropylene mats and sausages, sawdust, rags, and paper towels
These have restricted usage and are not considered all-rounders. Coconut coir is excellent for oils and is a fire retardant, polypropylene is similar but is more of an adsorbent and comes in many manifestations (mats, booms, sausages, powder etc).
Rags and paper towels are poor absorbers and present a risk of self-ignition with flammable liquids.
Sawdust can be classified as a class 4.1 flammable solid but is` a weak absorbent and is too reactive to be of much use especially with liquid oxidisers.

D) **ELEMENTAL MERCURY**

Do not use powdered sulphur, it doesn't work and will only create a bigger mess. Commercial mercury absorbers such as HgX work well as do the mercury sponge in the lid type models. Granulated zinc (not zinc dust) will form a solid amalgam with mercury and not release mercury vapour. Amalgam can be swept up. Solutions of mercury salts can be treated with lime sulphur, a commercial fungicide which will precipitate the mercury as an insoluble sulphide

E) NEUTRALISERS

For acids use soda ash (anhydrous sodium carbonate) or sodium bicarbonate-when the fizzing stops you know you have added enough. For alkaline spills sodium acid sulphate (from pool shops) is effective. Ammonia solutions can be treated with solid citric acid. Lime as calcium hydroxide not the oxide, is recommended for bromine and hydrofluoric acid and soluble fluorides.

-You can combine one of the absorbents from A) above with a neutraliser to prepare a good all-purpose spill kit.
-Remember the waste collected from a chemical spill is usually chemical waste and requires collection and disposal with your other wastes.
- Look at what chemicals you are going to use and have the required spill kit ready. A valid risk control
-Never reuse used absorbents.

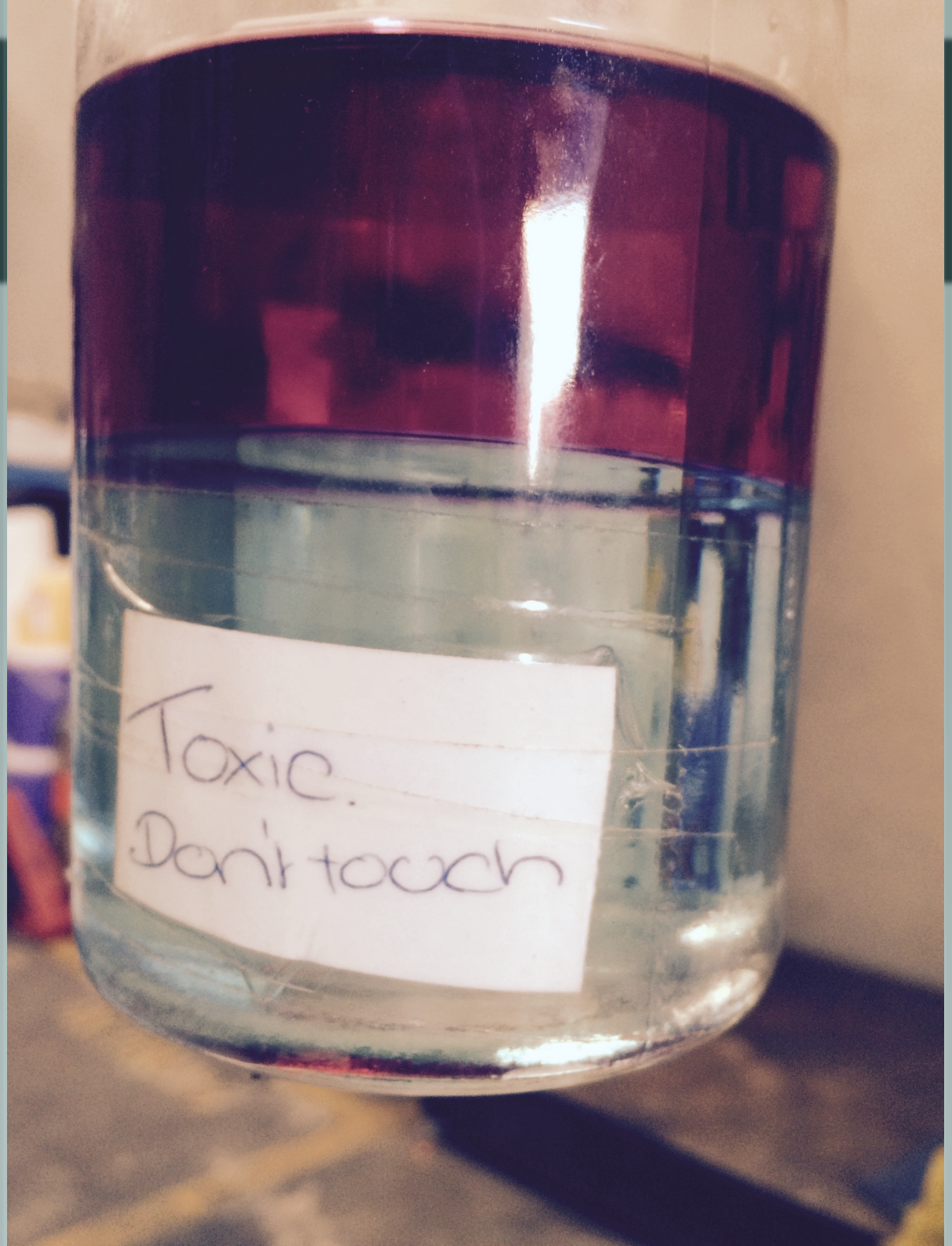
- At the very least you can get away with just having a suitable absorbent such as vermiculite on hand for liquid spills. For chemical splashes water is the single most effective means of flushing. This can be a eye wash bottle, hand hose or safety shower connected to the lab's plumbing or a portable water extinguisher or cylinder.
- Commercial spill kits seem to be very expensive for what you get and can be made up from your own supplies
- Remember spill kit waste is prescribed chemical waste


POISON


VISY

Waste disposal as mentioned previously is often overlooked but the same physical and chemical properties are still present whether or not it is waste. One of problems we encounter is poor packaging for chemical waste. Photographic waste always seems to be accumulated in orange juice bottles for example.Mercury in glass coffee jars. Second hand winchesters with the original label intact. Your chemical disposal contractor will usually provide suitable containers into which you can consolidate your various waste streams and the next slide has some short cuts to assist

Here are some examples of what is sometimes presented for disposal. This sort of packaging runs the risk of being refused by a waste contractor .


Toxic.
Don't touch


-Various-
Iodine 8/6.1
-Potassium Chlorate
5.1
-Nitrate solid
waste 5.1
OXIDIZING
AGENT
5.1
CORROSIVE
8
TOXIC
6


SCHOTT
DURAN
SCHOTT
DURAN
XIDIZING
AGENT
5.1


SCHOTT
DURAN
SCHOTT
DURAN
KIDIZING
AGENT
5.1
-Various-
Iodine
-Potassium
-Nitrate


Waste
Waste
NYLON
WASTE
WASTE
Magnesium
Chloride


NYLON
WASTE
CONTAINS 35% MILK FAT
CORROSIVE
8
KEEP REFRIGERATED AT OR BELOW 4°C
2.2 LITRES
WASTE
Magnesium
Chloride
CONTAINS 18% MILK FAT
INGREDIENTS: LIGHT CREAM, HALAL GELATINE, SOUR CREAM CULTURE
KEEP REFRIGERATED AT OR BELOW 4°C
2.2 LITRES

In House Treatment of Some Chemical Waste Types for School Laboratories

-please keep in mind that there is no definite rule for in house treatments and that the below recommendations should be considered in general terms. Specific treatments certainly do exist and references are provided below . Final disposal will in most cases remain external, you are reducing the amounts for disposal and probably reducing the hazard of your wastes.

-flammable liquids can all be consolidated into a single container. Examples are alcohols, ketone and aldehydes (acetone, formalin) crude oil, vegetable oil, kerosene, turps and thinners, petrol and diesel. etc. If attempting to evaporate any waste flammable liquid to dryness please consider what residue will be produced. Evaporation of diethyl ether should never be attempted . The consolidated solvents should be disposed of via a waste disposal service.

-inorganic solutions containing metals can be mixed provided pH matching is observed. Do not mix acids with alkaline solutions. Do not mix different acids together if nitric is present. Hydrochloric, acetic, phosphoric will generally not react. Sulphuric will get hot if it is mixed with anything aqueous.

-never acidify any solution containing nitrates.

-permanganate solutions can be reduced using a reducing sugar solution such as fructose or glucose. Sucrose is not a reducing sugar. The solution will turn from purple to brown with precipitated manganese dioxide being formed. This solution can then go into the metals solutions.

-oxidisers in solution can be reduced with sodium thiosulphate or sodium metabisulphite . Example being the reduction of chrome VI to chrome III or iodine to iodide

-photographic liquids such as developer, fixer, stop bath etc can generally be added together for external disposal. A suitable container must be used, not fruit juice of milk containers.

Other treatments such as lime addition to precipitate metals as insoluble hydroxides or lime sulphur to neutralise mercuric solutions can be attempted but should be researched or discussed with a disposal professional.

References:

Hazardous Chemicals Disposal Guide ; Margaret-Ann Armour 2nd edition

Destruction of Hazardous Chemicals in the Laboratory; G Lunn and E.B. Sansone 2nd or 3rd edition

Chemicals which are not recommended for School laboratories
December 2008

The following list comprises those chemicals which are not recommended for use in school laboratories. They are either strongly toxic, unstable, highly reactive or considered too dangerous for use by inexperienced personnel. The list is not an official one it is simply based on our professional experience and opinion.

Class 3

-carbon disulphide	very low flash point , highly volatile, very toxic
-diethyl ether	low flash point, easily ignited; aka sulphuric ether.
-benzene	human carcinogen
-toluene	suspected human carcinogen; methyl benzene

Class 4.3

-potassium metal	very vigorous reaction with water
-sodium amide	flammable, strong reaction with water; aka sodamide

Class 4,2

-white phosphorous	flammable, pyrophoric solid, highly toxic; aka yellow phosphorous

Class 5.1

-chlorates	dangerous explosion risk. Explosive mixtures easily formed
-perchlorates	form explosive mixtures with some organic, combustible materials
-ammonium dichromate	explosive when dry.
-perchloric acid	as for perchlorates
-chromium trioxide	strong oxidiser; aka chromic acid. Very toxic
-sodium peroxide	strong oxidiser

Class 6

-arsenic salts	most are schedule poisons
-beryllium salts	many are considered carcinogens
-asbestos	crocidolite, amosite and chrysotile are the three commonoly encountered forms that are human carcinogens. Mounted and sealed specimens are considered safe when intact.
-aniline	strongly toxic
-benzidine	human carcinogen. Used to make dyes
-cadmium salts	all considered to be too toxic
-cyanides	usually fatal if swallowed; special permits required
-napthylamines	both alpha and beta forms considered carcinogens

-chloral hydrate	hypnotic, dangerous to eyes
-dimethyl suphate	suspected carcinogen
-fluorides	can evolve HF if acidified; all are very strongly toxic.
-halogenated solvents	carbon tetrachloride, chloroform, trichloroethylene, trichloroethane. Considered too toxic and are suspected human carcinogens
-mercury salts	highly toxic for most
-picric acid	can be explosive when dry or in contact with metals
-thallium salts	highly toxic
-thorium salts	many are radioactive
-uranium salts	usually strongly toxic and radioactive.

Class 8 acids

-hydrofluoric acid	particularly dangerous.
-formic acid 90%	conc formic acid emits carbon monoxide on aging
-perchloric acid	see under oxidisers

Others calcium hypochlorite (solid pool chlorine) , o-toluidine, sodium azide, anhydrous sodium sulphide ,sodium hydroxide, organic peroxides eg mekp, phenol, nickel salts.