Chemical Storage Checklist

Taking stock of current storage conditions and procedures is the first step in managing a safe chemical storeroom. This checklist format not only facilitates a systematic assessment of storage and housekeeping conditions, but also identifies general and specific areas of concern.

An affirmative answer to each item indicates a satisfactory storage condition.

YES	NO	N/A	STORAGE AREA
			Storage rooms are properly marked or identified.
			Storage rooms are secured whenever not in use and are available only to authorised personnel.
			Storage areas are well illuminated.
			Storage areas are well ventilated.
			Aisles in the storage area are free from obstruction.
			Ladders with handrails are available where needed.
			SHELF STORAGE
			Large bottles and containers are stored on shelves near the floor.
			Containers of chemicals are stored below eye level.
			Where possible, shelves have raised edges or rim guards to prevent the accidental dislodging of containers.
			Reagent bottles or containers do not protrude over the shelf edges.
			Enough space is available so that chemicals are not overcrowded.
			Empty bottles are removed from shelves.
			Shelves are level and stable. Shelving units are securely fastened to wall or floor.
			Shelves are clean – free of dust and chemical contamination.
			STORAGE CONTAINERS
			Storage containers are inspected periodically for rust, corrosion or leakage.
			Damaged containers are removed or repaired immediately.
			Chemicals are kept in airtight bottles, not in beakers or open vessels.
			Stoppers form an airtight seal with containers.
			Stoppers are easily removed from bottles or containers.
			LABELLING OF CHEMICAL CONTAINERS
			All containers are clearly labelled as to its contents.
			Labels are readable and free of encrustation or contamination.
			Labels are firmly attached to containers.
			Chemical containers are labelled with the appropriate hazard warning (e.g. poison, corrosive, etc.).
			All container labels include both date of receipt and group name.
			HOUSEKEEPING
			Cleanliness and order are always maintained in the storage areas.
			Unlabelled, contaminated or undesirable chemicals are properly discarded.
			Chemicals in storage cabinets and on shelves are inspected for decomposition on a regular basis.
			Unused chemicals are never returned to stock bottles.
			Packing materials and empty cartons are immediately removed from the area.
			Waste receptacles are properly marked and easily located.
			Separate disposal containers are available for broken glass.
			EMERGENCY PREPAREDNESS
			Equipment and supplies for cleaning up spills are readily available.
			Fire extinguishers are immediately accessible.
			Fire extinguishers are periodically inspected and maintained.

YES	NO	N/A	STORAGE AREA
			CHEMICAL STORAGE
			Chemicals are not exposed to direct sunlight or localised heat.
			Containers of corrosive chemicals are stored in trays large enough to contain spillage or leakage.
			Chemicals are stored by reactive class (e.g. flammables with flammables, oxidizers with oxidizers).
			Incompatible chemicals are physically segregated from each other during storage.
			1. ACIDS *Common acids include hydrochloric acid, sulfuric acid, nitric acid, chromic acid, acetic acid and hydrofluoric acid. Common bases are ammonium hydroxide, potassium hydroxide (caustic potash) and sodium hydroxide (caustic soda).*
			Acids are segregated from chemicals that can generate toxic gases on contact, such as chloride or ammonia.
			Absorbents or acid neutralisers are available for acid spills (acid spills should be neutralised with sodium bicarbonate and then cleaned up with a paper towel or sponge).
			Standard operating procedures in the event of a chemical spill: a) Communicate the hazard. Immediately notify others working in the area and any supervisory personnel of the hazard and if the situation warrants it, evacuate the area. b) Control the spill. This step focuses on ensuring that the spill does not become any worse. c) Contain the hazard. d) Clean up the spill and any damage.
			2. CAUSTICS *Substances that burn or eat away by chemical reaction. Common household products including drain and toilet bowl cleaners and some dishwasher detergents contain damaging caustic substances, such as sodium hydroxide and sulfuric acid.*
			Caustics are stored away from acids.
			Solutions of inorganic hydroxides are stored in polyethylene containers.
			Absorbents or caustic neutralisers are available for spills. Sand or soda ash – flush away using a large quantity of water. Vinegar – acetic acid is an acid as the name suggests. It can neutralise NaOH and caustic soda. If you have vinegar at 5% m/v solution, you will need 1.5*100*5 = 30L vinegar to neutralise 1kg NaOH.
			3. FLAMMABLES *Example: alcohol-based hand sanitiser*
			Flammables are kept away from any source of ignition (e.g. flames, heat or sparks).
			Absorbents (sand) are available for leaks or spills.
			In the event of an alcohol-based hand sanitiser fire, the following are recommended to extinguish the fire: a) Alcohol foam; b) CO2; and/or c) Dry chemical extinguisher.
			4. WATER-REACTIVE CHEMICALS *Chemicals that react vigorously with moisture. The most common water sensitive chemicals include sodium, potassium, lithium metals and aluminium alkyls.*
			Chemicals are kept in a cool and dry place.
			In case of fire, a Class D fire extinguisher is available.

Official sign off:

Name:

Designation:

Signature:

Date:

Government Gazette

REPUBLIC OF SOUTH AFRICA

Regulation Gazette No. 7700

Vol. 456 Pretoria 25 June 2003 **No. 25130**

AIDS HELPLINE: 0800-0123-22 Prevention is the cure

GOVERNMENT NOTICE
GOEWERMENTSKENNISGEWING

DEPARTMENT OF LABOUR
DEPARTEMENT VAN ARBEID

No. R. 930 **25 June 2003**

OCCUPATIONAL HEALTH AND SAFETY ACT, 1993

GENERAL AMENDMENT

The Minister of Labour, has under section 43 of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993), after consultation with the Advisory Council for Occupational Health and Safety, made the regulations in the Schedule.

SCHEDULE

1. The General Administrative Regulations, promulgated by Government Notice No. R. 1449 of 6 September 1996, are hereby amended by the deletion of regulation 7 and Annexure 1.

2. The Hazardous Chemical Substances Regulations, promulgated by Government Notice No. R. 1179 of 25 August 1995, are hereby amended by—
(*a*) the insertion of the following regulation after regulation 9:

"Handling of hazardous chemical substances

9A.(1) Subject to section 10(3) of the Act, every person who manufactures, imports, sells or supplies any hazardous chemical substance for use at work, shall, as far as is reasonably practicable, provide the person receiving such substance, free of charge, with a material safety data sheet in the form of Annexure 1, containing all the information as contemplated in either ISO 11014 or ANSIZ400.1.1993 with regard to—

(*a*) product and company identification;
(*b*) composition/information on ingredients;
(*c*) hazards identification;
(*d*) first-aid measures;
(*e*) fire-fighting measures;
(*f*) accidental release measures;
(*g*) handling and storage;
(*h*) exposure control/personal protection;
(*i*) physical and chemical properties;
(*j*) stability and reactivity;
(*k*) toxicological information;
(*l*) ecological information;
(*m*) disposal considerations;

(*n*) transport information;

(*o*) regulatory information; and

(*p*) other information:

Provided that, where it is not reasonably practicable to provide a material safety data sheet, the manufacturer, importer, seller or supplier shall supply the receiver of any hazardous chemical substance with sufficient information to enable the user to take the necessary measures as regards the protection of health and safety.

(2) Every employer who uses any hazardous chemical substance at work, shall be in possession of a copy of Annexure 8 or a copy of sufficient information, as contemplated in subregulation (1).

(3) Every employer shall make Annexure 8 or sufficient information, as contemplated in subregulation (1), available at the request of any interested or affected person.";

(*b*) the insertion in regulation 16 of the expression "9A" as follows:

"Offences and penalties

16. Any person who contravenes or fails to comply with any provision of regulation 3, 4, 5, 6, 7, 8, 9, 9A, 10, 11, 12, 13, 14 or 15 shall be guilty of an offence and liable on conviction to a fine or to imprisonment for a period not exceeding six months and, in the case of a continuous offence, to an additional fine of R200 for each day on which the offence continues or additional imprisonment of one day for each day on which the offence continuous: Provided that the period of such additional imprisonment shall in no case exceed 90 days."; and

(b) the insertion of the following Annexure:

"ANNEXURE 8	
MATERIAL SAFETY DATA SHEET	No: Date issued: Page of
COMPANY DETAILS	
Name:	Emergency telephone no.:
Address:	Telex:
Tel:	Fax:
1. Product and Company Identification: **(Page 1 may be used as an emergency safety data sheet)**	
Trade name:	Chemical abstract no.:
Chemical family:	NIOSH no.:
Chemical name:	Hazchem code:
Synonyms:	UN no.:
2. Composition:	
Hazardous components:	
EEC classification:	
R Phrases:	
3. Hazards Identification:	
Main hazard:	
Flammability:	
Chemical hazard	
Biological hazard:	
Reproductive hazard:	

MATERIAL SAFETY DATA SHEET (continue)	No: Date issued: Page of
3. Hazardous Identification: (continue)	
Eye effects: eyes: Health effects - skin: Health effects - ingestion: Health effects - inhalation: Carcinogenicity: Mutagenicity: Neurotoxicity:	
4. First-aid Measures:	
Product in eye: Product on skin: Product ingested: Product inhaled:	
5. Fire-fighting Measures:	
Extinguishing media: Special hazards: Protective clothing:	
6. Accidental Release Measures:	
Personal precautions: Environmental precautions: Small spills: Large spills:	

MATERIAL SAFETY DATA SHEET (continue)	No: Date issued: Page of

7. Handling and Storage:

Suitable material:

Handling/storage precautions:

8. Exposure Control/Personal Protection:

Occupational exposure limits:

Engineering control measures:

Personal protection - respiratory:

Personal protection - hand:

Personal protection - eye:

Personal protection - skin:

Other protection:

9. Physical and Chemical Properties:

Appearance:

Odour:

pH:

Boiling point:

Melting point:

Flash point:

Flammability:

Autoflammability:

Explosive properties:

Oxidizing properties:

MATERIAL SAFETY DATA SHEET (continue)	No: Date issued: Page of

9. Physical and Chemical Properties: (continue)

Vapour pressure:

Density:

Solubility - water:

Solubility - solvent:

Solubility - coefficient:

10. Stability and Reactivity:

Conditions to avoid:

Incompatible materials:

Hazardous decomposition products:

11. Toxicological Information:

Acute toxicity:

Skin and eye contact:

Chronic toxicity:

Carcinogenicity:

Mutagenicity:

Neurotoxicity:

Reproductive hazards:

12. Ecological Information:

Aquatic toxicity - fish:

Aquatic toxicity - daphnia

Aquatic toxicity - algae

Biodegradability:

MATERIAL SAFETY DATA SHEET (continue)	No: Date issued: Page of
12. Ecological Information: (continue)	
Bio-accumulation: Mobility: German wgk:	
13. Disposal Considerations:	
Disposal methods: Disposal of packaging:	
14. Transport Information:	
UN no. Substance indentity no. ADR/RID class: ADR/RID item no. ADR/RID hazard identity no.: IMDG - shipping name: IMDG - class: IMDG - packaging group: IMDG - marine pollutant: IMDG - EMS no. IMDG - MFAG tabel no.: IATA - shipping name: IATA - class: IATA - subsidiary risk(s):	

MATERIAL SAFETY DATA SHEET (continue)	No: Date issued: Page of
14. Transport Information: (continue)	
ADNR - class: UK - description: UK - emergency action class: UK - classification: Tremcard no.:	
15. Regulatory Information:	
EEC hazard classification: Risk phases: Safety phases: National legislation:	
16. Other Information:".	

Western Cape Government

Education

WESTERN CAPE EDUCATION DEPARTMENT POLICY ON THE CONTROL OF CHEMICAL SUBSTANCES,
2021

Contents

Annexures

1. Legislative framework

The legislative framework for this policy is:

a) Circular 0021/2012, dated 30 May 2012, and the *Safety in School Science Policy and Protocol in the Western Cape, 2012*.
b) *Community Fire Safety By-law* published in *Provincial Gazette Extraordinary* No. 5832 of 28 February 2002.
c) *General Safety Regulations*, published in *Government Gazette* No. 10252 of 30 May 1986.
d) National Environmental Management Act, 1998 (Act 107 of 1998).
e) Occupational Health and Safety Act, 1993 (Act 85 of 1993).
f) *Regulations for Hazardous Chemical Substances*, published in *Government Gazette* No. 25130 of 25 June 2003, as amended.
g) South African Bureau of Standards code of practice SABS 0228 "The identification and classification of dangerous substances and goods".

2. Purpose

The purpose of this policy is to—

a) provide a safe and healthy workplace for all Western Cape Education Department (WCED) staff; and
b) avoid environmental damage.

3. Scope

This policy is applicable to all WCED buildings (Head Office, district offices, satellite offices and schools) where hazardous or potentially hazardous chemical substances are used, stored, transported to or from or disposed of.

4. Objectives

The objectives of this policy are to—

a) ensure that hazardous or potentially hazardous substances are managed according to the *Regulations for Hazardous Chemical Substances*, published in *Government Gazette* No. 25130 of 25 June 2003, as amended, and legal requirements;
b) avoid the potential liabilities and damage to health and safety because of the poor management of hazardous substances; and
c) avoid possible environmental pollution due to the accidental spillage or release of hazardous chemical substances.

5. **Responsibility**

5.1 Primary: Head of the institution/school/School Compliance Officer

5.2 Secondary: Appointed School Safety Officer
School Occupational Health and Safety Committee
Science Safety Officer

5.3 The execution of this policy is the responsibility of the head of the institution/school/Compliance Officer, which is in line with the incumbent's obligations to provide and maintain a safe and healthy environment as per sections 16(1) and 16(2) of the Occupational Health and Safety Act, 1993 (Act 85 of 1993). The head of the institution/school may appoint a Chemical Substance Coordinator – who is in fact the appointed Science Safety Officer in line with Circular 0021/2012, dated 30 May 2012, and the *Safety in School Science Policy and Protocol in the Western Cape, 2012.*

5.4 Any delegations made by the head of the institution/school must be done in writing.

6. **Storage of hazardous substances**

6.1 Poor or incorrect chemical storage practices can lead to inadvertent reactions between incompatible materials with the potential to cause harm, fires or even explosions. All chemicals should be stored in such a manner to prevent incompatible materials from being accidentally mixed in the event of the breakage of one or more containers in the storage area, or to prevent the formation and build-up of reactive vapours. The correct storage of chemicals within storage areas/stockrooms, workshops and laboratories is an ongoing challenge which can sometimes be complex and potentially confusing. The overall purpose of correct storage is to ensure safety and to maintain control over the chemicals so that they can be both stored and retrieved safely.

6.2 <u>General considerations</u>

6.2.1 The safe storage of chemicals must begin with the **identification of the chemicals** to be stored and their intrinsic hazardous properties. Since many chemicals have several hazards, which may vary in degree of severity, depending on quantity as well as nature and concentration, it is not always straight forward to determine what protection is needed for safe storage and where best to store a chemical.

6.2.2 **Typical storage considerations** may include temperature, ignition control, ventilation, segregation and identification.

6.2.3 **Separation** (i.e. use of distance), **segregation** (i.e. use of a physical boundary) or **isolation** is recommended depending upon the severity of hazard, total quantities stored, and the size, break resistance and durability of individual containers (i.e. fragility of glass bottles, perforation or degradation of plastic containers, and corrosion or puncture of metal containers). Hence, the physical composition and even the size of storage containers may also affect the need for special storage practices and safety procedures.

6.2.4 It should be noted that **ventilation** is needed for chemicals and its containers which may release dangerous or damaging quantities of vapours or gases that are flammable, corrosive, irritating or toxic. Ventilated storage is particularly important for those substances classed as fuming or highly volatile.

6.2.5 Every storage area should have **emergency**, and where necessary, **evacuation procedures** in case of a leak, spill or fire within the room. It may be necessary to consider incidents in adjacent parts of the premises, which may affect storage. Firefighting equipment should be provided at readily accessible locations at the storage area. If necessary, consult the Fire Safety Unit for further guidance.

6.3 Where necessary, **adequate drainage** should be provided to deal with the water used for fire protection, firefighting or post-fire cooling (acetylene cylinders), to minimise environmental damage. Interceptors or special drainage systems may be necessary to minimise the risk of contamination of watercourses.

6.4 Storage areas and buildings, rooms, cupboards and bins should be adequately maintained.

6.5 The safe movement of chemicals to and from storage should be considered when choosing the location of the storage areas for frequently used chemicals.

6.6 <u>Steps to storing hazardous chemicals safely</u>

6.6.1 Improperly stored chemicals can be highly dangerous and can potentially cause a serious accident.

6.6.2 A safe chemical storage location should primarily limit the exposure of workers and others to the risks associated with the chemicals and protect people from the hazardous effects that could result from an accidental spillage or chemical reaction.

6.6.3 Steps to follow:

a) Read the safety data sheet on substances carefully and follow all storage recommendations.

b) Secure the chemicals against unauthorised access or use.
c) Only keep minimal amounts of chemicals on site. Ensure that all chemicals are clearly and correctly labelled, and that the labels are intact and legible.
d) Do not allow chemicals to be exposed to sunlight, excessive heat or sources of ignition.
e) Provide adequate ventilation.
f) Label shelves and cupboards so that chemicals can be stored in the right place.
g) Use placarding where required.
h) Ensure clear segregation schemes are maintained. Chemicals must be separated when stored to ensure that incompatible chemicals do not mix if there is a spill.
i) Keep the outside of containers clean and the storage area tidy.
j) Do not store liquids above solids to avoid contamination in the event of a leak.
k) Always store corrosives on spill trays.
l) Ensure shelves are not overloaded.
m) Never store flammable liquids in refrigerators or freezers unless they have been modified, i.e. spark proofed.
n) Separate incompatible chemicals that could react dangerously if stored together.

6.7 Note that different chemicals must be separated when stored or transported to ensure that incompatible chemicals do not mix if there is a spill. Professional advice about the segregation of hazardous chemicals should be obtained.

7. **Inspection of stored chemicals**

7.1 Chemical storage areas should be inspected at least quarterly, using the attached chemical storage checklist, and any unwanted or expired chemicals must be removed and safely disposed of via a hazardous waste disposal service. During this inspection, the list of chemicals present in the laboratory should be updated or verified and the date and name of the inspector recorded.

7.2 The visual inspection of stored chemicals is important in the disposal decision.

7.3 Chemicals showing any of the following indications should be sent for disposal:
a) Slightly cloudy liquids which were once clear
b) Darkening or change in colour
c) Spotting on solids
d) Caking of anhydrous materials indicating the uptake of water
e) Existence of solids in liquids or liquids in solids
f) Pressure build-up in containers
g) Evidence of reaction with water
h) Corrosion or damage to the container

i) Missing or damaged (i.e. illegible) labels.

8. **Implementation date**

This policy is effective from the date of signature of the Head of Department.

9. **Review**

This policy must be reviewed when the need arises or in the case of changed circumstances such as pronouncements by legislation and/or regulations and budgetary constraints.

I……., Head of Department for Education in the Western Cape hereby approve the Policy on the control of chemical substances.

…….. (sign name)

…… (date)