Chapter 9
Chemical Hazard Information

OVERVIEW

Many chemicals have minimal hazards, making them relatively safe to use. Others pose inherent risks and require specific precautions. Still other chemicals must be handled with such extreme care that they are not practical or safe for use in schools. This chapter provides information on hazards for nearly 600 chemicals to help teachers, schools and districts select and use chemicals safely. Schools and jurisdictions may use this information as a starting point for reviewing chemicals currently on their shelves (particularly where chemicals have accumulated over the years) and reassessing the scope and contents of their chemical inventories.

The information in this chapter includes numeric ratings for health, flammability and reactivity, plus supplementary comments on the scope and severity of hazards. It also includes WHMIS and storage classifications, as well as transportation hazard classes and disposal methods. This information has been compiled from the most reliable and accurate sources available at the time of writing. It remains the responsibility of school jurisdictions and individual teachers to use this information carefully and cautiously and assume responsibility for the consequences of using this information.

Inclusion of a chemical in this listing does not signal appropriateness for school use, but is provided as preliminary information on potential concerns. Given the nature and severity of hazards involved, some of the chemicals listed are designated as *not appropriate for use in schools due to safety considerations.* Readers are advised to consult MSDS sheets and other current sources of more detailed information before using any of the chemicals listed here. Omission from this list is also not an indication of safety.

REACTIVE NATURE OF CHEMICALS

Chemicals can be grouped according to their chemical properties and general behaviour on exposure to other substances or environmental conditions. The following table provides information on types of reactive chemicals, which can be useful when designing a chemical storage scheme or deciding whether or not a chemical should be stocked for classroom use.

Reactive Nature of Chemical	Substances	Notable Characteristics	Handling and Storing
Explosive	• Fulminates★ • Nitroglycerin★ • Peroxides★ • Picric acid★ • Azides★ • Perchlorates (Na, K)★ • Hydrazines★ • Dioxane★ • Ether★ (excluding petroleum ether)	• Substances that decompose with such speed that they cause a rapid expansion of air, sometimes accompanied by burning gases and flying objects. • Explosion may be caused by shock, friction or heat. • May form explosive by-products on slow decomposition during storage; e.g., ether and dioxane may form explosive peroxides with varying storage time. These appear as grey-green precipitates.	★Do not order, use or store **concentrates** of this group of chemicals in schools. • Lower concentrations of some explosive substances (e.g., hydrogen peroxide at 3 to 7%) are safe.
Acid sensitive	• Alkali metals • Alkaline hydroxides • Carbonates • Carbides • Nitrides • Metals • Sulfides • Cyanides★	• Substances that react with acids to release heat, hydrogen and/or other explosive gas and toxicants.	• Isolate from reactive substances. • Wear and use adequate protection.

★ These chemicals are not recommended for schools because of their **reactive** nature.

Reactive Nature of Chemical	Substances	Notable Characteristics	Handling and Storing
Water sensitive	• Strong acids and bases • Acid anhydrides • Alkali metals • Alkali metal hydrides • Carbides★ • Aluminium chloride (anhydrous)	• Substances that react with water, releasing heat and/or flammable gases. • Ignition in moist air can cause explosions. • May produce acetylene or methane. • Spontaneous decomposition during extended storage may cause container to explode upon opening.	• Isolate from other reactive substances. • Store in cool, waterproof area. • Wear protective gear.
Oxidation-reduction sensitive (oxidizers only)	• Oxygen • Mineral acids • Perchlorates★ • Peroxides★ (excluding H2O2) • Chromates and dichromates • Permanganates • Halogens and Chlorates★	• Substances that undergo rapid oxidation or reduction releasing heat in the process. • Some are explosive.	• Isolate from each other and other potentially reactive substances. • Use adequate protection.
Special case-organic substances	• Acrolein★ • Benzene★ • Diethyl ether★	• Organic substances that are flammable may polymerize violently or form explosive peroxides. • May explode when exposed to many oxidants. • May be carcinogenic (benzene).	• Store in an airtight container in a cool place. • Isolate from oxidants.
Pyrophors	• Phosphorous (white or yellow)★	• Substances that burn spontaneously when exposed to air.	• Protect from air.

★ These chemicals are not recommended for schools because of their **reactive** nature.

ORGANIZATION OF THE CHEMICAL HAZARD INFORMATION TABLE

The Chemical Hazards Information Table in this chapter provides information to assist teachers and schools in deciding what chemicals to stock and use. The table lists hazard ratings for almost 600 chemicals, including a number of substances that have been used in schools in the past but that have serious risks associated with their use. As well, it provides additional information necessary for safe storage and disposal of the chemicals.

The absence of chemicals from this table does not imply that they are safe. Other sources should be consulted for information on these chemicals.

The Chemical Hazard Information Table is organized with the following column headings:

1. Chemical Name(s), State and Formula
2. Appropriateness for School Use
3. Hazard Ratings and Comments for Health, Flammability and Reactivity
4. WHMIS Hazard Classes
5. Chemical Storage Classes
6. TDG Hazard Classes
7. Chemical Disposal Methods

The content of each section, as well as the codes and conventions used in the table, is briefly explained below.

Chemical Name(s), State and Formula

The table lists chemicals alphabetically using names conforming to those of IUPAC and the Merck Index. Where an alternative name is acceptable, the substance will appear in the table under both names. The state or form of the substance is included since it implies concentration—a factor that must be known if the hazard levels are to be meaningful. The formula is provided as a means to cross-reference the names of substances, ensuring that the name used for a specific substance actually correlates with the correct substance by formula.

Appropriateness for School Use

To assist teachers, schools and districts in making safe choices, the chemicals listed in the table have been grouped into one of three categories, based on their relative safety. The hazards of a chemical tend to increase with its concentration. Keeping this in mind, it should be noted that some chemicals in the table are rated in the “B” or “C” category in concentrated form, but may be rated in the “A” or “B” category in the diluted form. Many acids and bases are rated in this way. For example: Hydrochloric acid [HCl (aq)].

Concentration	Category
5% or less	A
above 5%	B

Category A – Chemicals appropriate for use in schools under controlled conditions of use.

Chemicals in this category are ones for which the risks can be managed if used in limited quantities and concentrations, in controlled situations and following safe procedures. Use of these chemicals should take into account the maturity and skills of the students, the knowledge and skills of the teacher, and the needs of the curriculum.

Category B – Chemicals not appropriate for student use in schools except in junior and senior high school science courses under highly controlled conditions of use.

This category of chemicals is not appropriate for use by students in elementary science, but may be appropriate for use in junior and senior high school science courses when used in limited quantities under close supervision by well-qualified staff in appropriate facilities. If these chemicals are used, keep quantities and concentrations to a minimum, instruct students in safe use procedures, and ensure waste storage and disposal have been addressed. These chemicals may be appropriate for demonstration purposes in elementary schools by teachers with appropriate knowledge and skills.

Category C – Chemicals not appropriate for student use.

Chemicals placed in this category pose significant safety risks in one or more hazard categories (health, flammability or reactivity), making them dangerous to use unless major precautions are taken. Conditions required for safe use by students exceed what can be consistently and reliably provided by schools. Some chemicals in this category may be used for demonstration purposes by well qualified senior high school teachers following a thorough risk assessment.

Category D – Chemicals not recommended for school use by teachers or students because of excessive hazard levels.

For quick reference, category D chemicals have been itemized in alphabetical order in Appendix K at the back of this document.

Hazard Ratings and Comments for Health, Flammability and Reactivity

Hazard ratings given in the Chemical Hazard Information Table are based on the National Fire Protection Association (NFPA) Hazchem Code, which is also used by most large North American chemical suppliers. This hazard identification system attaches numerical values to hazard levels for health, flammability and reactivity of a chemical. Each category of hazards is rated on a scale of 0 to 4 (low to high). In addition, a special precautionary symbol may be used where necessary. In most cases, the hazard ratings given are for the pure form of the chemical.

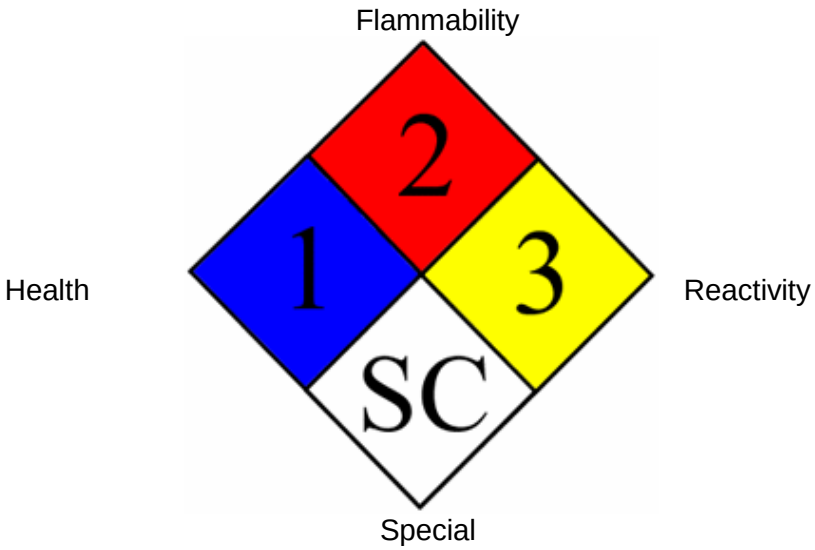
The hazard ratings for each chemical listed in the chart are based on information from multiple sources. Sources used in compiling the ratings were primarily the MSDS sheets provided by major supply companies. In many cases the ratings found in these MSDS sheets showed different values for the same chemical, which reflected different interpretations of the hazards involved. For example, it appears that in determining health ratings, some companies factor in the effects of prolonged and chronic exposure whereas other do not. In case of disagreements between sources, a further assessment was made of the information available before determining the rating given in the chart. To assist the user, additional information on the specific nature of the hazards posed by each chemical is provided in the comments section.

The health ratings given in the chart, as derived from MSDS sheets, focus primarily on short-term health effects. Currently available information on long-term effects—including carcinogenicity—is in many cases limited. More recent information may become available over time and will be reflected in current MSDS sheets.

In general, chemicals with a rating of 3 or 4 in one or more categories, but especially in health, are classified as inappropriate for student use. There are some exceptions to this rule, particularly in cases where the risks can be substantially reduced by using the substance in a less concentrated form, as is the case with solutions. In general, powdered or pure forms of carcinogenic substances or chemicals that produce toxic substances when they react will be identified as not appropriate for student use and in a number of cases will be identified as not appropriate for school use at all.

Note that the information in the chart is provided primarily to assist schools in determining what chemicals are appropriate for use. After the chemicals have been acquired, school staff should consult the MSDS sheet for more detailed information before using any of the chemicals.

Sample N.F.P.A. Hazchem Code



Note: The colour coding is often not consistent among manufacturers. Some omit colour entirely.

Following are the three categories and 5-point rating scale used in the NFPA. Hazchem codes are described in the Hazard Rating Chart below.

Health (Blue)		
4	**Danger**	May be fatal on short exposure. Specialized protective equipment required
3	**Warning**	Corrosive or toxic. Avoid skin contact or inhalation
2	**Warning**	May be harmful if inhaled or absorbed
1	**Caution**	May be irritating
0		No unusual hazard

Flammability (Red)		
4	**Danger**	Flammable gas or extremely flammable liquid
3	**Warning**	Flammable liquid flash point below 100° F
2	**Caution**	Combustible liquid flash point of 100° to 200° F
1		Combustible if heated
0		Not combustible

Reactivity (Yellow)		
4	**Danger**	Explosive material at room temperature
3	**Danger**	May be explosive if shocked, heated under confinement or mixed with water
2	**Warning**	Unstable or may react violently if mixed with water
1	**Caution**	May react if heated or mixed with water but not violently
0	**Stable**	Not reactive when mixed with water

Special Notice (White)	
~~W~~	Water Reactive
OX	Oxidizing Agent

Note: See http://www.nfpa.org/ for further information on the NFPA rating system.

WHMIS Hazard Classes

The Workplace Hazardous Materials Information System categorizes controlled substances into 6 classes and provides symbols for each of these. The classes are:

A. Compressed Gases
B. Flammable and Combustible Materials
C. Oxidizing Materials
D. Poisonous and Infectious Materials
   Division 1: Material causing immediate and serious toxic effects
   Division 2: Material causing other toxic effects
   Division 3: Biohazardous infectious material
E. Corrosive Materials
F. Dangerously Reactive Materials

This column of the Chemical Hazard Information Table shows which of these classes each chemical falls into. Substances that are not controlled are identified as NC on the table.

For more information about WHMIS, refer to Chapters 1, 4 and 8 in this document.

Chemical Storage Classes

The chemical classes assigned in this section of the table and outlined below are useful in devising a scheme for the safe storage of chemical groups in laboratories or chemical storage rooms. In some cases, a chemical may fall into more than one class. In such instances, flammability is the primary overriding property for storage classification.

Class #	Chemical Category and Symbol
1	Inorganic Acids (IA)
2	Strong Bases (SB)
3	Organic Acids (OA)
4	Flammable Solids (FS)
5	Flammable Liquids (FL)
6	Oxidizing Agents (OX)
7	Halogens (element form) (H)
8	Miscellaneous (M)

Chemical storage classes were discussed in some detail in Chapter 8 as an important aspect of chemical management.

TDG Hazard Classes

The classes and divisions of chemicals defined by TDG regulations are important for a number of reasons, including the classification of chemical waste when preparing for disposal pick-up. The hazard classes are numbered 1 to 9. Certain classes are further subdivided into numbered divisions. A waste's classification is stated as the class number followed by a point and the division number. For example, a classification of 4.3 means that the waste is in Division 3 of Class 4.

The table below briefly summarizes the nine classes and types of hazards involved. Refer to Part III of the *Transportation of Dangerous Goods Act and Regulations*, 1992 for specifics about the criteria and procedures needed to determine hazardous waste classes, divisions and packing groups.

Class 1 – Explosives	Explosives are classified into 6 divisions according to sensitivity and explosive potential. **Note**: This class of compounds is not recommended for school use.
Class 2 – Gases	Class 2 substances can be a gas, a mixture of gases, a mixture of gases with one or more vapours of substances included in other classes, an article charged with a gas, an aerosol or tellurium hexafluoride. These substances fall into one of three divisions. **Divisions** 2.1 Flammable gases 2.2 Nonflammable, nontoxic gases 2.3 Toxic gases

Class 3 – Flammable liquids	This class includes liquids (or liquids containing solids in solution or suspension) that have a flashpoint less or equal to 60.5°C, or liquids that are intended or expected to be at a temperature that is greater than or equal to their flashpoint at any time while the substance is in transport.
Class 4 – Flammable solids	**Divisions** 4.1 Flammable solids 4.2 Substances liable to spontaneous combustion 4.3 Substances which on contact with water emit dangerous quantities of flammable gases
Class 5 – Oxidizing substances and organic peroxides	**Divisions** 5.1 Oxidizing substances 5.2 Organic peroxides
Class 6 – Toxic and infectious substances	**Divisions** 6.1 Toxic substances 6.2 Infectious substances
Class 7 – Radioactive materials	This class includes radioactive materials with an activity greater than 74 kBq/kg.
Class 8 – Corrosive substances	This class includes materials that: • cause full thickness destruction of human skin; i.e., lesions that are permanent and destroy all layers of the outer skin • exhibit a corrosion rate that exceeds 6.25 mm/year at a temperature of 55°C.
Class 9 – Miscellaneous Products, Substances or Organisms	This includes any substance that does not meet the criteria for inclusion in classes 1 to 8 and contains one or more of the following: • genetically modified micro-organisms that may endanger human life • a marine pollutant • material to be transported at high temperatures • material that releases toxic substances through leaching • environmentally hazardous substances.

Chemical Disposal Methods

The appropriate methods for disposing of various chemicals depend on a number of factors, and must meet federal, provincial and local regulations. The Chemical Hazard Information Table uses the following symbols to indicate disposal options for each chemical.

Symbol	Disposal Method	Comments
WF/I	Chemical Waste Facility/Incinerator (government approved)	Substances identified as controlled/hazardous products must be disposed of through a waste facility by federal/provincial law. Nonregulated chemical waste may be disposed via a waste facility.
A	Dissipate into Air	Atmospheric gases only.
D	Drain	Dilute acids and bases containing no regulated constituents (pH of 5.5 to 10) and nonhazardous, noncontrolled salts can be disposed of this way.
R	Recycle	Local metal and plastic recycle depots.
N/P-T or N/P-D	Neutralize/Precipitate and dispose of in Trash or Drain	Follow neutralization/precipitation procedure and dispose of nontoxic byproducts in trash (T) or drain (D).
RS	Return to Supplier	Containers with remaining substance can be returned to supplier.
T	Trash (Landfill)	Dry, noncontrolled, nonhazardous wastes.

"Controlled products" are substances that fall into one or more of the WHMIS hazard classes. These include compressed gases, oxidizing materials and substances that are poisonous, infectious, flammable, combustible, corrosive or dangerously reactive. There is no master list of controlled products; however, any product with a hazard warning could be a controlled product.

CHEMICAL HAZARD

INFORMATION TABLE

Note: One should become familiar with the background information to the Chemical Hazard Information Table in the introductory portion of this chapter before proceeding to the table for details on specific chemicals.

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
acetaldehyde --------- liquid (*ethanal, acetic aldehyde*) $CH_3CHO(l)$ or $C_2H_4O(l)$	D	3	4	2	Toxic; harmful by inhalation, ingestion, skin absorption; causes skin irritation or burns and severe eye irritation; affects the central nervous system, liver and kidneys; extremely flammable liquid and vapour; may form explosive levels of peroxides in storage; possible human carcinogen.	B, D1	5	3.1	WF/I
acetamide ---------- crystals (*acetic acid amide*) $CH_3CONH_2(s)$	C	1	1	0	May cause skin, eye and respiratory tract irritation; dust-air mixture explosive; possible human carcinogen.	D2	8	NR	WF/I
acetic acid, glacial -- liquid (*ethanoic acid*) $CH_3COOH(l)$ or $C_2H_4O_2(l)$	B	3	2	0	Corrosive; liquid and mist cause severe burns to all body tissue; may be fatal if ingested; harmful if inhaled; flammable liquid and vapour.	B, E	5, 1	8 (3)	N/P -D
acetic acid ---------- solution (*vinegar*) mixture: CH_3COOH ---------5 - 7% H_2O ---------- 93 - 95% $CH_3COOH(aq)$	A	1	0	0	Causes irritation of the nose, throat and respiratory tract; prolonged contact may cause burns and dermatitis.	NC	1	8	N/P-D
acetic anhydride ----- liquid (*acetic oxide, ethanoic anhydride*) $C_4H_6O_3(l)$	C	3	2	1 W	Corrosive; causes severe burns to any area of contact; severe eye and respiratory irritant; harmful if swallowed; flammable liquid and vapour; water reactive.	D1, D2, E	5	8 (3)	WF/I
acetone ---------- liquid (*2-propanone*) $CH_3COCH_3(l)$	B	1	3	0	Causes respiratory and eye irritation; vapours may cause drowsiness and dizziness causing depression of the central nervous system; harmful if swallowed; highly flammable.	B, D2	5	3	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
aceto-carmine stain---------- solution mixture: carmine ---------- 0.5% acetic acid --------- 45.0% water ---------- 54.5%	B	1	0	0	May cause skin, eye and respiratory tract irritation; may cause gastro-intestinal tract discomfort if ingested.	D1, E	1	8	WF/I
aceto-orcein stain-solution mixture: acetic acid ---------- 45% orcein ---------- 2% water ---------- 53%	B	1	0	0	May cause irritation to eyes, skin and respiratory system; may cause gastro-intestinal tract discomfort if ingested.	E	1	8	WF/I or N/P - D
acetyl chloride -------- liquid (*ethanoyl chloride*) $CH_3COCl(l)$	D	3	3	2 W	Corrosive; causes severe burns to eyes and skin; harmful if inhaled or swallowed; highly flammable; reacts violently with water forming toxic phosgene.	B, D1	5	8 (3)	WF/I
acrolein ---------- liquid (*2-propenal, acrylaldehyde*) $C_3H_4O(l)$	D	3	4	1	Corrosive; causes severe irritation or burns to eyes and skin; highly toxic if inhaled or ingested; highly flammable; may be carcinogenic.	B, D1, E	5	6.1	WF/I
acrylic acid ---------- liquid (*2-ropenoic acid*) $C_3H_4O_2(l)$ or $CH_2CHCOOH(l)$	D	3	2	2	Toxic, may be fatal if swallowed; harmful if inhaled or absorbed through skin; causes burns to skin, eyes and mucous membranes; severe respiratory irritant; unstable, must be stored with MEHQ inhibitor and access to oxygen gas; flammable liquid and vapour.	B, D1, E	5	3 (8)	WF/I
adipic acid --------- powder (*hexanedioic acid, 1,4-butandicarboxylic acid*) $C_6H_{10}O_4(s)$ or $HOCO(CH_2)_4COOH(s)$	B	1	1	0	Causes irritation of the eyes; inhalation may cause irritation; powder-air mixture is explosive.	NC	3	NR	N/P - D

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
adrenaline ---------- powder (*epinephrine*) $C_9H_{13}NO_3$(s)	B	2	1	0	May cause irritation of eyes, skin, respiratory and digestive tracts; harmful by inhalation, contact with skin or if swallowed; excess absorption can be fatal; increases heart rate, blood pressure; powder-air mixture explosive.	D2	8	6.1	WF/I
agar, all culture --- powder mixture: agarose ---------- variable agaropectin -------- " glucose ---------- " ascorbic acid ---- " other ---------- "	A	2	1	1	May be irritating to eyes, skin, mucous membranes and upper respiratory tract; decomposes on exposure to light; combustible if heated or ignited.	NC	8	NR	T
L-alanine ---------- crystals (l-2 aminopropanoic acid) $C_3H_7NO_3$(s) or $CH_3CH(NH_2)COH$(s)	B	1	1	0	Dust may cause irritation of eyes, digestive and respiratory tracts; flammable if heated, combustible if heated or ignited, powder-air mixture is explosive.	NC	8	NR	T or D(aq)
alizarin ---------- crystals (*alizarin B or red, mordant red 11, turkey red*) $C_{14}H_8O_4$(s)	B	2	1	0	Skin and eye irritant; may be harmful if ingested or inhaled; flammable if heated, powder-air mixture is explosive.	D2	8	NR	T or D(aq)
alizarin red S------ solution mixture: alizarin ---------- 1.0% water ---------- 99.0%	B	1	0	0	Solution may cause mild skin and eye irritation.	NC	8	NR	D
alizarin red S ----- powder (*mordant red 3*) $C_{14}H_7NaO_7S$(s)	B	2	1	0	May cause severe irritation of skin, eyes, digestive and respiratory tracts; harmful if swallowed or inhaled; combustible if heated or ignited, powder-air mixture is explosive.	NC	8	NR	T or D(aq)

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
alizarin yellow R -- powder $C_{13}H_8NaO_5N_3(s)$	B	2	1	0	Causes severe eye and skin irritation, irritating to the mucous membranes and upper respiratory tract; may be harmful if swallowed or inhaled; combustible if heated or ignited, dust-air mixture explosive.	NC	8	NR	T or D(aq)
alum ---------- powder (*aluminium potassium-sulfate dodecahydrate*) $KAl(SO_4)_2 \bullet 12H_2O(s)$	A	2	0	0	Causes irritation of skin, eyes and respiratory tract; harmful if swallowed or inhaled.	D2	8	NR	T or D(aq)
aluminon ---------- crystals (*ammonium aurintricarboxylate*) $C_{22}H_{23}N_3O_9(s)$	B	2	1	0	Causes minor irritation of the skin and eyes; harmful by ingestion or inhalation; flammable if heated.	D2	8	NR	T or D(aq)
aluminium ----- foil or strips Al(s)	A	0	1	0	Metal strips or foil has no adverse effects; strips will readily burn if ignited.	B	8	NR	R or T
aluminium --------- powder Al(s)	B	1	1	1 ~~W~~	Metal powder may be irritating to eyes and respiratory system; not readily absorbed through skin, digestive tract or the lungs; chronic exposure may cause lung damage; powder readily burns or explodes if ignited; reacts slowly with water to liberate H_2.	B	8	NR	R or T
aluminium acetate (basic)----- powder mixture: $Al(C_2H_3O_2)_2OH(s)$ ---- 30% $Al_2O_3(s)$ ---------- 70%	A	1	1	0	Nuisance dust; may cause irritation to eyes, skin and respiratory tract; may be harmful if swallowed or inhaled; dust-air mixture is explosive.	NC	8	NR	T or D

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
aluminium ammonium-sulfate dodecahydrate ---- powder (*ammonium alum*) $AlNH_4(SO_4)_2 \bullet 12H_2O(s)$	A	1	0	0	May cause eye, skin, respiratory and/or digestive tract irritation; prolonged exposure may cause liver damage.	NC	8	NR	T or D(aq)
aluminium carbide ---------- powder $Al_4C_3(s)$	C	1	3	1	Causes irritation of eyes, mucus membranes and upper respiratory tract; highly flammable solid; contact with water liberates extremely flammable gases.	B	4	4.3	WF/I
aluminium carbonate ---------- powder $Al_2(CO_3)_3(s)$	A	0	0	0	No adverse effects.	NC	8	NR	T or D(aq)
aluminium chloride, anhydrous ---------- powder $AlCl_3(s)$	C	3	0	2 W	Corrosive; causes irritation and burns to skin, eyes, respiratory and digestive tracts; reacts violently with water forming HCl.	D2, E, F	8	8	WF/I or N/P-T
aluminium hydroxide ---------- powder (*aluminium hydrate*) $Al(OH)_3(s)$	A	1	0	0	Causes irritation of eyes and respiratory tract.	NC	2	NR	WF/I or N/P-T
aluminium nitrate nonahydrate ------- crystals $Al(NO_3)_3 \bullet 9H_2O(s)$	B - soln. C - crystals	2	0	0 OX	Causes irritation of skin, eyes and respiratory system; harmful if ingested or inhaled; strong oxidizing agent; can react violently as a result of shock or friction.	C, D1, D2	6	5.1	WF/I
aluminium oxide -- powder $Al_2O(s)_3(s)$	A	2	0	0	May irritate eyes and respiratory system; may be harmful if swallowed or inhaled.	NC	8	NR	T
aluminium phosphate --------- powder $AlPO_4(s)$	B - soln. C - powder	3	0	0	Corrosive; causes skin and eye burns and severe damage to digestive tract if ingested; causes severe irritation and possible burns to mucous membranes of respiratory tract if inhaled.	D1, E	8	NR	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
aluminium potassium sulfate dodecahydrate----- crystals (*alum*) $AlK(SO_4)_2 \bullet 12H_2O(s)$	A	2	0	0	Causes irritation of skin, eyes and respiratory tract; harmful if swallowed or inhaled.	D2	8	NR	WF/I or N/P-T
aluminium sodium sulfate ---------- powder $NaAl(SO_4)_2(s)$	A	1	0	0	May cause mild irritation of the skin, eyes, respiratory and digestive tracts if inhaled or ingested.	NC	8	NR	WF/I or N/P-T
aluminium sulfate- powder $Al_2(SO_4)_3(s)$	A	2	0	0	May irritate skin; severe eye irritant; harmful if inhaled, ingested or absorbed through skin.	E	8	NR	WF/I or N/P-T
aluminium sulfide-granules $Al_2S_3(s)$	C	1	0	2 W	Irritating to skin, eyes and mucous membranes; reacts violently with water and acid-producing toxic H_2S.	F	8	4.3	WF/I
ammonia, anhydrous---------- gas (liquid under pressure) $NH_3(g)$ & $NH_3(l)$	C	3	1	0	Corrosive liquid and gas; irritating and causes burns to eyes and skin; may cause burns if ingested or inhaled; flammable vapour, air-gas mixture explosive.	E	2, 8	2.2 (8)	WF/I
ammonia water---- solution (*household ammonia*) mixture: NH_3 ---------- 10% H_2O ---------- 90% $NH_3(aq)$	A	2	0	0	Irritating to skin and mucous membranes; may cause burns with prolonged exposure; harmful if swallowed, absorbed through skin or with inhalation of fumes.	E	2, 8	8	WF/I
ammonia water---- solution (*ammonium hydroxide*) mixture: NH_3 ---------- 25 - 30% H_2O ---------- 70 - 75% $NH_3(aq)$	B	2	1	0	Irritating to skin and mucous membranes; may cause burns with prolonged exposure; harmful if swallowed, absorbed through skin or with inhalation of fumes; vapours flammable, concentrated air-gas mixture explosive.	E	2, 8	8	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
ammonium acetate ---------- crystals $CH_3COONH_4(s)$	B	1	1	0	May cause irritation to eyes, skin, digestive and respiratory tracts; flammable if heated or ignited, particle-air mixture explosive.	D2	8	NR	T or D(aq)
ammonium bromide---------- crystals $NH_4Br(s)$	A	2	0	0	Causes irritation of skin, eye and mucous membranes of the respiratory tract; harmful by ingestion, inhalation or absorption through skin; affects the central nervous system and eyes.	D2	8	NR	T or D(aq)
ammonium carbonate ---------- powder $(NH_4)_2CO_3(s)$	B	2	0	2	Causes irritation of skin, eye and respiratory tract; harmful if swallowed or inhaled; unstable upon exposure to air; converts to ammonium bicarbonate.	D2	8	NR	T or D(aq)
ammonium chloride---------- powder $NH_4Cl(s)$	A	2	0	0	Irritating to skin, eyes and respiratory tract; harmful if swallowed or inhaled.	D2	8	NR	T or D(aq)
ammonium chromate ---------- crystals $(NH_4)_2CrO_4(s)$	B - soln. C - crystals	3	0	0 OX	Corrosive; causes severe irritation, burns to skin, eyes and mucous membranes; may be fatal by ingestion, inhalation or skin absorption; strong oxidizing agent, may explode when heated; mutagen; human carcinogen.	D1, D2, C, E	6	9	WF/I
ammonium citrate--powder $(NH_4)_2HC_6H_5O_7(s)$	B	2	1	0	May cause irritation to skin, eyes and respiratory tract; harmful if ingested or inhaled; flammable if heated or ignited, particle-air mixture explosive.	NC	8	NR	T or D(aq)
ammonium dichromate --------- crystals $(NH_4)_2Cr_2O_7(s)$	B - soln. C - crystals	3	1	1 OX	Corrosive; causes severe skin and eye irritation and burns to any area of contact; toxic by inhalation or ingestion; very strong oxidizing agent; combustible solid if ignited, also decomposes if heated; known human carcinogen.	D1, D2, C, E	6	5.1	WF/I or N/P-T

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
ammonium dihydrogen-phosphate ---------- crystals (*ammonium phosphate monobasic*) $NH_4H_2PO_4(s)$	B	2	0	1	Causes irritation to skin, eyes and respiratory tract; harmful if swallowed or inhaled.	NC	8	NR	WF/I
ammonium ferrous sulfate hexahydrate ------- crystals (*mohr's salt, ammonium iron(II)sulfate hexahydrate*) $(NH_4)_2FeSO_4 \bullet 6H_2O(s)$	B	2	0	1	May cause irritation of the skin, eyes, respiratory and intestinal tracts; may be harmful by inhalation or skin absorption; ingestion may cause iron poisoning, larger intakes can cause liver and kidney damage and other complications; unstable, air and light sensitive.	D1	8	9	WF/I
ammonium fluoride ---------- crystals $NH_4F(s)$	D	3	0	0	Corrosive; causes severe burns to skin, eyes, respiratory and digestive tracts; may be fatal by ingestion, inhalation or skin absorption; symptomatic effects may be delayed without sensation or onset of pain.	E	8	6.1	WF/I
ammonium hydrogen carbonate ---------- powder (*ammonium bicarbonate*) $NH_4HCO_3(s)$	A	1	0	0	Mildly irritating to eyes and respiratory membranes; ingestion can cause nausea and vomiting.	NC	8	NR	T or D(aq)
ammonium hydrogen-phosphate ---------- crystals (*ammonium phosphate, dibasic*) $(NH_4)_2HPO_4(s)$	B	2	0	0	Causes skin and eye irritation, may damage cornea; causes respiratory and intestinal tract irritation.	NC	8	NR	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
ammonium hydroxide ---------- solution (*ammonia water*) mixture: NH_4OH ---------- 57% H_2O ---------- 43% (NH_3 ---------22% - 30%)	B - soln. C - crystal	3	1	0	Corrosive; causes severe burns to skin, eyes and gastro-intestinal tract, if ingested; inhalation causes severe irritation and inflammation of respiratory membranes; concentrated fumes explosive.	E	2	8	N/P-D
ammonium molybdate tetrahydrate -------- crystals $(NH_4)_6Mo_7O_{24}\bullet 4H_2O(s)$	B	2	0	0	Causes irritation to skin, eyes and respiratory tract; may be harmful if swallowed or inhaled; extended exposure affects kidneys and blood.	NC	8	NR	T or D(aq)
ammonium nitrate–crystals $NH_4NO_3(s)$	B	2	0	3 OX	Causes irritation to skin, eyes and respiratory tract; may be harmful if swallowed or inhaled; strong oxidizer; may decompose if heated; will explode if heated to 210°C; explodes more readily if contaminated with combustible material.	C, D2	6	5.1	WF/I
ammonium oxalate monohydrate ----- granules $(NH_4)_2C_2O_4\bullet H_2O(s)$	D	4	1	0	Toxic and corrosive; inhalation may be fatal due to spasm, inflammation and edema; extremely destructive to tissue of the mucous membranes and upper respiratory tract; causes severe burns to skin, eyes and gastro-intestinal tract, if ingested; may affect kidneys; combustible if heated or ignited.	E	8	8	WF/I
ammonium sulfate-crystals $(NH_4)_2SO_4(s)$	A	2	0	0	Skin, eye and respiratory irritant; may be harmful by inhalation, ingestion or skin absorption.	D2	8	NR	T or D(aq)

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
ammonium sulfide -- liquid $(NH_4)_2S(l)$	D	3	3	1	Corrosive; strong skin, eye and mucous membrane irritant, causes burns to any area of contact; may be fatal if swallowed or inhaled; harmful if absorbed through skin; highly flammable liquid and vapour; toxic hydrogen sulfide gas is released when heated.	B, D2	5	8 (3) (6.1)	WF/I
ammonium sulfite monohydrate ------ crystals $(NH_4)_2SO_3 \bullet H_2O(s)$	B	2	0	0	Causes irritation of eyes, skin, mucous membranes and upper respiratory tract; may be harmful by inhalation, ingestion or skin absorption.	NC	8	NR	T or D(aq)
ammonium thiocyanate -------- crystals $NH_4SCN(s)$	B	2	0	1	May cause irritation of skin, eyes and/or respiratory tract; harmful if swallowed, inhaled or absorbed through skin; emits toxic fumes when heated or in contact with acids.	NC	8	NR	T or D(aq)
ammonium thiosulfate ---------- powder $(NH_4)_2S_2O_3(s)$	B	2	0	1	Irritating to skin, eyes and respiratory system; harmful if inhaled, swallowed, or in contact with skin; decomposes and emits toxic gases when heated to temperatures above 104.4°C.	NC	8	NR	T or D(aq)
ammonium vanadate ---------- granules $NH_4VO_3(s)$	D	3	0	0	Highly toxic fume, mist and dust; may be fatal if inhaled or ingested; causes irritation to skin, eyes and respiratory tract; may damage lung tissue and bronchial airways.	D1	8	6.1	WF/I
amyl acetate ---------- liquid (*n-amyl acetate*) $CH_3COOC_5H_{11}(l)$	C	2	3	0	Causes irritation to the eyes, skin and respiratory tract; harmful if swallowed or inhaled; highly flammable liquid and vapour.	B, D1	5	3	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
iso - amyl alcohol ---- liquid (*isopentyl alcohol*) $C_4H_{10}O(l)$ or $(CH_3)_2CHCH_2CH_2OH(l)$	B	2	2	0	Causes irritation to skin, mucous membranes and respiratory tract; severe irritant to eyes; harmful if swallowed, inhaled or ingested; hematotoxic; affects the central nervous system; flammable liquid and vapour; emits toxic fumes when burned.	B, D2	5	3	WF/I
n-amyl alcohol ------- liquid (*1-pentanol, n-pentyl alcohol*) $C_5H_{11}OH(l)$	B	2	3	0	Liquid causes skin and severe eye irritation with possible burns; vapours cause severe irritation of the respiratory tract; harmful if inhaled, swallowed or absorbed through skin; affects the nervous system; flammable liquid and vapour.	B, D2	5	3	WF/I
amylase ---------- powder composition - variable	B	1	1	0	May cause irritation of skin, eyes and respiratory tract; low ingestion hazard; dust-air mixture explosive.	NC	8	NR	T or D(aq)
aniline ---------- liquid (*amino benzene, benzenamine*) $C_6H_5NH_2(l)$	B - soln. C - pure liq.	3	2	0	Toxic; may be fatal by ingestion, inhalation and skin absorption; causes irritation to skin and respiratory tract; severe irritant to eyes; combustible liquid and vapour; mutagen.	B, D1	5	6.1	WF/I or N/P-D
antimony ---------- solid Sb(s)	B	2	1	0	Dust causes skin, eye digestive and respiratory irritation; prolonged exposure may cause blood abnormalities and cardiac disturbances; inhalation of fumes causes metal-fume fever; chronic inhalation may cause lever, kidney and cardiac changes; bulk metal combustible at high temperatures; dust-air mixture is explosive.	D1, E	8	6.1	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
antimony pentachloride --------- liquid (*antimony perchloride*) $SbCl_5(l)$	D	3	0	1 ~~W~~	Corrosive; liquid causes severe burns to skin and eyes; extremely destructive to tissues of the mucous membranes and upper respiratory tract; may be fatal if ingested, inhaled or absorbed through skin; water reactive.	D1, E	8	8	WF/I
antimony sulfate---------- powder (*diantimony trisulfate*) $Sb_2(SO_4)_3(s)$	B	2	0	1	May cause skin, eye and/or respiratory tract irritation; harmful if swallowed, inhaled or absorbed through skin; chronic exposure may cause liver and kidney damage; decomposes if heated.	D2	8	6.1	WF/I
antimony sulfide ---------- powder (*diantimony trisulfide*) $Sb_2S_3(s)$	B - soln. C - powder	2	1	0	Causes irritation of skin, eye and mucus membranes of upper respiratory tract; harmful if inhaled, ingested or absorbed through skin; possible carcinogen; particle-air mixture explosive.	D2	8	NR	WF/I
antimony trichloride ---------- crystals (*trichlorostibine*) $SbCl_3(s)$	D	3	0	1 ~~W~~	Corrosive; contact with skin and eyes causes severe irritation or burns; harmful if inhaled, ingested or absorbed through skin; inhalation of dust may cause dizziness and difficulty breathing; ingestion causes nausea, vomiting and loss of consciousness; water reactive, releases heat and toxic fumes.	E	8	8	WF/I
antimony trioxide-- crystals (*diantimony trioxide*) $Sb_2O_3(s)$	B - soln. C - crystals	2	1	0	Causes irritation to skin, eyes, digestive and respiratory tracts; harmful if swallowed or inhaled; prolonged exposure affects the cardiovascular system and liver; powdered form flammable if heated; mutagen.	D2	8	6.1	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
apatite ---------- crystalline (*fluorapatite, chlorapatite, hydroxlapatite*) $Ca_5(PO_4)_3 \cdot F/Cl/OH(s)$	A	1	0	0	Dust may cause irritation of skin, eyes, respiratory and digestive tracts.	NC	8	NR	T
L(+) arabinose ---- crystals (*pectin sugar*) $C_5H_{10}O_5(s)$	A	0	1	0	No adverse effects; flammable if heated or ignited; dust-air mixture explosive.	NC	8	NR	T
L-arginine ---------- powder $C_6H_{14}N_4O_2(s)$	A	0	1	0	No adverse effects; flammable if heated or ignited.	NC	8	NR	T
argon ---------- gas $Ar(g)$	A	2	0	0	Nontoxic but may produce suffocation by displacing the oxygen in the air.	NC	8	NR	A
arsenic --- powder or lump $As(s)$	D	4	1	0	Very strong neurotoxin; may be fatal if powder inhaled, or if swallowed or absorbed through the skin; known human carcinogen; may cause reproductive disorders; dust-air mixture is slightly explosive.	D1	8	6.1	WF/I
arsenic pentoxide- powder (*diarsenic pentaoxide*) $As_2O_5(s)$	D	3	0	0	Toxic by inhalation and/or ingestion; mutagen; may be a human carcinogen.	D1, D2	8	6.1	WF/I
arsenic trichloride --- liquid (*trichloroarsine*) $AsCl_3(l)$	D	3	0	0	Toxic; may cause skin, eye, respiratory and digestive tract irritation; may be fatal if swallowed; may cause cardiac disturbances, and/or liver and kidney damage; may cause central nervous system depression; human carcinogen.	D1, D2	8	6.1	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
arsenic trioxide ---- powder (*diarsenic trichloride*) $As_2O_3(s)$	D	3	0	0	Toxic; causes skin and eye irritation; causes severe respiratory and digestive tract irritation or burns; highly toxic by ingestion and inhalation; may cause lung damage and cause central nervous system effects; may have adverse reproductive and fetal effects; human carcinogen.	D1, D2	8	6.1	WF/I
asbestos –----- fibrous solid mixture: silicates of Na, Mg, and Ca; most commonly chrysotile - $Mg_3(Si_2O_5)(OH)_4$ amosite $(MgFe)_7(Si_8O_{22})(OH)_2(s)$	D	1	0	0	Causes irritation of the eyes, nose and throat; prolonged inhalation of particles cause asbestosis and cancer.	D2	8	9	WF/I
ascorbic acid ------ crystals (*vitamin C*) $C_6H_8O_6(s)$	A	1	1	0	May cause mild irritations of the skin, eyes and respiratory tract; flammable if heated or ignited.	NC	3	NR	T or D(aq)
L-asparagine monohydrate ------ crystals $C_4H_8O_3N_2 \bullet H_2O(s)$	A	0	1	0	No adverse effects; flammable if heated or ignited.	NC	8	NR	T
L-aspartic acid ---- crystals $C_4H_7NO_4(s)$	A	0	1	0	No adverse effects; flammable if heated or ignited.	NC	3	NR	T
azure A ---------- powder $C_{14}H_{14}ClN_3S(s)$	A	2	0	0	May cause irritation of the eyes, skin and respiratory system; may be harmful if swallowed or inhaled.	NC	8	NR	T
azure B ---------- powder (*azure I*) $C_{15}H_{16}ClN_3S(s)$	A	2	0	0	May cause irritation of the eyes, skin and respiratory system; may be harmful if swallowed or inhaled.	NC	8	NR	T

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
baking soda ------- powder (*sodium hydrogen carbonate or bicarbonate*) $NaHCO_3(s)$	A	1	0	0	May cause slight irritation of the eyes, skin and respiratory tract.	NC	8	NR	T or D(aq)
barium ---- powder or solid Ba(s)	C - solid D - powder	3	1	2 W	Toxic; poisonous if powder inhaled or ingested; reacts violently with water and acids; flammable if heated.	D1, F	8	4.3	WF/I
barium carbonate--powder $BaCO_3(s)$	B	2	0	0	May cause irritation of the skin, eyes and respiratory tract; harmful if inhaled, may be fatal if swallowed; prolonged exposure affects muscles and central nervous system, may cause kidney damage.	D1	8	6.1	N/P-T or WF/I
barium chloride dehydrate ---------- solid $BaCl_2 \bullet 2H_2O(s)$	B - soln. C - solid	3	0	0	Toxic; may cause irritation to skin, eyes and respiratory tract; may be fatal if swallowed, harmful if inhaled; prolonged exposure affects heart, respiratory system and central nervous system.	D1, D2	8	6.1	N/P-T or WF/I
barium iodide ------ beads $BaI_2(s)$	B	2	0	0	Irritant to eyes, skin and mucous membranes; harmful if inhaled or swallowed; chronic exposure can cause severe gastroenteritis, slow or irregular heartbeat.	D2	8	6.1	N/P-T or WF/I
barium(IV) oxide -- powder (*barium peroxide*) $BaO_2(s)$	B - soln. C - powder	3	0	1	Toxic; skin or eye contact may lead to severe irritation or burns; may be fatal if swallowed; chronic exposure may lead to damage to CNS, spleen, liver, kidney and/or bone marrow; decomposes slowly in the presence of water.	D1, D2	8	6.1	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
barium hydroxide - crystals (*barium hydrate*) $Ba(OH)_2(s)$	B	3	0	0	Toxic; causes irritation of the skin, eyes and respiratory tract; may be fatal if swallowed, harmful if inhaled; prolonged exposure affects muscles and central nervous system.	D1, E	2	6.1	N/P-T or WF/I
barium iodide ------ crystals $BaI_2(s)$	B	2	0	0	Causes irritation of the skin, eyes and mucous membranes; harmful if inhaled or swallowed; ingestion causes severe abdominal pain, vomiting, diarrhea, tremors and slow or irregular heartbeat.	D1	8	6.1	N/P-T or WF/I
barium nitrate ----- crystals *(black ash)* $Ba(NO_3)_2(s)$	B	3	0	0 OX	Toxic; causes irritation of the skin, eyes and respiratory tract; may be fatal if swallowed, harmful if inhaled; prolonged exposure affects muscles and central nervous system; strong oxidizer, may cause fire if in contact with reducing agents or combustibles.	C, D1, D2	6	5.1 (6.1)	WF/I
barium sulfide ---- crystals BaS(s)	B	2	1	1	Irritates and burns skin and eyes; harmful by ingestion or inhalation; acute over-exposure may be fatal; causes hair loss; decomposes when heated to produce toxic gas; particle-air mixture is combustible.	D1, D2	8	6.1	WF/I
bauxite -- chunks/granules mixture: aluminium silicates & oxides of Al, Si, Ti & Fe	A	1	0	0	Can cause mild irritation to skin, eyes, respiratory and digestive tracts; silicates known to be carcinogenic in humans with prolonged exposure.	NC	8	NR	T

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
Benedict's qualitative reagent –---------- solution mixture of: H_2O ---------- 73.5% $NaCO_3$------- 10.0%, $CuSO_4$------- 1.5%, $NaC_6H_5O_7$--- 15.0%	B	2	0	0	Causes severe irritation of the skin and eyes, as well as the respiratory and digestive tract if ingested or inhaled; long-term exposure may corrode the digestive tract with hemorrhaging and shock; may cause liver and kidney damage or cause adverse reproductive and fetal effects.	D2	8	6.1	WF/I or N/P-D
benzaldehyde ------- liquid (*benzoic aldehyde*) $C_6H_5CHO(l)$	B	2	2	0	Causes irritation of the skin, eyes and respiratory tract; harmful if swallowed or inhaled, prolonged exposure may cause central nervous system depression that can lead to unconsciousness, coma and possible death due to respiratory failure; combustible liquid.	B, D1, D2	5	NR	WF/I
benzaldehyde green ---------- crystals (*malachite green*) $C_{23}H_{25}ClN_2(s)$ or $C_{23}H_{26}N_2O(s)$	B	1	1	1	Contact with skin or eyes may cause irritation; ingestion may be harmful; flammable if heated; light sensitive. Note: Two forms—oxalate and chloride.	NC	8	6.1	WF/I
benzene ---------- liquid $C_6H_6(l)$	D	3	3	0	Toxic; causes irritation of the skin, eyes and respiratory tract; toxic by ingestion, inhalation and skin absorption, depresses the central nervous system; highly flammable; human carcinogen.	B, D1, D2	5	3	WF/I
benzenesulfonic acid 1.5 hydrate --------- crystals (*phenylsulfonic acid*) $C_6H_5SO_3H \bullet 1.5H_2O(s)$	D	3	0	0	Corrosive; causes burns to any area of contact; harmful if swallowed, inhaled or absorbed through the skin.	E	3	8	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
benzoic acid ------ crystals (*benzenecarboxylic acid, phenylformic acid)* $C_7H_6O_2$(s)	A	2	1	0	Causes moderate irritation of the skin and severe irritation and possible injury to eyes; may be harmful if swallowed, inhaled or absorbed through skin; combustible if heated.	D2	3	NR	T
benzoyl peroxide - crystals *(dibenzoyl peroxide, acetoxyl, nericur)* $(C_6H_5CO)_2O_2$(s)	D	2	3	3 OX	Irritant of skin, eyes and respiratory tract; harmful if swallowed or inhaled; possible mutagen and carcinogen; highly flammable; strong oxidizer, reaction with reducing compounds can cause fire; extremely explosive, sensitive to shock, friction and heat.	B, C, D2, F	4,6	5.2	WF/I
beryllium metal ------- lump Be(s)	C	3	1	0	Very toxic if swallowed or inhaled; irritating to skin, eyes and respiratory system; human carcinogen.	D1, D2	8	NR	WF/I
beryllium salts ---------- crystals	D	3 or 4			Very toxic; human carcinogens.	D1, D2	-	-	WF/I
bile salts --------- powder (oxgall) formula not applicable	A	1	0	0	Causes irritation to skin, eyes and respiratory tract; may cause allergic reaction if sensitive to proteolytic enzymes.	NC	8	NR	T
bismuth ---------- powder or lump Bi(s)	B - lump C - powder	2	1	0	May cause irritation of the skin, eyes, digestive and respiratory tracts, particularly in powder form; prolonged exposure affects the central nervous system; may cause liver and kidney damage; powder flammable.	NC	8	NR	T
bismuth chloride pentahydrate ------ crystals (*bismuth trichloride*) $BiCl_3 \bullet 5H_2O$(s)	B	2	0	1	Causes irritation to skin, eyes and respiratory tract, may cause burns; decomposes in water to form bismuth oxychloride.	NC	8	NR	T

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
bismuth nitrate ---- crystals *(bismuth ternitrate*) $Bi(NO_3)_3(s)$	B	2	0	0 OX	Causes irritation to skin, eyes and respiratory tract; harmful if swallowed; strong oxidizer; reaction with reducing agents or combustibles may cause ignition.	C	6	5.1	WF/I
bismuth oxide ----- powder *(dibismuth trioxide, bismuth yellow*) $Bi_2O_3(s)$	A	0	0	0	No adverse effects.	NC	8	NR	T
Biuret reagent ----- solution mixture: NaOH ----- 28.00% $CuSO_4$ ----- 0.12% H_2O -------- 71.88%	A	2	0	0	Corrosive; harmful by inhalation, ingestion or skin absorption; causes burns of the skin, eyes, respiratory and digestive tract; irritation may lead to chemical pneumonitis and pulmonary edema.	D2, E	2	8 (6.1)	D
bleach ---------- solution (*sodium hypochlorite*) mixture: H_2O ----------80 – 99% NaClO----------– 1 – 20% NaClO(aq)	B	2	0	2 OX	Skin irritant, may cause burns to skin and eyes; harmful by inhalation, ingestion or through skin contact; light and temperature sensitive; decomposes with release of chlorine gas; oxidizer.	C, D1	6	8	D
bleaching powder ---------- granules (*calcium hypochlorite*) $Ca(ClO)_2(s)$	B	3	0	2 OX ~~W~~	Corrosive to eyes; minute amounts very harmful if ingested; extremely toxic if inhaled into lungs, burns mucous membranes; water reactive, emits toxic chlorine gas; rapidly decomposes on exposure to air; thermally unstable; oxidizer, decomposes at 180°C releasing oxygen.	C, D1, E	6	8	D-(aq) WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
borax ---------- powder (*sodium borate decahydrate*) $Na_2B_4O_7 \bullet 10H_2O(s)$	A	2	0	0	May cause irritation of skin, eyes and respiratory tract; harmful if inhaled or ingested.	NC	8	NR	T or D(aq)
boric acid ---------- crystals $H_3BO_3(s)$	A	2	0	0	May cause skin, eye and respiratory tract irritation; causes severe digestive tract irritation resulting in hemorrhaging and shock; may have adverse reproductive affects.	D2	1	NR	T or D(aq)
boron --- powder or chunks B(s)	C	3	3	0	Toxic by inhalation, ingestion or by skin absorption; irritant; may affect the CNS; highly flammable.	B, D1, D2	4	4.1	WF/I
brass ---------- solid mixture: copper---- variable (2 parts) zinc ------- variable (1 part) other metals -- variable	A	1	0	0	Finished alloy is not hazardous. Dust or fume is classified as skin and eye irritant.	C, D1	8	NR	R
bromine ------- liquid & gas $Br_2(l)$ or $Br_2(g)$	D	3	0	0 OX	Highly toxic by skin contact, inhalation or ingestion; severe skin irritant, causes severe burns; very strong oxidizer; reacts violently with many organic compounds.	D1	6,7	8 (6.1)	WF/I or N/P-D
bromine water – solution Br(aq)	B	3	0	0 OX	Corrosive vapour or mist; may cause irritation or severe burns to skin, eyes or respiratory tract; ingestion may cause digestive tract burns, abdominal pain, vomiting and possible death; oxidizer.	C, D1	6,7	8 (6.1)	WF/I or N/P-D
bromcresol green---------- powder $C_{21}H_{14}Br_4O_5S(s)$	A	2	1	0	May cause irritation of skin, eyes and respiratory tract; may be harmful if swallowed or inhaled; dust-air mixture explosive.	NC	8	NR	T

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
bromcresol green ---------- solution mixture: water ---------- >98.8% bromcresol green----------< 1.0% tetrasodium ethylene diamine tetraacetate ----------0.02%	A	1	0	0	May cause irritation of skin, eyes.	NC	8	NR	D
bromcresol purple----------powder $C_{21}H_{16}Br_2O_5S(s)$	A	2	0	0	May cause irritation of skin, eyes and respiratory tract; may be harmful if swallowed, inhaled or absorbed through skin.	NC	8	NR	T
bromcresol purple---------- solution mixture: water ---------- 99.96% bromcresol purple-–0.04% $C_{21}H_{16}Br_2O_5S(aq)$	A	1	0	0	May cause irritation of skin and eyes.	NC	8	NR	D
bromoethane ---------- liquid (*ethyl bromide*) $C_2H_5Br(l)$	C	2	3	0	A skin, eye and respiratory tract irritant; harmful if swallowed or inhaled; chronic exposure may lead to liver and kidney damage; an anaesthetic and a narcotic; highly flammable, low flash point, forms explosive mixtures with air.	B, D2	5	6.1	WF/I
bromophenol ------ powder $C_6H_5BrO(s)$	A	1	1	0	Causes irritation to skin, eyes, gastrointestinal and respiratory tracts; flammable if heated or ignited.	NC	8	6.1	WF/I
bromophenol blue–powder $C_{19}H_{10}Br_4O_5S(s)$	A	2	1	0	May cause irritation to skin, eyes and respiratory tract; may be harmful if swallowed or inhaled; flammable if heated, particle-air mixture explosive.	D1	8	6.1	T or D(aq)

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
4-bromophenol blue –---------- solution mixture: water ---------- 79.0% methyl alcohol ------ 20.0% bromophenol blue- < 1.0%	A	2	1	0	May cause irritation to skin, eyes and respiratory tract; may be harmful if swallowed or inhaled; flammable vapours.	D1	8	6.1	D
bromothymol blue –---------- solution mixture: water ---------- 99.9% bromothymol blue- 0.1%	A	1	0	0	May cause irritation to skin and eyes.	NC	8	NR	D
bromothymol blue–crystals $C_{27}H_{28}Br_2O_5S(s)$	A	2	1	0	May cause irritation to skin, eyes and respiratory tract; harmful if swallowed; flammable if heated, particle-air mixture explosive.	D1	8	NR	T
butane ---- liquefied gas $C_4H_{10}(l)$ & $C_4H_{10}(g)$	B	1	4	0	Eye and skin irritant, may be harmful if ingested, inhaled or through skin contact; can cause CNS depression; extremely flammable.	A, B	5	2.1	WF/I
1-butanol ---------- liquid *(butyl alcohol, propyl carbinol, n-butyl alcohol*) $C_4H_{10}O(l)$ or $CH_3(CH_2)_2CH_2OH(l)$	B	2	3	0	May cause irritation to skin, eyes and respiratory tract; harmful if swallowed, inhaled or absorbed through skin; affects the CNS, may affect liver and kidneys; highly flammable liquid and vapour.	B, D2	5	3	WF/I
2-butanone ---------- liquid *(methyl ethyl ketone*) $C_4H_8O(l)$ or $CH_3COCH_2CH_3(l)$	B	2	3	0	Vapour is an eye and skin irritant; may be harmful by ingestion, inhalation or through skin contact; prolonged exposure causes CNS depression; may cause damage to lungs and CNS; may be a mutagen; highly flammable.	B, D2	5	3	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
iso-butyl alcohol ----- liquid (*2-methyl-1-propanol*) $C_4H_{10}O(l)$ or $(CH_3)_2CHCH_2OH(l)$	B	2	3	0	Causes irritation of the skin, eyes and mucous membranes; may be harmful if swallowed, inhaled or absorbed through skin; prolonged exposure affects the CNS; may damage the liver and kidneys; highly flammable.	B, D2	5	3	WF/I
sec-butyl alcohol ---- liquid (*2-butanol, 1-methyl propanol*) $C_4H_{10}O(l)$ or $CH_3CHOHCH_2CH_3(l)$	B	2	3	0	Causes irritation to skin, eyes and respiratory tract; harmful if swallowed or inhaled; affects the CNS; highly flammable liquid and vapour.	B, D2	5	3	WF/I
butyl alcohol-tert ----- liquid *(tert-butanol, 2-methyl-2-propanol)* $C_4H_{10}O(l)$ or $(CH_3)_3COH(l)$	B	2	3	0	Causes irritation to eyes and respiratory tract, may cause irritation to skin; harmful if swallowed or inhaled; affects the CNS; may affect liver and kidneys; highly flammable liquid and vapour.	B, D2	5	3	WF/I
n-butyl phthalate --- liquid (butyl phthalate) $C_6H_4(CO_2C_4H_9)_2(l)$	B	2	1	0	Causes skin and respiratory tract irritation and severe eye irritation; harmful if swallowed or inhaled; combustible if heated or ignited.	D2	8	9	WF/I
n-butyric acid --------- liquid *(butanoic acid,ethyacetic acid, propylformic acid)* $C_4H_8O_2(l)$ or $CH_3CH_2CH_2COOH(l)$	B	2	2	0	Causes severe irritation and possible burns to skin and eyes; may cause respiratory tract irritation; harmful if swallowed, inhaled or absorbed through skin; obnoxious odour; flammable liquid and vapour.	B, E	5,3	8	WF/I
cadmium metal -- solid bar Cd(s)	A	2	0	0	No special health hazards except for dust that may be released. For cadmium powder (dust) see below.	D1, D2	8	NR	R

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
cadmium metal --- powder or chunks Cd(s)	C - chunks D - powder	3	1	0	Toxic by skin contact, inhalation or ingestion; may be fatal if inhaled; prolonged exposure causes damage to lungs and kidneys; dust-air mixture explosive; probable human carcinogen.	D1, D2	8	6.1	WF/I
cadmium salts ----- powder $CdCO_3$(s)	D	3	0	0	Toxic and a human carcinogen with prolonged exposure.	D1, D2	8	6.1	WF/I
caffeine ---------- powder (*1,3,7-trimethylxanthine*) $C_8H_{10}N_4O_2$(s)	B	2	1	0	Causes irritation to skin, eyes and respiratory tract; harmful if swallowed or inhaled; may cause birth defects; flammable if heated, particle-air mixture explosive.	D1, D2	8	6.1	WF/I
calcite ---------- crystalline (*calcium carbonate*) $CaCO_3$(s)	A	0	0	0	May cause irritation to skin, eyes and respiratory tract; nuisance dust.	NC	8	NR	T
calcium metal -------- solid Ca(s)	B	3	1	2 ~~W~~	Corrosive; contact may cause burns; harmful or fatal if swallowed or absorbed through skin; flammable solid; reacts with water.	B, E	8	4.3	WF/I
calcium acetate --- powder $Ca(CH_3COO)_2$(s)	A	0	0	0	No adverse affects.	NC	8	NR	T or D(aq)
calcium carbide - granules CaC_2(s)	C	2	4	3 ~~W~~	Causes severe skin and eye irritation; harmful if inhaled; unstable; extremely flammable; reacts violently with water liberating flammable acetylene gas.	B, D2	4	4.3	WF/I
calcium carbonate-powder (*calcite, aragonite, limestone*) $CaCO_3$(s)	A	1	0	0	May cause irritation to skin, eyes and respiratory tract; nuisance dust.	NC	8	NR	T or D(aq)

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
calcium chloride - granules (*dowflake)* $CaCl_2(s)$	A	2	0	0	Causes irritation and possible burns to skin, eyes and respiratory tract; harmful if swallowed or inhaled; releases chlorine fumes when heated.	D2	8	NR	T or D(aq)
calcium dihydrogen-phosphate monohydrate ------ crystals *(calcium phosphate monobasic)* $Ca(H_2PO_4)_2 \bullet H_2O(s)$	A	1	0	0	Direct contact with eyes causes severe irritation or burns; may cause respiratory tract irritation.	NC	8	NR	WF/I
calcium fluoride --- powder (*fluorite, acid spar*) $CaF_2(s)$	A	2	0	0	May cause irritation to skin, eyes and respiratory tract; may be harmful if swallowed or inhaled.	E	8	NR	T or D(aq)
calcium hydride - granules $CaH_2(s)$	C	3	2	2 W	Corrosive; contact may cause burns; harmful if swallowed, inhaled or absorbed through skin; strong reducing agent; highly flammable solid; reacts with water.	B, D1, E	4	4.3	WF/I
calcium hydroxide-crystals (*slake lime, calcium hydrate*) $Ca(OH)_2(s)$	B	3	0	0	Corrosive; causes burns to skin and eyes and severe irritation to respiratory tract; harmful if swallowed or inhaled.	E	2	8	T or D(aq)
calcium hydroxide-solution mixture: H_2O ----------80 – 90% $Ca(OH)_2$ ---------- 10 –20% $Ca(OH)_2(aq)$	A - 5% or less B - more than 5%	3	0	0	Corrosive; causes burns to skin and eyes and severe irritation to respiratory tract; harmful if swallowed or inhaled.	E	2	NR	D
calcium hypochlorite –------ crystals (*bleaching powder*) $Ca(ClO)_2(s)$	B	3	0	1 OX W	Corrosive; causes burns to area of contact; harmful if swallowed or inhaled; strong oxidizer; reacts with water; emits toxic chlorine gas when mixed with acid.	C, D1	6	5.1	D-(aq) WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
calcium nitrate tetrahydrate -------- crystals $Ca(NO_3)_2 \bullet 4H_2O(s)$	B - soln. C - crystals	2	0	3 OX	Causes irritation to skin, eye and respiratory tract; harmful if swallowed or inhaled; strong oxidizer; will ignite reducing agents or combustibles; may be explosive by shock or friction.	C, D2, F	6	5.1	WF/I
calcium oxide ----- powder $CaO(s)$	B	3	0	1 W	Corrosive; contact causes severe burns to skin, eyes and respiratory tract if inhaled; may cause alkali burns to mouth and throat if ingested; reacts with organic materials and water.	E	8	NR	WF/I
calcium oxalate monohydrate ------- powder $CaC_2O_4 \bullet H_2O(s)$	A	2	0	0	May cause irritation of skin, eye, respiratory and digestive tracts; harmful if swallowed or absorbed through skin.	D1	8	6.1	WF/I
calcium phosphate (dibasic)dihydrate- crystals $CaHPO_4 \bullet 2H_2O(s)$	A	0	0	0	May cause irritation of skin, eyes and respiratory tract.	NC	8	NR	T or D(aq)
calcium phosphate (tribasic) ---------- crystals $Ca_3(PO_4)_2(s)$ or $Ca_5(OH)(PO_4)_3(s)$	A	1	0	0	May cause irritation of skin, eyes, respiratory and digestive tracts.	NC	8	NR	WF/I
calcium propionate -------- granules $Ca(CH_3CH_2COO)_2(s)$	A	1	0	0	May cause irritation of skin, eyes, respiratory and digestive tracts, if large amounts ingested.	NC	8	NR	WF/I
calcium sulfate -- granules (*anhydrous gypsum*) $CaSO_4(s)$	A	1	0	0	Causes irritation to skin, eye and respiratory tract; may be harmful if swallowed.	NC	8	NR	WF/I
calcium sulfide ---- powder $CaS(s)$	D	3	1	1	Toxic; may be fatal if inhaled or ingested; irritant to skin and mucous membranes; flammable; oxidizes in dry air; decomposes in moist air to form H_2S; oxides of sulfur, calcium hydroxide, CO_2 and CO.	D1	8	NR	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
camphor ---------- crystals (*2-bornanone*) $C_{10}H_{16}O$(s)	A	1	2	0	Causes irritation to skin, eye and respiratory tract; flammable.	B	4	4.1	T
caprylic alcohol---------- liquid (*n-octanol*) $C_8H_{18}O$(l) or $CH_3(CH_2)_6CH_2OH$(l)	B	2	2	0	Causes irritation to skin, eye and respiratory tract; may be harmful if swallowed or inhaled; affects the CNS; combustible liquid and vapour.	B, D1	5	NR	D
carbamide ---------- powder (*urea*) CH_4N_2O(s) or NH_2CONH_2(s)	A	1	1	0	May cause irritation of skin, eyes, respiratory and digestive tracts; particle-air mixture explosive.	NC	8	NR	T or D(aq)
carbolic acid –----- liquid or crystals (*phenol, phenic acid, phenylic acid*) C_6H_6O(s)	D	4	2	0	Toxic and corrosive; absorbed rapidly through skin; causes severe burns to any area of contact; may be fatal if swallowed, inhaled or absorbed through skin; affects CNS, liver and kidneys; flammable.	B, D1, D2	4 ,5,3	6.1	WF/I
carbon ----------powder (*graphite*) or rods C(s)	A - rods B - powder	1	1	0	Dust may cause mechanical skin and eye irritation, may cause irritation of the respiratory and digestive tracts; flammable, dust-air mixture explosive.	NC	8	4.2	T
carbon dioxide --------- gas CO_2(g)	B	2	0	0	Will elevate rate of breathing and heart rate; gas nontoxic but displaces oxygenated air and can cause rapid suffocation with high concentrations.	NC	8	2.2	A
carbon disulfide ----- liquid (*carbon bisulfide*) CS_2(l)	D	3	4	0	Toxic, may be fatal if inhaled or ingested; harmful if absorbed through skin; affects the CNS and heart, may cause liver and kidney damage; has adverse reproductive and fetal effects; extremely flammable liquid and gas.	B, D1, D2	5	3 (6.1)	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
carbon tetrachloride–liquid $CCl_4(l)$	D	3	2	0	Toxic; may be fatal by inhalation or skin absorption; highly toxic by ingestion; causes irritation to skin, eyes and respiratory tract; readily absorbed through skin; reproductive toxin; flammable; emits toxic fumes; mutagen and possible human carcinogen.	D1, D2	5	6.1	WF/I
carborundum --------- solid (*silicon carbide*) SiC(s)	A	1	0	0	May cause mechanical irritation to skin and eyes, and irritation to the respiratory and digestive tracts; chronic inhalation of dust may lead to silicosis and lung damage.	NC	8	NR	T
carmine –---------- powder $C_{22}H_{20}O_{13}$•xAl(s)	A	2	0	0	May cause skin, eye and respiratory tract irritation; may be harmful if swallowed, inhaled or absorbed through skin.	NC	8	NR	WF/I
Carnoy's fluid --------- liquid mixture: ethanol ---------- 98.0% acetic acid (glacial)- 1.0% chloroform ---------- 1.0%	C	1	3	0	May cause irritation to skin, eyes and respiratory tract, possible burns to eyes; ingestion may cause discomfort and vomiting; highly flammable liquid.	B, D1, D2	5	3	WF/I
casein ---------- granules (*milk protein)* formula not applicable	A	0	1	0	No adverse health effects; flammable if heated or ignited.	NC	8	NR	T
caustic potash ------ pellets (*potassium hydroxide*) KOH(s)	B	3	0	1	Corrosive; causes severe burns to any area of contact; harmful by ingestion, inhalation or skin contact; unstable, absorbs carbon dioxide and moisture from air.	D1, E	2	8	WF/I or N/P-T
caustic soda -------- pellets (*sodium hydroxide*) NaOH(s)	B	3	0	1	Corrosive; causes burns to any area of contact; may be fatal if swallowed; harmful if inhaled; heat released when added to water.	D1, E	2	8	WF/I or N/P-T

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
cellulose acetate –powder (variable formula)	A	1	1	0	No adverse effects.	NC	8	NR	T or D(aq)
cellulose methyl ether---------- granules (*methyl cellulose*) $C_7H_{14}O_5X$ (X-variable)(s)	A	0	0	0	No adverse effects.	NC	8	NR	T
cesium metal ---------- solid Cs(s)	C	2	0	2 ~~W~~	May cause irritation of skin, eyes, respiratory and digestive tracts; may cause central nervous system effects, cardiac disturbances; reacts violently with water.	D1, D2, F	8	4.3	WF/I
cesium chloride -- crystals CsCl(s)	A	0	0	0	No adverse effects.	NC	8	NR	T
cetyl alcohol ------- powder (*1-hexadecanol, palmityl alcohol*) $C_{16}H_{34}O$(s) or $CH_3(CH_2)_{14}CH_2OH$(s)	A	1	1	0	May cause mild skin and eye irritation; powder-air mixture flammable.	NC	8	NR	T
chalcopyrite -------- chunks (*cupric ferrous sulfide*) $CuFeS_2$(s)	A	1	0	0	May be irritating to skin, eyes and respiratory tract; prolonged exposure may cause hemolysis of the red blood cells and injury to liver, lungs, kidneys and pancreas.	NC	8	NR	T
charcoal ----------solid (*carbon*) C(s)	A	1	1	0	Dust may cause mechanical skin and eye irritation; may cause irritation of the respiratory and digestive tracts; flammable.	NC	8	4.2	T
chlorine ---------- gas Cl_2(g)	D	4	0	0 OX	Extremely toxic if inhaled; strong oxidizer.	D1, D2	6, 7	5.1	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
chloroform ---------- liquid (*trichloromethane*) $CHCl_3(l)$	D	2	0	0	Causes irritation to skin, eyes and respiratory tract; may be fatal if swallowed, inhaled or absorbed through skin; extended exposure may affect the CNS, cardiovascular system, liver and kidneys; possible human carcinogen.	D1, D2	8	6.1	WF/I
2 -chlorophenol ------ liquid (*o-chlorophenol, 2-hydroxychlorobenzene*) $C_6H_5ClO(l)$	C	3	2	0	Corrosive; very destructive of mucous membranes, inhalation may be fatal; harmful if swallowed or absorbed through skin; may cause liver and kidney damage; flammable; possible human carcinogen.	B, D1, D2	5	5	WF/I
chromic acid –----- solution (c*hromium*(*VI)*) *oxide solution*) mixture: H_2O ---------- 90% CrO_3 ---------- 10% $CrO_3(aq)$	C	3	0	1 OX	Corrosive; causes burns to skin, eyes and mucous membranes; highly toxic; powerful oxidizing agent; avoid contact with reducing agents and organic material. A human carcinogen as fume or dust.	C, D1, D2, E	1, 6	8	N/P-D
Chromium (III) acetate ---------- powder (*chromic acetate*) $C_6H_9CrO_6(s)$ or $Cr(CH_3COO)_3(s)$	B	1	1	0	May cause minor irritation of skin, eyes and respiratory tract; prolonged exposure causes cumulative lung damage; combustible if heated or ignited.	NC	8	6.1	WF/I
chromium(III) chloride hexahydrate ------- crystals $CrCl_3 \bullet 6H_2O(s)$	B	2	0	0	May cause skin, eye, respiratory and digestive tract irritation and possible burns; may be harmful if swallowed; may cause liver and kidney damage; may cause fetal effects.	NC	8	NR	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
chromium(III) nitrate nonahydrate ---------- solid $Cr(NO_3)_3 \bullet 9H_2O(s)$	B	2	0	1 OX	May cause severe skin, digestive and respiratory tract irritation and possible burns; may cause methemoglobinemia; strong oxidizer, may explode when heated.	C, D2	6	5.1	WF/I
chromium metal ------ solid Cr(s)	A	1	0	0	Associated dust may cause irritation to skin, eyes and respiratory tract. For dust see effects below.	NC	8	NR	R
chromium metal -- powder Cr(s)	B	2	1	1	Dust causes skin, eye and digestive tract irritation; causes severe respiratory tract irritation; may cause lung, liver and kidney damage; oxidizes in air; dust-air mixture explosive.	NC	8	NR	R
chromium(III) chloride hexahydrate ----- powder $CrCl_3 \bullet 6H_2O(s)$	B	2	0	0	Causes skin and eye irritation and possible burns; causes respiratory tract irritation; may cause digestive tract irritation, may cause kidney and liver damage with prolonged exposure.	D1, D2	8	6.1	WF/I
chromium(III) nitrate nonahdrate --------- crystals $Cr\ (NO_3)_3 \bullet 9H_2O(s)$	B	2	0	1 OX	Irritant to skin and eyes with possible burns; harmful if swallowed or inhaled; strong oxidizer; may explode when heated.	D1	6	5.1	WF/I
chromium(VI) salts ---------- powder	D	3	0	1	Corrosive; all carcinogenic with long-term exposure.	D1 D2	6	5.1	WF/I
chromium(VI) oxide ---------- powder $CrO_3(s)$	D	3	0	1 OX	Corrosive; causes severe burns to every area of contact; harmful if swallowed or inhaled, affects the respiratory system, liver, kidneys, eyes, skin and blood; strong oxidizer; carcinogenic.	D1, D2	6	5.1, 8	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
chromium potassium sulfate•12 hydrate----------granules $CrK(SO_4)_2•12\ H_2O(s)$	B	2	0	0	Causes skin, eye and respiratory tract irritation; harmful if swallowed or inhaled.	D2	8	NR	WF/I
citric acid ---------- powder $C_6H_8O_7(s)$	B	2	0	0	Causes skin and respiratory tract irritation; causes severe eye irritation; may cause digestive tract irritation; moisture sensitive.	E	3	NR	N/P-D
Clayton yellow ---- powder (*thiazole yellow G*) $C_{28}H_{19}N_5Na_2O_6S_4(s)$	B	0	1	1	No adverse effects; flammable if heated or ignited, air-dust mixture explosive; light sensitive.	NC	8	NR	T
cobalt ----- powder or solid $Co(s)$	B - solid D - powder	2	0	0	Powder may cause irritation to eyes, skin and respiratory tract; harmful if swallowed; powder will oxidize in air; possible human carcinogen.	D2	8	4.1	R or WF/I
cobalt(II) acetate – crystals $Co(C_2H_3O_2)_2•4H_2O(s)$	A	1	0	0	Causes irritation to skin, eyes and respiratory tract; harmful if swallowed or inhaled; chronic exposure may effect the thyroid, lungs, heart and kidneys.	NC	8	NR	WF/I or N/P-T
cobalt(II) carbonate–----------powder $CoCO_3(s)$	B	2	0	0	Causes irritation to eyes, skin and respiratory tract; harmful if swallowed or inhaled; chronic exposure may effect the thyroid, lungs, heart and kidneys.	D1, D2	8	6.1	WF/I or N/P-T
cobalt(II) chloride, anhydrous & hexahydrate ------- powder $CoCl_2$ & $CoCl_2•6H_2O(s)$	B	2	0	0	May cause irritation of skin, eyes and mucous membranes; may be harmful if inhaled or absorbed through skin; toxic by ingestion; possible carcinogen.	D1, D2	8	6.1	WF/I or N/P-T

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
cobalt(II) nitrate hexahydrate ------- crystals $Co(NO_3)_2 \bullet 6H_2O(s)$	B	2	0	0	Causes irritation of skin, eyes and mucous membranes; harmful if inhaled or absorbed through skin.	C, D2	8	6.1	WF/I
cobalt(II) sulfate heptahydrate ------ crystals $CoSO_4 \bullet 7H_2O(s)$	B	2	0	0	Causes irritation of skin, eyes and mucous membranes; may be harmful if inhaled or absorbed through skin.	D1, D2	8	6.1	WF/I or N/P-T
colchicine ---------- powder $C_{22}H_{25}NO_6(s)$	D	4	1	0	Corrosive and highly toxic if swallowed; causes severe irritation of eyes; causes irritation of skin and respiratory tract; may be fatal if inhaled, or absorbed through skin; may cause birth defects; affects the reproductive system; combustible if heated or ignited.	D1, D2	8	6.1	WF/I
collodion solution --- liquid (*pyroxylin solution*) mixture: ethyl ether --------- 60-70% ethyl alcohol ------- 22-26% nitrocellulose ----- ~5.2 %	C	2	4	0	Causes skin irritation and possible burns, moderate eye irritation; harmful if inhaled, swallowed or absorbed through skin; extended exposure to vapour can cause lung damage; may cause central nervous system depression or reproductive and fetal effects; may cause liver and kidney damage; prolonged exposure to air may form unstable explosive peroxides; extremely flammable; possible human carcinogen.	B, D2	5	3	WF/I
congo red ---------- solution mixture: water ---------- 99.0% congo red ---------- 0.1% $C_{32}H_{22}N_6Na_2O_6S_2(aq)$	B	1	0	0	May cause irritation to skin and eyes; excessive absorption through skin or by ingestion may be harmful.	D1, D2	8	9	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
congo red ---------- powder $C_{32}H_{22}N_6Na_2O_6S_2$(s)	C	3	1	0	Toxic; may be fatal by ingestion, inhalation or by skin absorption; causes irritation of eyes and possibly skin; possible human carcinogen; combustible if heated or ignited; dust-air mixture explosive.	D1, D2	8	6.1	WF/I
copper metal ------ powder Cu(s)	D	2	0	0	Causes irritation to skin, eyes and mucous membranes; harmful if swallowed or inhaled; affects the liver and kidneys; chronic exposure may cause tissue damage.	NC	8	NR	R
copper metal - strip or wire Cu(s)	A	0	0	0	No adverse effects.	NC	8	NR	R
copper(II) acetate monohydrate ------- powder $Cu(CH_3COO)_2 \bullet H_2O$(s)	B	2	0	0	Causes irritation to skin and respiratory tract, causes eye burns; harmful if swallowed.	NC	8	9	WF/I or N/P-T
copper(II) bromide –----------crystals $CuBr_2$(s)	B	2	0	0	Causes irritation to skin, eyes and respiratory tract; harmful if swallowed; affects central nervous system, liver and kidneys.	NC	8	NR	WF/I or N/P-T
copper(II) carbonate basic---------- powder $(CuCO_3 \bullet CU(OH)_2$(s)	B	2	0	0	Causes irritation to skin, eyes and respiratory tract; harmful if swallowed; affects the liver and kidneys.	D1, D2	8	NR	WF/I or N/P-T
copper(I) & (II) chloride (anhydrous) -------- crystals CuCl & $CuCl_2$(s)	B	2	0	0	Causes irritation to skin, eyes, respiratory and digestive tract; harmful if inhaled or swallowed; may cause lung, liver and kidney damage.	D1, D2, E	8	8	WF/I or N/P-T

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
copper(II) nitrate· hemihydrate ------- crystals $Cu(NO_3)_2 \bullet 2.5H_2O(s)$	B	2	0	0 OX	Causes irritation to skin, eyes and respiratory tract; harmful if swallowed; affects the liver and kidneys; strong oxidizer; contact with other material may cause fire.	C, D2, E	6	5.1	WF/I
copper(II) oxide -- powder $CuO(s)$	B	2	0	0	Causes irritation to skin, eyes and respiratory tract; harmful if swallowed; affects the liver and kidneys.	D2	8	NR	T
copper(II) sulfate anhydrous & pentahydrate-------- powder $CuSO_4$ & $CuSO_4 \bullet 5H_2O(s)$	B	2	0	0	May cause irritation to skin, eyes and respiratory tract; harmful if swallowed; affects the liver and kidneys.	D1, D2	8	9	WF/I or N/P-T
copper(II) sulfide - powder $CuS(s)$	B	2	0	0	Causes irritation to skin, eyes and respiratory tract; harmful if swallowed; affects the liver and kidneys.	NC	8	NR	WF/I or N/P-T
cream of tartar ---- powder (*potassium hydrogen tartrate*) $KHC_4H_4O_6(s)$	A	0	0	0	No adverse effects.	NC	8	NR	T
cresol ---------- liquid (*cresylic acid*) $C_7H_8O(l)$	B	2	2	1	May cause severe skin and eye irritation; harmful by inhalation, ingestion, or absorption through skin; chronic exposure may cause damage to kidneys, liver, lungs, blood or central nervous system; flammable.	B, D1	5	6.1	WF/I
cryolite ---------- chunk (*sodium aluminum fluoride*) $Na_3AlF_6(s)$	C	3	0	0	Toxic; extremely destructive of mucous membranes and upper respiratory tract; harmful by inhalation; ingestion or through skin absorption; prolonged exposure through inhalation or ingestion can cause serious damage to health.	D1, D2	8	8	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
crystal violet ------- powder (*gentian violet*) $C_{25}H_{30}N_3Cl(s)$	B	2	1	0	Causes irritation to skin, eyes and mucous membranes; may cause eye injury; harmful if swallowed; possible human carcinogen; dust-air mixture explosive.	D1, D2	8	6.1	T
crystal violet stain ---------- solution mixture: ethanol ---------- <12.0% methyl alcohol ------ <1.0% phenol ---------- <1.0% crystal violet ------- < 0.4% water ---------- balance	B	2	1	0	May cause irritation of skin, eyes, respiratory and digestive tract; inhalation of high concentrations causes central nervous effects; may cause liver and kidney damage and reproductive and fetal effects; possible human carcinogen.	D2	8	3 (6.1)	WF/I
cyclohexane ---------- liquid (*hexamethylene*) $C_6H_{12}(l)$	B	2	3	0	Respiratory, eye, and skin irritant; harmful by inhalation, ingestion or skin absorption; highly flammable.	B	5	3	WF/I
cyclohexanol --------- liquid (hexalin,*cyclohexyl alcohol*) $C_6H_{12}O(l)$	B	2	2	0	Severe skin and eye irritant; harmful by inhalation, ingestion or skin absorption; flammable; reacts violently with oxidizing agents.	B, D1	5	3	WF/I
cyclohexene ---------- liquid (*tetrahydrobenzene)* $C_6H_{10}(l)$	B	1	3	0	Skin, respiratory tract and eye irritant; highly flammable; strong offensive odour.	B, D2	5	3	WF/I
cysteine ---------- crystals $C_3H_7NO_2S(s)$ or $HSCH_2CH(NH_2)COOH(s)$	A	1	0	0	May be harmful if swallowed.	NC	8	NR	T
cystine ---------- crystals (*L-cystine*) $C_6H_{12}N_2O_4S_2(s)$	A	0	0	0	No adverse effects.	NC	8	NR	T

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
dextrose ---------- crystals (*glucose*) $C_6H_{12}O_6$(s)	A	0	0	0	No adverse effects.	NC	8	NR	T
diastase ---------- powder (*amylolytic enzymes*) formula not applicable	A	0	1	0	Mechanical irritant, no adverse health effects; combustible if heated or ignited; dust-air mixture explosive.	NC	8	NR	T
1,4 – dibromo-benzene ---------- crystals (*p - dibromobenzene*) $C_6H_4Br_2$(s)	B	1	0	0	Causes irritation to skin, eyes and respiratory tract.	NC	8	NR	WF/I
dibutyl phthalate ---- liquid (*n-butyl phthalate*) $C_6H_4 (CO_2C_4H_9)_2$(l)	B	2	1	0	Causes skin and respiratory tract irritation and severe eye irritation; harmful if swallowed or inhaled; combustible if heated or ignited.	D2	8	9	WF/I
p-dichloro-benzene ---------- crystals (*I,4-dichlorobenzene*) $C_6H_4Cl_2$(s)	B	2	2	0	Causes irritation to skin, eyes and respiratory tract; harmful if inhaled, swallowed or absorbed through the skin; affects the respiratory system, liver, kidneys and blood; flammable, forms explosive vapour-air mixture; possible human carcinogen.	D1, D2	4	9	WF/I
1,2-dichloroethane - liquid $ClCH_2CH_2Cl$(l)	C	2	3	0	Harmful if swallowed, inhaled or absorbed through skin; affects the central nervous system, liver, kidneys and cardiovascular system; flammable liquid and vapour; possible human carcinogen.	B, D1, D2	5	3 (6.1)	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
dichloromethane ---- liquid (*methylene chloride*) $CH_2Cl_2(l)$	C	2	1	0	Causes irritation and possible burns to skin, eyes and respiratory tract; may be absorbed through skin; may depress central nervous system function; combustible if heated or ignited; vapours may form explosive mixture with air; mutagen and possible human carcinogen.	D1, D2	8	6.1	WF/I
2,4-dichlorophenoxy-acetic acid --------- powder (*2,4 D*) $C_8H_6Cl_2O_3(s)$	C	3	0	1	Toxic if swallowed or inhaled; eye, skin and respiratory irritant; may be harmful by skin contact; may cause central nervous system damage; possible human carcinogen; decomposes in water.	D1, D2	8	6.1	WF/I
1,2-dichlorotetrafluoro-ethane ---------- gas (*freon 114*) $CClF_2CClF_2(g)$ or $C_2Cl_2F_4(g)$	B	1	0	0	May irritate skin, eyes and respiratory tract; contributes to ozone depletion in the atmosphere.	NC	8	NR	WF/I
diethyl ether ---------- liquid (*ethyl ether*) $C_4H_{10}O(l)$ or $C_2H_5OC_2H_5(l)$	D	2	4	1	Causes skin, eye and respiratory irritation; harmful by ingestion, inhalation or skin absorption; may cause inebriation or coma; extremely flammable; unstable, reacts with air to form explosive peroxides while in storage.	B, D1	5	3	WF/I
dimethylglyoxime-- powder *(diacetyldioxime)* $C_4H_8N_2O_2(s)$	B	1	1	0	May irritate skin, eyes and respiratory tract; harmful if swallowed; flammable if heated.	NC	8	NR	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
dimethyl sulfate ------ liquid $(CH_3)_2SO_4(l)$	D	4	2	0	Toxic and corrosive; causes severe burns to any area of contact; vapours extremely toxic, a few whiffs can be fatal; vapours have no odour or immediate irritation to warn of inhalation exposure; may also be fatal if swallowed or absorbed through skin; delayed effects are severe inflammation, chest tightness, trouble breathing and severe pulmonary damage; flammable liquid and vapours; possible human carcinogen.	B, D1, D2	5	6.1 (8)	WF/I
2, 4–dinitrophenol- powder (*aldefin*) $C_6H_4N_2O_5(s)$	D	3	2	0	Toxic by inhalation and ingestion, danger of cumulative effects; flammable, may explode when heated.	B, D1, D2	4	4.1	WF/I
1,4-dioxane ---------- liquid (*1,4-diethylene dioxide*) $C_4H_8O_2(l)$	D	3	3	1	Most toxic by inhalation, easily absorbed through lungs; poisoning has poor warning properties; anhydrous form oxidizes slowly forming explosive peroxides in storage; highly flammable; a possible human carcinogen.	B, D1, D2	5	3	WF/I
diphenylamine ---- crystals (*n-phenylbenzeneamine*) $C_{12}H_{10}NH(s)$	C	3	1	0	Toxic, inhalation causes systemic poisoning; causes irritation to skin, eyes and respiratory tract; harmful if swallowed, inhaled or absorbed through skin; affects the blood; prolonged exposure damages the nervous system, liver, kidneys and bone marrow; flammable if heated; possible mutagen.	NC	8	6.1	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
dry ice ---------- solid/gas (*carbon dioxide*) $CO_2(s)$ & $CO_2(g)$	C	2	0	0	Cryogenic solid; causes frostbite or extensive freezing of flesh on contact; gas will elevate rate of breathing and heart rate; gas nontoxic but displaces oxygenated air and can cause rapid suffocation with high concentrations.	NC	8	9	A
EDTA ---------- powder (*ethylenedinitrilotetraacetic acid*, *edetic acid*) $C_{10}H_{16}N_2O_8(s)$ or the dihydrate $C_{10}H_{12}N_2Na_4O_8 \bullet 2H_2O(s)$	A	2	0	0	Causes eye irritation, may cause irritation to skin and respiratory tract; may be harmful if swallowed or inhaled.	NC	8	NR	WF/I
eosin B ---------- powder $C_{20}H_6Br_2N_2Na_2O_9(s)$	A	2	1	0	May cause irritation to skin, eyes or respiratory tract; may be harmful if swallowed, inhaled or absorbed through skin; combustible if heated or ignited.	NC	8	NR	WF/I
eosin Y ---------- solution mixture: water ---------- 99.8% eosin Y ---------- 0.2% $C_{20}H_6Br_4Na_2O_5(aq)$	A	1	0	0	May cause irritation of the eyes and skin; excessive absorption through skin or by ingestion may be harmful.	NC	8	NR	D
eosin Y ---------- powder $C_{20}H_6Br_4Na_2O_5(s)$	A	2	0	0	May cause irritation of the eyes, skin, respiratory and digestive tracts; harmful if inhaled or absorbed through skin; may be harmful if ingested.	NC	8	NR	WF/I
epinephrine 99% - powder (*adrenalin*) $C_9H_{13}NO_3(s)$	B - soln. C - powder	2	1	0	Causes skin and eye irritation; harmful if swallowed, inhaled or absorbed through skin; increases heart rate, blood pressure; may cause central nervous system depression; excess absorption can be fatal; powder-air mixture explosive.	D2	8	6.1	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
epsom salts ------ powder (*magnesium sulfate heptahydrate*) $MgSO_4 \bullet 7H_2O(s)$	A	1	0	0	Dust may be slightly irritating to respiratory system; may be harmful if swallowed.	NC	8	NR	T
eriochrome black T-- liquid mixture: water ---------- 0.8% methyl alcohol ------ 98.4% ammonium hydroxide ---------- 0.3% eriochrome black T - 0.4%	B	2	3	0	Causes irritation of skin, eyes and respiratory tracts; harmful if inhaled, swallowed or absorbed through skin; highly flammable liquid and vapour.	B, D1, D2	5	3 (6.1)	D
eriochrome black T-powder $C_{20}H_{12}N_3NaO_7S(s)$	A	1	0	0	Causes eye irritation; may cause irritation of the skin, digestive and respiratory tracts.	NC	8	NR	T
ethanoic acid, glacial ---------- liquid (*glacial acetic acid*) $CH_3COOH(l)$	B	3	2	0	Corrosive; liquid and mist cause severe burns to all body tissue; may be fatal if ingested; harmful if inhaled; flammable liquid and vapour.	B, E	5	8 (3)	WF/I or N/P-D
ethanoic acid--------solution (*acetic acid*, v*inegar*) mixture: CH_3COOH --------- 7% H_2O ---------- 93% $CH_3COOH(aq)$	A	1	0	0	Causes irritation of the nose, throat and respiratory tract, prolonged contact may cause burns and dermatitis.	NC	1	NR	N/P-D
ethyl acetate ---------- liquid $CH_3COOC_2H_5(l)$ or $C_4H_8O_2(l)$	B	2	3	0	Causes irritation to skin, eyes and respiratory tract; harmful if swallowed or inhaled; affects the central nervous system; highly flammable liquid.	B, D2	5	3	WF/I
ethyl alcohol ---------- liquid (*ethanol*) $C_2H_5OH(l)$	B	0	3	0	Causes moderate skin and severe eye irritation; inhalation or ingestion of high concentrations may depress the central nervous system; highly flammable.	B, D1, D2	5	3	D

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
ethylamine ---- liquid & gas (*monoethyamine*) $C_2H_7N(l)$ & $C_2H_7N(g)$	D	3	4	0	Corrosive; higher concentrations destructive to skin, airway and eyes; inhalation may be fatal; vapours extremely flammable.	B, D1	5	3	WF/I or RS (gas in cylinder)
ethyl bromide --------- liquid (b*romoethane*) $C_2H_5Br(l)$ or $CH_3CH_2Br(l)$	D	2	3	0	Irritating to skin and eyes; very irritating upon inhalation; narcotic, may cause liver and kidney damage; harmful if swallowed; highly flammable, forms explosive mixture with air; possible carcinogen, mutagen.	B, D1, D2	5	6.1	WF/I
ethyl butyrate --------- liquid $C_6H_{12}O_2(l)$	B	1	3	0	Vapours may cause skin, eye, mucous membrane and upper respiratory tract irritation; may be absorbed through skin; highly flammable liquid.	B	5	3	WF/I
ethylene dichloride -- liquid (*1,2 - dicholoroethane)* $ClCH_2CH_2Cl(l)$	D	2	3	0	Harmful if swallowed, inhaled or absorbed through skin; causes irritation to skin, eyes and respiratory tract; inhalation of concentrated amounts affects the central nervous system, liver, kidneys and cardiovascular system; highly flammable liquid and vapour; possible human carcinogen.	B, D1, D2	5	3 (6.1)	WF/I
ethylenediamine ----- liquid (*1,2-ethanediamine)* $C_2H_8N_2(l)$	D	3	2	0	Corrosive; causes burns to any area of contact; very destructive of mucous membranes; harmful if inhaled, swallowed or absorbed through skin; flammable liquid and vapours; mutagen, negative reproductive effects.	D2	5	8 (3)	WF/I
ethylenedinitrilotetraacetic acid (EDTA) -------- powder (*edetic acid*) $C_{10}H_{16}N_2O_8(s)$ or $C_{10}H_{12}N_2Na_4O_8 \bullet 2H_2O(s)$	A	2	0	0	Causes eye irritation; may cause irritation to skin and respiratory tract; may be harmful if swallowed or inhaled.	NC	8	NR	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
ethylene glycol ------- liquid (*1,2-ethanediol*) $C_2H_6O_2(l)$	B	2	1	0	Irritating to skin, eyes and respiratory system; harmful if swallowed, can be lethal to some people; possible risk to fertility and fetal development; combustible at higher temperatures.	D2	8	3	WF/I
ethyl ether ---------- liquid (*diethyl ether*) $C_4H_{10}O(l)$	D	2	4	1	Causes skin, eye and respiratory irritation; harmful by ingestion, inhalation or skin absorption; may cause inebriation or coma; extremely flammable; unstable, reacts with air to form explosive peroxides while in storage.	B, D2	5	3	WF/I
ethyl iodide ---------- liquid (*iodoethane*) $C_2H_5I(l)$	C	2	1	1	Causes irritation to skin, eyes and respiratory tract; harmful if swallowed or inhaled; can affect the nervous system and motor control with repeated exposure; reacts with water forming toxic fumes; decomposes in light and air releasing free iodine; combustible if heated.	D2	8	6.1	WF/I
Fehling's reagent A ---------- solution mixture: copper(II) sulfate -- 4.43% water ---------- 95.57% $CuSO_4(aq)$	B	2	0	0	Splashes may cause irritation to skin or eyes, misting or vapours from heating may cause irritation of the respiratory tract; may be harmful if swallowed.	D1, D2, E	8	9	WF/I or N/P-D
Fehling's reagent B ---------- solution mixture: sodium potassium tartrate ---------- 24% potassium hydroxide - 7% water ---------- 69%	B	2	0	0	Splashes cause eye and skin burns; may cause severe respiratory or digestive tract irritation and burns if inhaled or ingested.	D2, E	8	8	D

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
feldspar ---------- chunks (*kaolinite*) $H_4Al_2Si_2O_9 \bullet SiO_2$(s)	A	1	0	0	Dust may irritate skin, eyes, respiratory and digestive tracts; repeated prolonged inhalation can lead to silicosis.	NC	8	NR	T
florisil ---------- solid (*magnesia-silica gel*) MgO3.75 $SIO_2 \bullet XH_2O$(s)	A	1	0	0	May cause irritation of the skin, eyes and respiratory tract.	NC	8	NR	T
fluorine ---------- gas F_2(g)	D	4	0	4 OX ~~W~~	Extremely corrosive and toxic gas; direct exposure of skin and eyes produces burns in seconds; severely irritates nose and throat; most powerful oxidizing agent, reacts explosively with a wide range of organic and inorganic substances; water reactive.	D1, C, F	6, 7	2.3	RS
fluorite ---------- solid (*calcium fluoride, fluorspar*) CaF_2(s)	A	2	0	0	Dust may cause irritation to skin, eyes and respiratory tract; may be harmful if swallowed or inhaled.	NC	8	NR	T
formaldehyde ----- solution (*formalin, methanal*) mixture: HCHO ---------- 37% CH_3OH ----------12 - 15% H_2O ---------- 48 - 53%	D	3	2	0	Toxic by inhalation, ingestion and through skin absorption; extremely destructive to tissues of the mucous membranes and upper respiratory tract; ingestion may be fatal or cause blindness; flammable liquid and vapour; mutagen; probable human carcinogen.	B, D1, D2	5	3 (8)	WF/I
formalin ---------- solution mixture: HCHO ---------- 3 - 4% CH_3OH ---------- 1 - 1.5% H_2O ---------- 94 - 96%	C	2	2	0	Harmful by inhalation and through skin absorption; causes irritation to skin, eyes and respiratory tract; ingestion may be fatal or cause blindness; mutagen; probable human carcinogen; flammable vapour.	B, D1, D2	5	9	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
formic acid -------- solution (*methanoic acid*) mixture: formic acid -------- 85 - 98% water ---------- 02 - 15% HCOOH(aq)	B	3	2	0	Corrosive; causes severe burns to skin, eyes, mucous membranes and respiratory tract; may be fatal by ingestion, inhalation or skin absorption; flammable liquid; decomposes to produce carbon monoxide during prolonged storage thus potential explosive hazard.	B, E	1, 5	8	WF/I or N/P-D
d-fructose --------- powder $C_6H_{12}O_6$(s)	A	1	1	0	Powder may cause mild irritation of the eyes and respiratory tract; flammable if heated.	NC	8	NR	T
fuchsin (acid) –------powder (*acid violet 19*) $C_{20}H_{17}N_3Na_2O_9S_3$(s)	B	2	1	0	May cause irritation of skin, eyes and respiratory tract; may be harmful if swallowed, inhaled or absorbed through skin; combustible if heated.	D2	3	NR	T
fumaric acid ------- powder (*2-butenedioic acid*) $C_4H_4O_4$(s)	B	2	1	0	May cause skin, respiratory and digestive tract irritation; causes eye irritation; may cause kidney damage, flammable if heated.	D2	3	NR	WF/I or N/P-D
galactose ---------- powder $C_6H_{12}O_6$(s)	A	0	1	0	No adverse affects; combustible if heated or ignited, dust-air mixture explosive.	NC	8	NR	T
galena ---------- solid (*lead(II) sulphide*) PbS(s)	A	2	0	0	Dust may irritate the skin and eyes; harmful if swallowed or inhaled.	D1	8	6.1	T
gallium --- solid or powder Ga(s)	A	2	0	0	Causes skin, eye and respiratory tract irritation; may cause gastro-intestinal tract irritation with nausea, vomiting and diarrhea; may cause bone marrow abnormalities with damage to blood forming tissues.	D2	8	8	T

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
gentian violet ----- solution mixture: methyl alcohol ------ 20.0% water ---------- 78.5% ammonium oxalate- 1.0% gentian violet ------ 0.5%	B	2	1	0	May cause irritation to skin, eyes, respiratory and digestive tracts; harmful and possibly fatal if swallowed or inhaled in excess; flammable vapours.	D1, D2	8	NR	D
gentian violet ------ powder (*crystal violet*) $C_{25}H_{30}N_3Cl(s)$	B	2	1	0	May cause skin and respiratory irritation; causes severe eye irritation; harmful if swallowed; may be harmful if inhaled; combustible if heated or ignited, air-powder mixture explosive; may be a human carcinogen.	D1, D2	8	6.1	T
germanium–powder/solid Ge(s)	B - solid C - powder	2	2	0	Causes skin, eye, mucous membrane and respiratory tract irritation; may be harmful if absorbed through skin, inhaled or ingested; may cause damage to liver and kidneys; flammable solid, dust-air mixture explosive.	B, D2	8	6.1	T- solid WF/I- powder
gibberellic acid --- powder $C_{19}H_{22}O_6(s)$	A	1	1	0	May cause skin, eye, respiratory and digestive tract irritation; flammable if heated.	NC	3	NR	D
glucose ---------- powder (*dextrose*) $C_6H_{12}O_6(s)$	A	0	1	0	No adverse affects. Flammable if heated.	NC	8	NR	T
glutamic acid ----- crystals $C_5H_9NO_4(s)$	A	1	1	0	May cause skin, eye, respiratory and digestive tract irritation; combustible if heated or ignited, dust-air mixture explosive.	NC	3	NR	WF/I or N/P-T

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
glycerin ----- viscous liquid (*glycerol, 1,2,3-propanetriol*) $C_3H_8O_3(l)$	A	1	1	0	May cause skin and eye irritation; ingestion of large amounts may cause irritation of the intestinal tract; inhalation of mist may irritate the respiratory tract; contact with strong oxidants (chromium trioxide, potassium chlorate, potassium permanganate) may be explosive; flammable if heated.	NC	8	NR	D
glycine –---------- crystals $C_2H_5NO_2(s)$	A	1	0	0	May cause skin, eye, respiratory and digestive tract irritation, the latter with ingestion of large amounts.	NC	8	NR	T
D-glycogen --------- powder (*animal starch*) $(C_6H_{10}O_5)_n(s)$	A	0	1	0	No adverse health effects; flammable if heated or ignited, air-dust mixture explosive.	NC	8	NR	T
gold ---- powder or pieces Au(s)	A	1	0	0	Powder may cause, eye, respiratory and digestive tract irritation.	NC	8	NR	R
graphite ---------- solid (*carbon*) C(s)	A - solid B - powder	1	1	0	Dust may cause skin, eye and respiratory tract irritation; may be harmful if inhaled; cancer hazard with long-term exposure if quartz present; flammable solid.	NC	8	4.2	T
halite ---------- crystalline (*sodium chloride*) NaCl(s)	A	1	0	0	Dust may cause irritation to eyes, skin and respiratory tract.	NC	8	NR	T
hematite ---------- chunks (*iron(III) oxide*) $Fe_2O_3(s)$	A	0	0	0	No adverse effects.	NC	8	NR	T
n-heptane ---------- liquid $C_7H_{16}(l)$	B	1	3	0	Causes skin and eye irritation; ingestion causes irritation with nausea, vomiting and diarrhea; inhalation causes respiratory tract irritation with dizziness headache and unconsciousness; flammable liquid.	B	5	3	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
n-hexane ---------- liquid $C_6H_{14}(l)$	B	2	3	0	Harmful by skin absorption, inhalation or ingestion; vapours irritating to mucous membranes and respiratory tract; may cause liver and kidney damage; flammable.	B, D2	5	3	WF/I
1,6-hexanediamine -- solid (*hexamethylenediamine*) $C_6H_{16}N_2(s)$	C	3	2	0	Corrosive; may cause severe irritation and possible burns to skin, eyes, respiratory and digestive tracts; may be harmful if swallowed, inhaled or absorbed through skin; may cause liver damage; may cause fetal effects; flammable solid.	E	4	8	WF/I
l-(+) histidine ----- crystals $C_6H_9N_3O_2(s)$	A	1	0	0	May cause irritation to skin, eyes, digestive and respiratory tracts.	NC	8	NR	T
hydrochloric acid– solution (*muriatic acid*) mixture: HCl ---------- 36.5% H_2O ---------- 63.5% HCl(aq)	A - 5% or less B - more than 5%	3	0	0	Corrosive; causes eye and skin burns; harmful if vapours inhaled or liquid swallowed, may cause severe respiratory or digestive tract irritation with possible burns; may cause fetal effects.	[D1, E	1	8	WF/I or N/P-D
hydrofluoric acid-- solution mixture: HF ---------- 48 - 52% H_2O ---------- 48 - 52% HF(aq)	D	4	0	1	Extremely corrosive and toxic; vapour causes severe burns to skin, eyes and respiratory tract; burns to skin may not be immediately painful or visible; may be fatal if swallowed or inhaled; causes bone damage; reaction with metals generates explosive hydrogen gas.	D1, D2, E	1	8 (6.1)	WF/I or N/P-D
hydrogen ---------- gas $H_2(g)$	B	0	4	0	No adverse effects; highly flammable gas.	A, B	8	2.1	A

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
hydrogen cyanide -- liquid or gas (*hydrocyanic* or *prussic acid if aq*) HCN(l) or HCN(g)	D	4	4	2	Very toxic; severe irritation of eyes and respiratory tract; very toxic by inhalation, skin contact or ingestion; potentially fatal if inhaled or swallowed; highly flammable, vapours may cause flash fire; avoid contact or mixing with oxidizers, alkalis, amines, sulfuric acid, acetaldehyde, hydrogen chloride + alcohol.	B, D1, D2, E	5, 1	6.1	WF/I
hydrogen peroxide ---------- solution mixture: hydrogen peroxide -- 30% water ---------- 70% H_2O_2(aq)	B	3	0	1 OX	Corrosive; causes burns to skin, eyes and respiratory tract; harmful if swallowed or inhaled; strong oxidizer, contact with oxidizable material may cause violent combustion; decomposes into water and oxygen; can decompose violently upon heating.	C, E, F	6	5.1 (8)	D
hydrogen peroxide ---------- solution mixture: hydrogen peroxide-2 - 4% water ---------- 96 - 98% H_2O_2(aq)	A	1	0	1 OX	Causes eye irritation, may be harmful if swallowed; oxidizer; decomposes into water and oxygen.	C	6	NR	D
hydrogen sulfide –----- gas H_2S(g)	D	4	0	0	Very corrosive and toxic; low concentrations (50 ppm) cause eye and respiratory membrane irritation; death occurs in 1–4 hours at 300–500 ppm, immediate respiratory arrest in excess of 1000 ppm; toxic by ingestion or inhalation; severe exposures, short of death, may cause long-term symptoms including lung damage, memory loss, paralysis of facial muscles or nerve tissue damage.	A, D1, D2, E	8	2.3 (2.1)	RS

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
hydroquinone ---- crystals (*1,4-benzenediol*) $C_6H_6O_2(s)$	B	2	1	0	Causes irritation to skin, respiratory tract and eyes; repeated exposure to dust may cause eye injury; harmful if inhaled or swallowed; combustible if heated or ignited, powder-air mixture explosive.	D1, D2	8	6.1	WF/I
indigo carmine ----- powder $C_{16}H_8N_2Na_2O_8S_2(s)$	A	2	0	0	May cause skin or eye irritation; may be harmful if swallowed, inhaled or absorbed through skin.	NC	8	NR	T
indium ---------- solid In(s)	A	1	1	0	Solid has low toxicity; high concentrations of dust may irritate eyes, mucous membranes, skin and upper respiratory tract; flammable dust-air mixture.	NC	6	NR	T
3-indoleacetic acid --- solid (*heteroauxin, IAA*) $C_{10}H_9NO_2(s)$	A	0	0	0	No adverse effects to skin, eyes, respiratory or digestive tracts; may cause fetal effects with chronic exposure based on animal studies.	NC	8	NR	WF/I or N/P-D
indophenol sodium salt --------- crystals $C_{12}H_8NaNO(s)$	B	1	1	0	Causes irritation to skin, eyes and respiratory tract; harmful if swallowed, inhaled or absorbed through skin; flammable if heated or ignited.	D1	8	NR	WF/I
inositol ---------- crystals (*hexahydrox-ycyclohexane*) $C_6H_6(OH)_6(s)$	B	1	1	0	May cause skin, eye or respiratory tract irritation; flammable if ignited or heated, dust-air mixture explosive.	NC	8	NR	T
iodine ---------- crystals $I_2(s)$	B	3	0	1 OX	Corrosive; crystals and vapours cause severe irritation or burns to skin, eyes, respiratory tract and any area of contact; may be fatal if swallowed or inhaled; affects cardiovascular and central nervous systems; strong oxidizer, contact with oxidizable material may cause fire.	C, D1, D2, E	6 (7)	6.1 (8)	WF/I or N/P-D

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
iodoethane ---------- liquid (*ethyl iodide*) $C_2H_5I(l)$	B	2	1	1 ~~W~~	Causes irritation to skin, eyes and respiratory tract; harmful if swallowed or inhaled; narcotic, can affect the nervous system and motor control with repeated exposure; reacts with water forming toxic fumes; decomposes in light and air releasing free iodine; combustible if heated.	D2	8	6.1	WF/I
iron ---------- powder Fe(s)	B	1	1	1	A skin, eye and mucous membrane irritant; combustible if powder is exposed to flame.	NC	8	4.1	T
iron ---------- filings Fe(s)	A	0	0	0	No adverse effects.	NC	8	NR	R or T
iron(III) ammonium citrate ---------- powder $xFe•xNH_3•C_6H_8O_7(s)$	A	0	1	0	May cause irritation to skin, eyes and respiratory tract; may be harmful if swallowed; combustible if heated.	NC	8	9.2	WF/I
iron(II) ammonium sulfate hexahydrate ------- crystals (*mohr's salt)* $Fe(NH_4)_2(SO_4)_2•6H_2O(s)$	A	2	0	0	Causes irritation to skin, eyes and respiratory tract; harmful if swallowed or inhaled; may cause liver damage and cardiac disturbances; decomposes if heated.	NC	8	9	WF/I or N/P-D
iron(III) ammonium sulfate ---------- crystals $FeNH_4SO_4(s)$	A	1	0	0	May cause irritation of the skin, eyes, respiratory and digestive tracts; may cause cardiac disturbances, and liver and kidney damage.	NC	5	NR	WF/I or N/P-D
iron(II) chloride hydrate ---------- crystals $FeCl_2•xH_2O(s)$	B	3	0	1	Corrosive; causes severe irritation to skin, eyes, mucous membranes and respiratory tract; harmful by skin absorption, inhalation or ingestion; may cause liver, kidney, pancreas damage and cardiovascular collapse; reacts violently with oxidizing agents; unstable.	E	8	8	WF/I or N/P-D

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
Iron(III) chloride hexahydrate ------- crystals $FeCl_3 \bullet 6H_2O(s)$	B - crystals C - powder anhydrous	3	0	0	Corrosive; extremely destructive to tissues of skin, eyes, mucous membranes and upper respiratory, tract; swallowing can cause severe burns to mouth, throat and stomach; affects the liver.	D1, E, F	8	5.1	WF/I or N/P-D
iron(III) nitrate nonahydrate ------- crystals $Fe(NO_3)_3 \bullet 9H_2O(s)$	A	2	0	0 OX	Causes severe irritation of the skin, eyes and respiratory tract; harmful if inhaled or ingested; affects the liver; strong oxidizer, contact with flammable material may cause fire.	C	6	5.1	WF/I
Iron(III) oxide ------ powder $Fe_2O_3(s)$	A	2	0	0	May cause irritation to skin, eyes and respiratory tract, harmful if inhaled.	NC	8	NR	WF/I or N/P-D
iron(III) sulfate, hydrated ---------- powder $Fe_2(SO_4)_3 \bullet xH_2O(s)$	A	2	0	0	Causes irritation to skin, eyes and respiratory tract; harmful if swallowed or inhaled; affects the liver.	NC	8	NR	T or D
iron(II) sulfate ----- crystals heptahydrate (*ferrous sulfate 7 - hydrate*) $FeSO_4 \bullet 7H_2O(s)$	A	1	0	0	Causes irritation with excessive inhalation or prolonged exposure to skin; exposure to eyes causes irritation that could be damaging; low toxicity, used as a food and feed iron supplement.	D2	8	NR	T
iron(II) sulfate heptahydrate ------- powder $FeSO_4 \bullet 7H_2O(s)$	A	2	0	0	Causes severe irritation to eyes; may cause irritation to skin, mucous membranes and respiratory tract; moderately toxic by ingestion; may affect the liver, kidneys, cardiovascular and central nervous systems.	D2	8	NR	T or D(aq)
iron(II) sulfide ----- powder $FeS(s)$	A	2	1	0	Dust causes irritation of skin, eyes and mucous membranes; prolonged inhalation may lead to pulmonary fibrosis, damage to kidneys and liver; dried form flammable, will spontaneously ignite if exposed to air.	NC	8	4.1	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
iso-amyl alcohol ------ liquid (*isopentyl alcohol*) $C_4H_{10}O$(l) or $(CH_3)_2CHCH_2CH_2OH$(l)	B	2	2	0	Causes irritation to skin, mucous membranes and respiratory tract, severe irritant to eyes; harmful if swallowed, inhaled or ingested; hematotoxic; affects the central nervous system; flammable liquid and vapour, emits toxic fumes when burned.	B, D2	5	3	WF/I
iso-pentyl alcohol -- liquid (*iso-amyl alcohol*) $C_4H_{10}O$(l) or $(CH_3)_2CHCH_2CH_2OH$(l)	B	2	2	0	Causes irritation to skin, mucous membranes and respiratory tract, severe irritant to eyes; harmful if swallowed, inhaled or ingested; hematotoxic; affects the central nervous system; flammable liquid and vapour, emits toxic fumes when burned.	B, D2	5	3	WF/I
kerosene (kerosine) -liquid mixture: aromatics---------- 15.9% cycloparaffins ------ 52.8% paraffins ---------- 30.8% alkenes ---------- 0.5%	B	0	3	0	May cause irritation of eyes, mucous membranes, skin and lungs with prolonged or repeated exposure; overexposure may affect the central nervous system and cause heartbeat irregularities; flammable mixture.	B, D2	5	3	WF/I
kinetin ---------- solid $C_{10}H_9N_5O$(s)	A	0	0	0	May cause irritation of the skin, eyes, respiratory and digestive tracts.	NC	8	NR	T
Knop's reagent ---- solution mixture: $MgSO_4 \cdot 7H_2O$ ------ 1.0g KH_2PO_4 ---------- 0.2g KNO_3 ---------- 1.0g $Ca(NO_3) \cdot 4H_2O$ ---– 1.0g $FeCl_3$ (1% soln.) -- 1.0 drop H_2O ---------- 1.0 L	A	1	0	0	May cause irritation of the skin, eyes, respiratory and digestive tract.	D2	8	NR	D

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
lactic acid - crystals/liquid (*2-hydroxypropanoic acid*) $C_3H_6O_3(s)$ or $CH_3CHOHCOOH(s)$	B	3	1	0	Corrosive; causes irritation and burns to any area of contact; harmful if swallowed or inhaled; extremely destructive to tissue of the skin, eyes, mucous membranes and respiratory tract; crystals combustible if heated or ignited.	E	3	8	WF/I or N/P-D
lactose –-- crystals/powder $C_{12}H_{22}O_{11}(s)$	A	0	1	0	Dust may cause eye and skin irritation; dust-air mixture explosive, combustible solid if heated.	NC	8	NR	T
lauric acid --------- crystals (*dodecanoic acid*) $C_{12}H_{24}O_2(s)$ or $CH_3(CH_2)_{10}COOH(s)$	B	1	1	0	May cause irritation of the skin, eyes, respiratory and digestive tract; combustible if heated or ignited, fine dust-air mixture explosive.	D2	3	NR	WF/I or N/P-D
lead metal ---------- strips $Pb(s)$	B - strips D - powder	3	0	0	Toxic, particularly the dust or powder; dust causes irritation to skin, eyes and respiratory tract; may be fatal if swallowed or if dust inhaled; a neurotoxin with prolonged exposure but also affects the kidneys, blood and reproductive system; possible human carcinogen dependent on duration and level of exposure.	D2	8	9	R
lead(II) nitrate ---- powder $Pb(NO_3)_2(s)$	B	2	0	0 OX	May cause skin, eye and respiratory tract irritation; may cause digestive tract irritation with nausea, vomiting and diarrhea; can be fatal if enough dust is inhaled or if ingested; neurotoxin with chronic or prolonged exposure, affects the central nervous system, kidneys, blood and reproductive system; strong oxidizer.	C, D1, D2	6	5.1 (6.1)	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
Lead compounds (other than nitrate) ------- powders	C - soln. D - powder	3	0	0	Toxic; cause skin, eye and respiratory tract irritation; may be fatal if swallowed or inhaled; neurotoxin with chronic or prolonged exposure, also affects the kidneys, blood, liver and reproductive system; Pb phosphate and Pb acetate are a cancer hazard in humans.	D1, D2	8	6.1	WF/I
lime water --------- solution mixture: $Ca(OH)_2$ ---------- 0.16% H_2O ---------- 99.84% $Ca(OH)_2(aq)$	A	0	0	0	May cause irritation of the skin, eyes, respiratory and digestive tracts.	NC	8	NR	D
lithium ---------- solid Li(s)	C	3	2	1 ~~W~~	Corrosive; causes eye and skin burns; may cause severe respiratory or digestive tract irritation or burns; may cause kidney damage and central nervous effects; light sensitive; reacts with water; flammable solid.	B, E	4	4.3	WF/I
lithium acetate dihydrate ---------- crystals $LiCH_3COO \bullet 2H_2O(s)$	A	2	0	0	Causes eye irritation; may cause irritation of the skin, respiratory and digestive tracts; harmful if swallowed, inhaled or adsorbed through skin; may cause kidney damage and central nervous effects.	D2	8	NR	T
lithium bromide --- crystals anhydrous LiBr(s)	A	2	0	0	May be harmful if swallowed; causes eye, skin and respiratory tract irritation; chronic or excessive intake may cause kidney, cardiac and central nervous system effects and/or damage.	D2	8	NR	WF/I
lithium carbonate - powder $Li_2CO_3(s)$	A	2	0	0	May cause irritation of the skin, eyes, respiratory and digestive tracts; harmful if swallowed or inhaled, affects the central nervous system, muscles and kidneys.	D2	8	NR	T

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
lithium chloride --- crystals LiCl(s)	A	2	0	0	Causes irritation of the skin, eyes and respiratory tract, skin irritation may be severe; harmful if swallowed or inhaled, affects the central nervous system, muscles and kidneys.	D2	8	NR	T
lithium fluoride ---- crystals LiF(s)	B	2	0	0	May cause severe eye and skin irritation and possible burns; causes respiratory or digestive tract irritation; may cause kidney damage, central nervous effects, cardiac disturbances and skeletal abnormalities.	D2	8	6.1	WF/I
lithium hydroxide monohydrate ------ crystals $LiOH \bullet H_2O(s)$	B	3	0	0	Corrosive; causes burns to any area of contact; may be fatal if swallowed or inhaled.	D1, E	2	8	WF/I or N/P-D
lithium iodide ----- crystals LiI(s)	B	2	0	0	May be harmful if swallowed; causes eye, skin and respiratory tract irritation; chronic or excessive intake may cause kidney, cardiac and central nervous system effects and/or damage.	D2	8	6.1	WF/I
lithium nitrate ---- granular $LiNO_3(s)$	B - soln. C - granule	2	0	3 OX	Causes irritation to skin, eyes and respiratory tract; harmful if swallowed or inhaled, affects the central nervous system, respiratory system, muscles and kidneys; strong oxidizer, contact with combustible material may cause fire; dangerous explosive risk when shocked or heated.	C, D1, D2	6	5.1	WF/I
lithium sulfate ----- crystals $Li_2SO_4 \bullet H_2O(s)$	B	2	0	0	May cause irritation to skin, eyes and respiratory tract; harmful if inhaled or swallowed; affects muscles, lungs, central nervous system and kidneys.	NC	8	NR	T or D(aq)

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
litmus blue -------- powder (*lichenblue*) formula (variable)	A	2	0	0	Causes irritation to skin, eyes and intestinal tract; may be harmful if swallowed, inhaled or adsorbed through skin.	NC	8	NR	T
Lugol's iodine stain ---------- solution (*bouchardat's reagent*) mixture: I_2 ---------- 5% KI ---------- 10% CH_3COOH ----- 10% H_2O ---------- 75%	B	2	0	1	Causes irritation to skin, eyes and respiratory tract; may burn skin on contact; harmful if swallowed or inhaled; chronic low-level ingestion may cause mental depression, nervousness, insomnia and sexual impotence.	D2	7	8 (9e)	WF/I
lycopodium ------- powder (*club moss spores*, *vegetable sulfur)* formula not applicable	B	1	2	0	Causes eye and gastro-intestinal tract irritation; may cause irritation of the skin and respiratory tract; possible allergen; flammable powder, easily ignited by open flame, can produce an explosive flash.	D2	8	4.1	WF/I
magnesium --------- powder Mg(s)	C	0	1	1 ~~W~~	May cause skin, eye and respiratory tract irritation; flammable solid, burning releases UV light and heat; may react with water to form explosive hydrogen gas.	B, D2	8	4.1	WF/I
magnesium ---------- strips Mg(s)	A	0	1	1	Flammable solid if heated, releases UV light and heat upon burning.	B, D2	8	4.1	R
magnesium acetate---------- powder $Mg(CH_3COO)_2 \bullet 4H_2O(s)$	A	1	0	0	May cause irritation to eyes and respiratory tract.	NC	8	NR	T or D(aq)
magnesium bromide ---------- granular $MgBr_2(s)$	A	2	0	0	Causes irritation to skin, eyes, respiratory and digestive tracts; may be harmful if swallowed, inhaled or absorbed through skin.	D2	8	NR	T

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
magnesium carbonate ---------- powder $MgCO_3(s)$	A	1	0	0	May cause irritation to skin, eyes and respiratory and digestive tracts.	NC	8	NR	T
magnesium chloride hexahydrate –------- crystals $MgCl_2 \bullet 6H_2O(s)$	A	2	0	0	May be harmful by ingestion, inhalation or skin absorption.	NC	8	NR	T
magnesium hydroxide ---------- powder $Mg(OH)_2(s)$	A	1	0	0	May cause irritation to skin, eyes, digestive and respiratory tracts.	D2	2?	NR	WF/I or N/P-D
magnesium nitrate hexahydrate –------- crystals $Mg(NO_3)_2 \bullet 6H_2O(s)$	A	2	0	0 OX	Causes irritation to skin, eyes and respiratory tract; may be harmful if swallowed or inhaled; strong oxidizer, contact with combustible material may cause fire.	C, D2	6	5.1	WF/I
magnesium oxide - powder $MgO(s)$	A	1	0	0	May cause irritation to skin, eyes and respiratory tract.	NC	8	NR	T
magnesium(IV) oxide ---------- powder (*magnesium peroxide*) $MgO_2(s)$	B	2	0	0 OX	May cause irritation to skin, eyes, mucous membranes and upper respiratory tract; may be harmful if swallowed, inhaled or absorbed through skin; oxidizer, contact with combustible material may cause fire.	C	6	5	T
magnesium sulfate heptahydrate ------- powder (*epsom salts)* $MgSO_4 \bullet 7H_2O(s)$	A	1	0	0	Dust may be slightly irritating to respiratory system, may be harmful if swallowed.	NC	8	NR	T
magnetite ---------- chunks (*iron oxide*) $Fe_3O_4(s)$	A	1	0	0	May cause irritation to skin, eyes and respiratory tract; prolonged inhalation of dust or fumes may lead to metal fume fever.	NC	8	NR	T

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
malachite green--- solution mixture: water ---------- 55% malachite green ----- 45%	B	2	0	0	Harmful if swallowed; contact with skin, eyes, digestive and respiratory tracts may cause irritation, risk of severe eye damage.	NC	8	8	WF/I
malachite green --- crystals (*aniline green, china green, benzaldehyde green*) $C_{23}H_{25}N_2Cl(s)$ or $C_{23}H_{26}N_2O(s)$	B	2	0	0	Harmful if swallowed; contact with skin or eyes may cause irritation and eye damage. * Note the two chemical forms.	NC	8	6.1 (8)	WF/I
malachite green --- crystals (*aniline green, china green, benzaldehyde green*) $C_{48}H_{50}N_4O_4 \bullet 2HC_2O_4(s)$	B	2	0	0	Harmful by inhalation or ingestion; irritates skin, eyes and mucous membranes.	NC	6.1, 8	NR	WF/I
maleic acid ---------- solid (*butenedioic acid, toxilic acid*) $C_4H_4O_4(s)$	B - soln. C - solid	3	1	1	Corrosive; causes skin and severe eye irritation and possible burns; may cause severe digestive and respiratory tract irritation and possible burns; may be harmful if swallowed or absorbed through skin; may cause kidney damage; combustible if heated.	E	3	8	WF/I or N/P-D
maleic anhydride --- lumps (*2,5-furandione*) $C_4H_2O_3(s)$	B - soln. C - lump	3	1	1	Corrosive; causes burns to skin and eyes; causes respiratory tract irritation and possible burns, digestive tract irritation with nausea and diarrhea; harmful if swallowed; combustible if heated, dust-air mixture explosive; decomposes slowly with water to form maleic acid.	E	4, 3, 8	8	WF/I
malic acid –--------- crystals (*hydroxybutanedioic acid*) $C_4H_6O_5(s)$	B	1	1	0	Causes irritation to skin, eyes and respiratory tract; may be harmful if swallowed; combustible at elevated temperatures or if ignited, dust-air mixture explosive.	NC	3	NR	WF/I or N/P-D

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
malonic acid ------- crystals (*propanedioic acid*) $CH_2(COOH)_2(s)$	B	1	1	0	Causes irritation to eyes; may cause irritation to skin and respiratory tract; may be harmful if swallowed; combustible at elevated temperatures or if ignited, dust-air mixture explosive.	NC	3	NR	WF/I or N/P -D
maltose ---------- granules $C_{12}H_{22}O_{11}(s)$	A	0	1	0	No adverse effects; combustible if heated or ignited, dust-air mixture explosive.	NC	8	NR	T or D(aq)
manganese—powder/solid Mn(s)	B - solid C - powder	2	1	1	Powder may cause irritation to skin, eyes and respiratory tract; harmful if swallowed or inhaled, causing chronic damage to health; chronic exposure affects the central nervous system; dust is flammable; decomposes slowly in contact with water.	NC	8	NR	R /T- solid WF/I- powder
manganese(II) carbonate hydrate ---------- powder $MnCO_3 \bullet XH_2O(s)$	A	1	0	0	May cause irritation to skin, eyes, digestive and respiratory tracts; chronic inhalation affects the central nervous system.	NC	8	NR	WF/I or N/P-D
manganese(II) chloride tetrahydrate ------- crystals $MnCl_2 \bullet 4H_2O(s)$	A	2	0	0	May cause irritation to skin, eyes and respiratory tract; harmful if swallowed or inhaled; affects lungs, central nervous system, blood and kidneys.	D2	8	NR	T or D(aq)
manganese(IV) oxide ---------- powder (*manganese dioxide*) $MnO_2(s)$	A	2	0	1 OX	Causes skin and eye irritation; harmful if inhaled, ingested or absorbed through skin; may affect central nervous system; oxidizing agent, may cause fire in contact with combustible material.	C, D2	6	5.1	WF/I or N/P-D
manganese sulfate monohydrate ------ granular $MnSO_4 \bullet H_2O(s)$	A	2	0	0	May cause irritation to skin, eyes and respiratory system; harmful if swallowed or inhaled; affects lungs, central nervous system, blood and kidneys.	D2	8	NR	T or D(aq)
D-mannose -------- crystals (*seminose, carubinose*) $C_6H_{12}O_6(s)$	A	0	1	0	No adverse affects; will burn if heated and dust-air mixture explosive.	NC	8	NR	T or D(aq)

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
marble chips ---------- chips (*calcium carbonate)* $CaCO_3(s)$	A	1	0	0	Dust may cause irritation to skin, eyes and respiratory system.	NC	8	NR	T
menthol ---------- solid (*hexahydrothymol*) $C_{10}H_{20}O(s)$	A	0	0	0	May cause irritation of the eyes, skin, respiratory and digestive tracts.	NC	8	NR	T or D(aq)
mercury ---------- liquid (*quicksilver*) Hg(l)	C	3	0	0	Corrosive; causes burns to skin, eyes and respiratory tract; may be fatal if swallowed or inhaled, harmful if absorbed through skin; chronic exposure affects the central nervous system and kidneys. If stocked in schools, mercury should be stored in a sealed plastic bottle to prevent evaporation and breakage.	D2	8	8	R or WF/I
mercury compounds	C	3	0	0	Toxic.	D2	8	6.1	WF/I
methane -------- gas/liquid (*natural gas*) $CH_4(g)$ & $CH_4(l)$	B	1	4	0	Excessive inhalation may cause difficulty breathing, nausea, dizziness, suffocation or coma; extremely flammable, will produce explosive mixture with air.	B	5	2.1	WF/I or RS-cyl.
methionine –-------- crystals (*acimethin*) $C_5H_{11}NO_2S(s)$	A	1	1	0	Dust may cause irritation to skin, eyes, digestive and respiratory tract; may cause reproductive and fetal effects; flammable if heated or exposed to flame.	NC	8	NR	WF/I
methyl alcohol(99%)--liquid (*methanol, gas line antifreeze*) $CH_3OH(l)$	B	2	3	0	Causes eye, skin and respiratory tract irritation; harmful if swallowed, inhaled or absorbed through skin; highly flammable.	B, D1, D2	5	3 (6.1)	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
methylbenzene ------- liquid (*toluene, phenylethane*) $C_7H_8(l)$	C	2	3	0	Irritant to skin, eyes, respiratory and digestive tract; harmful if inhaled or absorbed through skin; harmful or fatal if swallowed; may cause liver and kidney damage or affect the blood or central nervous system; highly flammable liquid and vapour.	B, D2	5	3	WF/I
methylcellulose ------- solid (*cellulose methyl ether*) $C_7H_{14}O_5\,X(s)$	A	0	0	0	No adverse effects.	NC	8	NR	T
methylene blue ---- crystals (*basic Blue 9*) $C_{16}H_{18}ClN_3S•3H_2O(s)$	A	2	1	0	Dust may cause mechanical irritation of eyes; harmful if swallowed, no adverse effects if inhaled; combustible if heated or ignited, dust-air mixture explosive.	NC	8	NR	T or D(aq)
methylene blue---- solution mixture: water ---------- 99.-% methylene blue ------<1.0% $C_{16}H_{18}ClN_3S(aq)$	A	0	0	0	May cause irritation to eyes; no other adverse effects.	NC	8	NR	D
methylene chloride -- liquid (*dichloromethane*) $CH_2Cl_2(l)$	C	2	1	0	Causes irritation and possible burns to skin, eyes and respiratory tract; may be absorbed through skin; may depress central nervous system function; combustible if heated or ignited, vapours may form explosive mixture with air; mutagen and possible human carcinogen.	D2	5, 8	6.1	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
methyl ethyl ketone --liquid (*2-butanone*) C_4H_8O(l) or $CH_3COCH_2CH_3$(l)	C	2	3	0	Causes mild irritation to skin, vapour causes moderate irritation to eyes, nose and respiratory tract; higher than 350 ppm exposure causes central nervous system depression; very high concentrations cause unconsciousness and possible death; flammable liquid, vapour-air mixture explosive.	B, D2	5	3	WF/I
2-methyl,1-propanol - liquid (*iso-butyl alcohol*) $C_4H_{10}O$(l) or $(CH_3)_2CHCH_2OH$(l)	B	2	3	0	Causes irritation to skin, eyes and respiratory tract; harmful if swallowed, inhaled or ingested; affects the central nervous system; flammable liquid and vapour.	B, D2	5	3	WF/I
methyl orange ------- solid (*C.I. acid orange 52*) $C_{14}H_{14}N_3NaO_3S$(s)	B	2	0	0	May cause irritation of the skin, eyes and respiratory tract; harmful by skin absorption, inhalation or ingestion.	D1, D2	8	6.1	WF/I
methyl orange ---- solution mixture: water ---------- 99.9% methyl orange ------ 0.1% $C_{14}H_{14}N_3NaO_3S$(aq)	A	1	0	0	May cause irritation of the skin, eyes and respiratory tract; excessive exposure may be harmful by skin absorption, inhalation or ingestion.	NC	8	NR	WF/I
methyl red –---------- solid (*C.I. acid red*) $C_{15}H_{15}N_3O_2$(s)	B	1	1	0	May cause skin, eye, digestive and respiratory tract irritation; chronic exposure may causes liver damage.	NC	8	NR	WF/I
methyl red –-------- solution mixture: methyl alcohol ----- 99.98% methyl red ---------- 0.02% $C_{15}H_{15}N_3O_2$(aq)	B	2	3	0	Causes eye, skin and respiratory tract irritation; harmful if swallowed, inhaled or absorbed through skin; highly flammable.	D2	5	3 (6.1)	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
methyl salicylate ----- liquid (*wintergreen oil, betula oil*) $C_8H_8O_3(l)$	A	2	1	0	Causes irritation of the skin, eyes and respiratory tract; harmful if swallowed, inhaled or absorbed through skin; affects the kidneys and central nervous system.	D2	8	NR	WF/I
methyl violet ------- solution mixture: water ---------- 99.98% methyl violet ------- 0.02% $C_{24}H_{28}N_3Cl(aq)$	A	1	0	0	May cause mild irritation to skin, eyes, digestive and respiratory tracts.	NC	8	6.1	WF/I
methyl violet ------- crystals (*C.I.basic violet 1*) $C_{24}H_{28}N_3Cl(s)$	A	2	0	0	Causes irritation to skin and eyes; harmful if swallowed or inhaled.	NC	8	6.1	WF/I
mica ---------- sheets (*muscovite, micro, dry ground, wet ground mica*) $KAl_2Si_3O_{10}(OH)_25H_2O(s)$	A	1	0	0	Dust may irritate eyes and respiratory tract; chronic lung damage results from extended inhalation; respirable particles of quartz are hazardous to inhale.	NC	8	NR	R or T
Million's reagent -- solution mixture: mercury ---------- 25% nitric acid ---------- 50% water---------- 25%	C	3	0	0	Toxic; causes burns to skin, eyes, respiratory and digestive tracts; extremely corrosive to mucous membranes; may cause reproductive effects; may cause teratogenic effects.	D1, E	1	6.1 (8)	WF/I
Mohr's salt -------- crystals (*ammonium ferrous sulfate*) $FeH_8N_2O_8S_2(s)$	B	2	1	0	May cause irritation of the skin, eyes, respiratory and intestinal tracts if taken internally; harmful by ingestion, inhalation or skin absorption; flammable if heated.	D1	8	9	WF/I or N/P-D
molybdenum metal ---------- powder Mo(s)	A	1	0	0	May be irritating to skin, eyes, nose, throat and respiratory tract; dust-air mixture could be explosive with strong ignition.	NC	8	NR	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
naphthalene ------ crystals (*moth balls, tar camphor*) $C_{10}H_8(s)$	C	3	2	0	Toxic; irritating to eyes, skin and respiratory system; harmful by inhalation, ingestion or skin contact; possible human carcinogen; flammable.	B, D2	4	4.1	WF/I
nichrome wire -------- solid mixture (alloy): nickel -------- 80 - 90% chromium -- 10 - 20%	A	1	0	0	Solid metal forms of nickel and chromium have no adverse effects.	NC	8	NR	R
nickel ---------- powder Ni(s)	D	1	1	1	Powder may cause irritation to skin, eyes and respiratory tract; causes gastrointestinal irritation with nausea, vomiting and diarrhea if ingested; powder pyrophoric, can ignite spontaneously; human carcinogen.	D2	4	4.1	WF/I
nickel ---------- strip Ni(s)	A	0	0	0	Stable, no adverse effects.	NC	8	NR	R
nickel ---------- salts	D	–	–	–	Human carcinogens with long-term exposure.	D2	–	–	WF/I
ninhydrin monohydrate ------- powder $C_9H_6O_4(s)$	B	2	1	0	Irritating to skin, eyes and respiratory tract; harmful if swallowed; combustible if heated or ignited, powder-air mixture explosive.	D2	8	NR	T
nitric acid --------- solution mixture: HNO_3 ---------- 62 - 75% H_2O ---------- 25 - 38% $HNO_3(aq)$	B - dilute C - conc.	3	0	0 OX	Corrosive; liquid and vapour causes severe damage to skin, eyes and mucous membranes; strong oxidant.	C, D1	1, 6	8 (5.1)	WF/I or N/P-D
nitrobenzene --- oily liquid (*nitrobenzol, oil of mirbane*) $C_6H_5NO_2(l)$	C	3	2	1	Toxic; may be fatal if swallowed, inhaled or absorbed through skin; causes irritation to skin and eyes; affects blood, liver, kidneys and reproductive system; possible cancer hazard; combustible liquid and vapour.	B, D1, D2	5	6.1	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
nitrogen ------- liquefied gas $N_2(l)$ & $N_2(g)$	C	3	0	0	Skin and eye contact with liquid causes cryogenic burns; gas nontoxic but in confined spaces, will displace oxygenated air and cause asphyxiation.	A	8	2.2	A
nitrogen dioxide –------- liquefied gas $NO_2(l)$ & $NO_2(g)$	D (commercial cylinders)	4	0	0 OX	Very toxic and corrosive, short-term exposure causes irritation and possible burns to skin, eyes and respiratory tract; potentially fatal if inhaled; strong oxidizer, contact with combustible material may cause fire.	D1, C	6	2.3 (5.1) (8)	WF/I
octyl acetate ---------- liquid (*2-ethylhexyl acetate*) $C_{10}H_{20}O_2(l)$	A	1	2	0	Causes skin and eye irritation, may cause respiratory and digestive tract irritation; combustible liquid.	B	5	NR	WF/I or RS – cyl.
octyl alcohol ---------- liquid (*n-octanol, caprylic alcohol*) $C_8H_{18}O(l)$	B	2	2	0	Causes irritation to skin, eye and respiratory tract, may be harmful if swallowed or inhaled; affects the CNS; combustible liquid and vapour.	B, D1	5	NR	WF/I
oleic acid –-------- oily liquid ((*z)-9-octadecenoic acid*) $C_{18}H_{34}O_2(l)$	A	1	1	0	Causes irritation to skin, eyes, digestive tract and respiratory tract, if mist is inhaled; combustible if pre-heated and ignited.	NC	3	NR	WF/I or N/P-D
orangeIV ---------- powder (*tropaeolin OO, C.I. 13080*) $C_{18}H_{14}N_3NaO_3S(s)$	B	2	1	0	May cause irritation to skin, eyes and respiratory tract; may be harmful by skin absorption, inhalation or ingestion; combustible if heated or ignited, powder-air mixture explosive.	D2	8	NR	T
orangeIV --------- solution mixture : water ---------- 99.9% orangeIV ---------- 0.1% $C_{18}H_{14}N_3NaO_3S(aq)$	A	1	0	0	May cause irritation to skin, eyes and respiratory tract; may be harmful by skin absorption or ingestion with excessive exposure or intake.	NC	8	NR	D
orcein ---------- powder $C_{28}H_{24}N_2O_7(s)$	A	1	0	0	May cause irritation to skin, eyes, respiratory and digestive tracts.	NC	8	NR	T

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
oxalic acid --------- crystals (*ethanedioic acid*) $C_2H_2O_4(s)$	B - soln. C - crystals	3	1	0	Corrosive; causes severe irritation to skin, eyes and respiratory tract; harmful if inhaled or absorbed through skin; may be fatal if ingested; may cause kidney damage; combustible solid below 101°C.	D1, E	3	8	WF/I or N/P-D
oxygen ---------- gas $O_2(g)$	A	0	0	0 OX	No adverse effects; supports combustion, accelerates burning.	A, C	6	2.2 (5.1)	A
palmitic acid -------- crystals (*hexadecanoic acid*) $C_{16}H_{32}O_2(s)$	A	1	1	0	Causes irritation to skin, eyes, respiratory and digestive tracts; combustible if heated or ignited, dust-air mixture explosive.	NC	3	NR	WF/I or N/P-D
pancreatin ---------- powder (*diastase vera*) (variable composition)	B	1	1	0	Causes irritation to skin, eyes, respiratory tracts; combustible if heated or ignited.	NC	8	NR	T
paradichloro – benzene ---------- crystals (*I,4-dichlorobenzene*) $C_6H_4Cl_2(s)$	C	2	2	0	Causes irritation to skin, eyes and respiratory tract; harmful if inhaled, swallowed or absorbed through the skin; affects the respiratory system, liver, kidneys and blood; flammable, forms explosive vapour-air mixture; possible human carcinogen.	D1, D2	4	9	WF/I
paraffin –---------- solid $C_nH_2n+_2(s)$	A	1	1	0	May cause mild irritation to eyes and digestive tract; dust or fumes may irritate the respiratory tract; flammable.	NC	8	NR	T
paraformaldehyde-powder $(CH_2O)_n(s)$	D	3	1	1	Corrosive; causes severe irritation to skin, eyes, respiratory and digestive tracts and possible burns; releases formaldehyde when dissolved in water; flammable solid.	B, D1, D2	8	4.1	WF/I or N/P-D
pentane (n) ---------- gas $C_5H_{12}(g)$	C	2	4	0	Causes irritation to skin, eyes and respiratory tract; harmful if inhaled or ingested; highly flammable liquid.	B, D1	5	3	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
pentyl alcohol -------- liquid (*amyl alcohol, 1- pentanol*) $C_5H_{11}OH(l)$	B	2	3	0	Liquid irritates the skin and causes severe irritation or eyes with possible burns; vapours cause severe irritation of the respiratory tract; harmful if inhaled, swallowed or absorbed through skin; affects the nervous system; flammable liquid and vapour.	B, D2	5	3	WF/I
pentyl (*iso*) alcohol -- liquid (*iso-amyl alcohol*) $C_4H_{10}O(l)$ or $(CH_3)_2CHCH_2CH_2OH(l)$	B	2	2	0	Causes irritation to skin, mucous membranes and respiratory tract; severe irritant to eyes; harmful if swallowed, inhaled or ingested; hematotoxic; affects the central nervous system; flammable liquid and vapour; emits toxic fumes when burned.	B, D2	5	3	WF/I
pepsin ---------- powder (variable composition)	B	1	1	0	May causes irritation to skin and eyes; combustible if heated or ignited.	NC	8	NR	T
perchloric acid --- solution mixture: $HClO_4$ ---- 70% H_2O ------- 30% $HClO_4(aq)$	D	3	0	3 OX	Corrosive; causes severe burns at site of contact; very harmful through skin contact, inhalation and ingestion; unstable, will decompose explosively at higher temperatures or if allowed to dehydrate; contact with wood, paper and other cellulose products may lead to explosion; strong oxidizer.	C, E	1, 6	5.1 (8)	WF/I or N/P-D
petroleum ether –---- liquid mixture: n-pentane --------- 85+% methylpentane -- small % cyclopentane ---- small % dimethylbutane - small % other hydrocarbons ----- variable	C	2	4	0	Irritating to skin, eyes and respiratory system; harmful by inhalation, ingestion or skin contact; extremely flammable liquid.	B, D1	5	3	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
phenol ---------- solid (*carbolic acid, phenic acid*) $C_6H_6O(s)$	D	4	2	0	Corrosive and toxic; causes severe burns to any area of contact; may be fatal if swallowed, inhaled or absorbed through skin; absorbed rapidly through skin; affects CNS, liver and kidneys; causes adverse reproductive and fetal effects; flammable.	B, D1, D2	3, 4, 5	6.1	WF/I
phenolphthalein -- needles $C_{20}H_{14}O_4(s)$	B	1	1	0	May cause skin, eye, digestive and respiratory tract irritation; prolonged exposure may have adverse reproductive effects; may be carcinogenic; combustible at higher temperatures or if ignited.	NC	8	NR	T
phenolphthalein -- solution mixture: phenolphthalein 0.5 -1.0% ethyl alcohol ----- 50 - 95% methyl alcohol -----1 - 2 % isopropyl alcohol - 1 - 2%	B	2	3	0	May cause skin, eye, digestive and respiratory tract irritation; prolonged exposure may have adverse reproductive effects; may be carcinogenic; combustible at higher temperatures or if ignited.	B	5	3	WF/I
phenol red –-------- solution mixture: water ---------- 73 - 75% ethanol ---------- 24 - 26% phenol red -------- < 1.0%	B	1	2	0	May cause irritation to skin, eyes, digestive and respiratory tracts; flammable vapour; excessive intake may depress the central nervous system.	NC	5	NR	D
l-phenylalanine -- crystals $C_9H_{11}NO_2(s)$	A	1	0	0	Skin, eye and respiratory tract irritant.	NC	8	NR	T
phenylhydrazine ---- liquid (*hydrozinobenezene*) $C_6H_8N_2(l)$	C	3	2	0	Corrosive; causes irritation of respiratory tract and burns to any area of contact; harmful if swallowed, inhaled or absorbed through skin; affects blood, liver, kidneys and respiratory system; combustible solid, liquid and vapour.	B, D2	5	6.1	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
phenyl salicylate -- crystals (*2-hydroxybenzoic acid, phenyl ester*) $C_{13}H_{10}O_3(s)$ or $C_6H_4(OH)COC_6H_5(s)$	B	2	0	0	May cause skin, eye, digestive and respiratory tract irritation; overexposure may cause reproductive disorders.	D2	8	NR	WF/I
phenylthiocarbamide paper (*phenylthiourea*, *PTC paper*) $C_7H_8N_2S(s)$	B	3	1	0	Toxic; exposure to larger amounts very toxic by inhalation, skin contact, or if swallowed; minute amounts in PTC paper not a serious danger; paper flammable.	D1	8	6.1	T
phosphoric acid -- solution mixture: H_3PO_4 ---------- 74 - 95% H_2O ---------- 5 - 26% $H_2PO_4(aq)$	B	3	0	0	Corrosive; causes severe irritation and burns to any area of contact; harmful if swallowed or fumes inhaled.	E	1	8	WF/I or N/P -D
phosphorus, amorphous red ---- powder P(s)	C	2	1	1	Causes eye irritation; may be harmful if swallowed or fumes inhaled; flammable solid, may ignite from friction.	B	8	4.1	WF/I
phosphorus, purified yellow ---------- waxy solid (*white phosphorus*) $P_4(s)$	D	3	4	2	Corrosive; causes severe skin and eye burns; harmful if absorbed through skin; acute inhalation causes serious damage to lungs and respiratory tract; may be fatal if swallowed; extremely flammable, ignites spontaneously on exposure to air; fumes from burning phosphorus extremely irritating.	B, D1	4	4.2	WF/I
phosphorus pentoxide –---------- powder (*phosphoric anhydride*) $P_2O_5(s)$	C	3	0	3 ~~W~~	Corrosive; fumes cause irritation to eyes and respiratory tract; causes burns to any area of contact; harmful if swallowed or inhaled; reacts violently with water to form phosphoric acid.	D1, E	8	8	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
phosphorus trichloride ---- fuming liquid $PCl_3(l)$	C	3	0	2 ~~W~~ OX	Corrosive; causes severe burns to any area of contact; may be fatal if swallowed or inhaled; reacts with water; strong oxidizer, contact with other material may cause fire.	C, D1	8	5.1 (8)	WF/I
phthalic acid -------- powder (*1,2-benzenedicarboxylic acid*) $C_8H_6O_4(s)$	B	1	1	1	Causes irritation of skin, eyes, respiratory and digestive tracts; decomposes if heated, powder-air mixture explosive.	NC	3	NR	WF/I or N/P-D
picric acid ---------- crystals (*2,4,6-trinitrophenol*) $C_6H_3N_3O_7(s)$	D	3	4	4	Toxic; causes skin and respiratory tract irritation, and severe eye irritation; harmful if swallowed, inhaled or absorbed through the skin; affects the liver, kidneys and blood; stable in water but explosive if allowed to dry, becomes increasingly shock, heat and friction sensitive as moisture lost; flammable solid.	B, D1, D2, F	3, 4	4.1	WF/I or N/P-D
platinum (metal) ------- solid $Pt(s)$	A	1	1	0	May cause irritation of skin, eye, respiratory and digestive tracts; flammable solid.	NC	8	NR	R
polyethylene ---------- solid $[C_2H_4]_n(s)$	A	1	1	0	Dust a respiratory tract and a mechanical eye irritant; combustible if heated or ignited.	NC	8	NR	R
polypropylene ---------- solid $[C_3H_6]_n(s)$	A	1	1	0	Dust may be an eye and respiratory tract irritant; combustible at high temperatures.	NC	8	NR	R
polystyrene ---------- solid (*dylene)* $[C_8H_8]_n(s)$	A	1	1	0	Dust an upper respiratory irritant and a mechanical eye irritant; combustible if heated or ignited.	NC	8	NR	R
polyvinyl acetate ------ solid (*PVA*) $(C_4H_6O_2)_n(s)$	A	0	0	0	No adverse effects.	NC	8	NR	R, T

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
polyvinyl alcohol - granules $[CH_2CHOH]_n(s)$	B	0	2	0	Nuisance dust, mechanical irritation of eyes; flammable if ignited or heated, may form combustible dust concentrations in air.	NC	8	NR	R or T
potassium (metal) ---- solid K(s)	C	3	3	2 ~~W~~	Corrosive; causes burns to all areas in contact; harmful or fatal if swallowed; harmful if absorbed through skin; water reactive; flammable solid, ignites when exposed to air.	B, D1, E	4	4.3	WF/I
potassium acetate- powder $KCH_3COO(s)$	A	1	0	0	May cause mild irritation to the skin, eyes and respiratory tract.	NC	8	NR	T or D(aq)
potassium bromate ---------- powder $KBrO_3(s)$	B - soln. C - powder	3	0	1 OX	Toxic; causes irritation to skin, eyes and respiratory tract; harmful if dust inhaled or absorbed through skin, may be fatal if swallowed; may cause kidney damage; strong oxidizer, may ignite combustible material.	C, D1, D2	6	5.1	WF/I
potassium bromide ---------- crystals KBr(s)	B	2	0	0	May cause irritation of the skin, eyes and respiratory tract; harmful if swallowed or inhaled; affects the central nervous system and eyes.	D2	8	NR	T
potassium carbonate ---------- powder $K_2CO_3(s)$	A	2	0	0	Causes severe irritation to skin, eyes and respiratory tracts; harmful if swallowed or inhaled.	D2	8	NR	T
potassium chlorate –---------- powder $KClO_3(s)$	B - soln. C - powder	2	0	3 OX	Causes irritation to skin, eyes and respiratory tracts; harmful if swallowed, may cause methemoglobinemia, liver or kidney damage; strong oxidizer, contact with other material may cause fire; decomposes when heated releasing oxygen gas, may explode.	C, D2	6	5.1	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
potassium chloride ---------- crystals $KCl(s)$	A	1	0	0	May cause severe irritation to skin, eyes and respiratory tract.	NC	8	NR	T
potassium chromate ---------- crystals $K_2CrO_4(s)$	D	3	0	1 OX	Corrosive; causes severe burns to area of contact; harmful if swallowed or inhaled; affects the respiratory system, liver, kidneys, eyes, skin and blood; strong oxidizer, contact with other material may cause fire; releases oxygen gas upon decomposition; human carcinogen.	C, D1, D2	6	5.1 (8)	WF/I or N/P-D
potassium dichromate ---------- powder $K_2Cr_2O_7(s)$	D	3	0	1 OX	Corrosive; causes severe burns to area of contact; harmful if swallowed or inhaled; affects the respiratory system, liver, kidneys, eyes, skin and blood; strong oxidizer, contact with other material may cause fire; releases oxygen gas upon decomposition; human carcinogen.	C, D1, D2	6	5.1 (8)	WF/I or N/P-D
potassium dihydrogen-phosphate, --------- crystals (*potassium phosphate, monobasic*) $KH_2PO_4(s)$	A	1	0	0	May cause irritation to eyes, skin, respiratory and digestive tracts.	NC	8	NR	WF/I
potassium ferrocyanide ---–---- powder $K_3Fe(CN)_6(s)$	B	2	0	1	May cause irritation to skin, eye and respiratory tract; may be harmful if swallowed or inhaled; decomposes if heated releasing cyanide gases.	NC	8	NR	WF/I
potassium hydrogen-carbonate ---------- crystals (*potassium bicarbonate*) $KHCO_3(s)$	A	1	0	0	May be a mild irritant to skin, eyes, digestive and respiratory tracts.	NC	8	NR	T or D(aq)

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
potassium hydrogen-oxalate- powder or crystals (*potassium binoxalate*) $KHC_2O_4(s)$	A	1	0	0	Causes irritation of the skin, eyes, respiratory and digestive tracts; harmful if swallowed.	D1, D2	8	NR	T or D(aq)
potassium hydrogen-phosphate ---------- powder (*potassium phosphate, dibasic*) $K_2 HPO_4(s)$	A	1	0	0	May be harmful if swallowed.	NC	8	NR	WF/I
potassium hydrogen-phthalate –---------- powder $KH_5C_8O_4(s)$	B	1	1	0	May cause irritation to skin, eyes and respiratory tract; combustible if heated or ignited, air-dust mixture explosive.	NC	8	NR	T or D(aq)
potassium hydrogen-sulfate ---------- powder (*potassium bisulfate*) $KHSO_4(s)$	B - soln. C - powder	3	0	0	Corrosive; causes burns to any area of contact; may be harmful if swallowed.	E	8	8	WF/I
potassium hydrogen-tartrate –---------- powder (*potassium bitartrate, cream of tartar*) $KHC_4H_4O_6(s)$	A	0	0	0	No adverse effects.	NC	8	NR	T or D(aq)
potassium hydroxide----------pellets (*caustic potash*) KOH(s)	B	3	0	1	Corrosive; causes severe burns to any area of contact; harmful by ingestion, inhalation or skin contact; unstable, absorbs carbon dioxide and moisture from air.	D1, E	2	8	WF/I or N/P-D

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
potassium iodate -- powder $KIO_3(s)$	B - soln. C - powder	2	0	3 OX	May cause severe irritation to skin, eyes and respiratory tract with possible burns; may cause kidney damage and central nervous system effects; strong oxidizer, enhances combustion of other substances; can be explosive if exposed to heat or flames, mechanical shock or friction.	C, D2	6	5.1	WF/I or N/P-D
potassium iodide -- crystals $KI(s)$	A	1	0	1	May cause irritation to skin, eyes, respiratory and digestive tracts; may cause fetal effects; light and moisture sensitive.	D2	8	NR	T or D(aq)
potassium nitrate - crystals $KNO_3(s)$	B	2	0	0 OX	Causes irritation of the skin, eyes and respiratory tract; harmful if swallowed, inhaled or absorbed through skin; strong oxidant, may cause fire in contact with combustible material.	C, D2	6	5.1	WF/I
potassium nitrite - granules $KNO_2(s)$	B	2	0	0 OX	Causes severe irritation of the skin, eyes and respiratory tract; harmful or fatal if swallowed, harmful if inhaled or absorbed through skin; strong oxidant, may cause fire in contact with combustible material; will decompose under extreme heat.	C, D2	6	5.1	WF/I
potassium oxalate-crystals $K_2C_2O_4 \bullet H_2O(s)$	B - soln. C - crystals	3	0	0	Corrosive; causes severe burns to every area of contact; may be fatal if swallowed, harmful if inhaled.	D1, D2	8	6.1	T or D(aq)
potassium permanganate ---- crystals (*condy's crystals*) $KMnO_4(s)$	B	3	0	1 OX	Corrosive; dust causes severe irritation and burns to skin, eyes and mucous membranes of the digestive and respiratory tracts; chronic exposure may impair the central nervous system; strong oxidizing agent, may ignite combustible materials; may decompose if heated above 150°C causing explosion.	C, E	6	5.1	WF/I or N/P-D

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
potassium phosphate, monobasic ---------- powder $KH_2PO_4(s)$	A	1	0	0	May cause irritation to eyes, skin and respiratory tract; may be harmful if swallowed or inhaled.	NC	8	NR	WF/I
potassium phosphate, dibasic ---------- powder $K_2HPO_4(s)$	A	1	0	0	No adverse effects to eyes, skin or respiratory tract; may be harmful if swallowed.	NC	8	NR	WF/I
potassium phosphate, tribasic ---------- powder $K_3PO_4 \bullet xH_2O(s)$	B	2	0	0	Causes irritation and possible burns to eyes, skin, respiratory and digestive tract; harmful if swallowed or inhaled.	E	8	8 (6.1)	WF/I
potassium sodium tartrate ---------- powder (*Rochelle salt*) $KNaC_4H_4O_6 \bullet 4H_2O(s)$	A	1	1	0	May cause irritation to eyes, skin and respiratory tract; combustible if heated or ignited, dust-air mixture explosive.	NC	8	NR	T or D(aq)
potassium sulphate - powder $K_2SO_4(s)$	A	1	0	0	May produce mechanical irritation to eyes and irritation to skin, respiratory and digestive tracts.	D2	8	NR	T or D(aq)
potassium sulfide - powder $K_2S(s)$	C	3	1	2	Toxic; very destructive to mucous membranes; causes burns by inhalation, ingestion or through skin contact; flammable, anhydrous form may be spontaneously combustible; reacts with acids to release toxic H_2S.	D1, D2	8	4.2 (6.1)	WF/I
potassium sulfite -- crystals $K_2SO_3(s)$	B	2	0	0	Irritating to skin, eyes and respiratory system; may be harmful if swallowed, inhaled or absorbed through skin.	D2	8	NR	T or D(aq)
potassium thiocyanate --------- crystals $KSCN(s)$	B	2	0	0	Causes irritation to eyes, skin and respiratory tract; harmful if swallowed or inhaled.	D2	8	NR	WF/I
L- proline ---------- powder $C_5H_9NO_2(s)$	A	1	0	0	May cause irritation to skin, eyes, respiratory and digestive tracts.	NC	8	NR	T or D(aq)

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
propane ---------- liquid/gas $C_3H_8(l)$ or $C_3H_8(g)$	B	1	4	0	May be harmful if inhaled, asphyxiant at high concentrations; highly flammable, vapours heavier than air and collect in low areas or along the floor; liquid gas can cause freeze burns.	A & B	5	2.1	RS WF/I
n-propanol ---------- liquid (*n-propyl alcohol, rubbing alcohol*) $C_3H_8O(l)$ or $CH_3(CH_2)_2OH(l)$	B - small volume	2	3	0	Causes irritation of the skin, eyes and respiratory tract; harmful if swallowed, inhaled or absorbed through skin, may affect the central nervous system; flammable liquid and vapour.	B, D2	5	3	D or WF/I
propionic acid --- oily liquid (*propanoic acid, methyl acetic acid*) $C_3H_6O_2(l)$ or $CH_3CH_2COOH(l)$	B - soln. C - conc.	3	2	0	Corrosive; causes severe irritation and burns to skin, eyes, respiratory and digestive tracts; extremely destructive to mucous membranes, harmful if absorbed through skin, inhaled or ingested; flammable liquid; mutagen.	B, D1	3, 5	8	WF/I or N/P-D
sec-propyl alcohol --- liquid (*iso-propyl alcohol*) $C_3H_8O(l)$ or $(CH_3)_2CHOH(l)$	B	2	3	0	Causes irritation to eyes and respiratory tract; harmful if swallowed, inhaled or absorbed through skin; affects the central nervous system; flammable liquid and vapour.	B	5	3	WF/I
propylene glycol -oily liquid (*1,2 propanediol*) $C_3H_8O_2(l)$ or $CH_3CHOHCH_2OH(l)$	A	0	1	0	May cause irritation to skin and eyes; combustible if heated or ignited.	NC	8	NR	WF/I
prussic acid --------- liquid (*hydrogen cyanide, anhydrous, hydrocyanic acid*) HCN(l)	D	4	4	2	Highly toxic; vapour irritates skin, eyes and mucous membranes; short-term exposure leads to death by rapid absorption through skin or by inhalation; also toxic by ingestion; flammable fumes.	B, D1, D2, E	1, 5	6.1	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
P.T.C.- embedded in paper (*phenylthiocarbamide, phenylthiourea*) $C_7H_8N_2S(s)$	B	3	1	0	Toxic; exposure to larger amounts very toxic by inhalation, skin contact, or if swallowed; minute amounts in PTC paper not a serious danger; paper flammable.	D1	8	6.1	T
pyridine ---------- liquid (*azabenzene*) $C_5H_5N(l)$	C	3	3	0	Corrosive; causes severe irritation and burns to skin, eyes, respiratory and digestive tracts; harmful if absorbed through skin, inhaled or ingested, may be fatal; long-term exposure may cause liver, kidney or central nervous system damage; reacts violently with some acids and oxidizing agents; flammable liquid, flash point 19°C.	B, D2, E	5	3	WF/I or N/P-D
pyrite ---------- chunks (*iron disulfide*) $FeS_2(s)$	A	2	1	0	Dust irritating to skin, eyes and respiratory tract; ingestion leads to release hydrogen sulfide by a reaction with stomach acid; prolonged inhalation may lead to pulmonary fibrosis, damage to kidneys and liver, fine powder flammable.	NC	8	NR	T
pyrogallol ---------- powder *(pyrogallic acid, 1,2,3-benzenetriol)* $C_6H_6O_3(s)$	B	2	1	0	Causes irritation to skin, eyes and respiratory tract; harmful if swallowed, inhaled or absorbed through skin; affects the respiratory system, liver, kidneys, eyes, skin and blood; combustible if ignited or heated.	D2	3	6.1 (8)	WF/I
quartz ---------- crystalline (*silica*) Si(s)	A	1	0	0	Dust or granules can be a mild skin irritant, prolonged overexposure to dust leads to silicosis; may be carcinogenic.	NC	8	NR	R or T
quinaldine red ------ powder $C_{21}H_{23}IN_2(s)$	B	2	0	0	May cause irritation; may be harmful if inhaled, ingested or absorbed via skin.	NC	8	NR	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
quinine sulfate dihydrate –---------- powder (*quinicardine*) $(C_{20}H_{24}N_2O_2)_2 H_2SO_4 \bullet H_2O(s)$	B	2	1	0	May cause irritation to skin, eyes and respiratory tract; harmful if swallowed, may be harmful if inhaled; prolonged exposure affects the cardiovascular and central nervous system; flammable if heated or ignited, dust-air mixture explosive.	D2	8	NR	WF/I
Rennett tablets -------- solid (*rennin*) (variable composition)	A	0	1	0	May cause irritation of the eyes, chronic exposure may produce an allergenic sensitization in susceptible individuals.	NC	8	NR	T
resorcinol –--------- powder (*1,3-benzenediol*) $C_6H_6O_2(s)$	B - soln. C - powder	3	1	0	Toxic; causes severe irritation to skin and eyes, less to the respiratory tract; harmful if absorbed through skin or inhaled, may be fatal if ingested; long-term exposure affects liver, kidneys, cardiovascular system, central nervous system and spleen; combustible if ignited or heated.	D1, D2	8	6.1	WF/I
rhodanine ---------- crystals (*rhodanic acid*) $C_3H_3NOS_2(s)$	B	2	1	0	May cause irritation to skin, respiratory and digestive tracts, irritant to eyes; harmful if swallowed; combustible at elevated temperatures or if ignited, dust-air mixture explosive.	D2	8	NR	WF/I
Rochelle salt –------ powder (*potassium sodium tartrate*) $KNaC_4H_4O_6 \bullet 4H_2O(s)$	A	1	1	0	May cause irritation to eyes, skin and respiratory tract; combustible at elevated temperatures or if ignited, dust-air mixture explosive.	NC	8	NR	T or D(aq)
rosolic acid ------- powder (*aurin*) $(HOC_6H_4)_2C:C_6H_4:O(s)$	B	1	1	0	Irritant to eyes, skin and respiratory tract; combustible at elevated temperatures or if ignited, dust-air mixture explosive.	NC	3	NR	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
rubbing alcohol ------- liquid (*n-propyl alcohol, n-propanol*) $C_3H_8O(l)$ or $CH_3(CH_2)_2OH(l)$	B	2	3	0	Causes irritation of the skin, eyes and respiratory tract; harmful if swallowed, inhaled or absorbed through skin, may affect the central nervous system; flammable liquid and vapour.	B, D2	5	3	D or WF/I
safranin O –--------- solution mixture: water ---------- 98.8% sodium benzoate --- 0.2% safranin O ---------- 1.0%	A	1	0	0	May irritate the eyes and skin. No other adverse effects.	NC	8	NR	D
safranin O –--------- powder $C_{20}H_{19}N_4Cl(s)$	A	1	0	0	Dust irritates the eyes and skin. No other adverse effects.	NC	8	NR	WF/I
salicylic acid–--------crystals (*2-hydroxybenzoic acid*) $C_7H_6O_3(l)$ or $HOC_6H_4COOH(l)$	B	2	1	0	Causes irritation to skin, eyes and respiratory tract; harmful if swallowed, inhaled or absorbed through skin; affects the central nervous system, kidneys and pancreas; combustible at elevated temperatures, dust-air mixture explosive.	D1, D2	3	NR	WF/I or N/P-D
selenium –---------- shot Se(s)	B	2	0	0	Dust causes severe irritation to skin, eyes and respiratory tract; dust harmful if swallowed or inhaled; affects the liver, kidneys, blood and spleen.	D1	8	NR	WF/I
serine –---------- powder $C_3H_7NO_3(s)$	A	1	0	0	May cause irritation to skin, eyes, digestive and respiratory tracts.	NC	8	NR	T or D(aq)
silicic acid --------- granules (*silica gel*) $H_2SiO_3(s)$	A	1	0	0	May cause irritation to skin, eyes, digestive and respiratory tracts.	NC	3	NR	T
silicon ---- crystals/powder Si(s)	B - crystal C - powder	1	3	0	May cause irritation to skin, eyes, digestive and respiratory tracts; may cause central nervous system depression; flammable powder.	B, D2	4	4.1	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
silicon dioxide ---- granules (*silica, quartz, sand*) $SiO_2(s)$	A	2	0	0	May cause eye irritation; harmful if dust inhaled, carcinogenic over extended period of inhalation.	D2	8	NR	T
silver (metal) –--------- solid and foil Ag(s)	A	0	0	0	Dust may cause mild skin, eye or mucous membrane irritation; prolonged exposure can cause permanent blue-grey staining of eyes, skin, nose, mouth and throat.	NC	8	NR	R
silver acetate ------- powder $AgC_2H_3CO_2(s)$	A	1	0	0	Causes irritation to skin, eyes and respiratory tract; may cause digestive tract irritation.	D2	8	NR	N/P -R
silver bromide ------ powder AgBr(s)	A	1	0	0	May cause irritation to skin, eyes and digestive tract.	D2	8	NR	N/P -R
silver chloride –----- powder AgCl(s)	A	1	0	0	May cause irritation to skin, eyes and digestive tract; causes respiratory tract irritation.	D2	8	NR	N/P -R
silver nitrate –------ crystals $AgNO_3(s)$	B	3	0	0 OX	Corrosive; causes burns to any area of contact; may be fatal if swallowed, harmful if inhaled; strong oxidizer, contact with combustible material may cause fire.	C, D1, E	6	5.1	N/P -R
silver oxide ---------- powder $Ag_2O(s)$	A	2	0	1 OX	Contact with skin and eyes causes severe irritation and possible burns; may cause irritation of the respiratory tract; harmful if swallowed; strong oxidizer, contact with combustible material may cause fire; absorbs CO_2 from air.	C, D2	6	5.1	N/P-R
silver sulfate-------- crystals $Ag_2SO_4(s)$	A	1	0	0	May cause irritation to skin, eyes, respiratory and digestive tract.	D2	8	NR	N/P -R

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
soda lime –---------- pellets mixture: ethyl violet ------ < 1% NaOH ---------- < 2% KOH ---------- < 3% $Ca(OH)_2$ -------- > 80%	B	3	0	0	Corrosive; causes severe burns to any area of contact; causes severe irritation to respiratory tract; harmful if swallowed or inhaled; absorbs CO_2 from air to form calcium carbonate.	NC	2	8	WF/I or N/P-D
sodium (metal) -------- solid Na(s)	C	3	3	2 ~~W~~	Corrosive; contact may cause burns; harmful if metal absorbed through skin, harmful or fatal if ingested; flammable solid, ignites spontaneously in air; reacts violently with water releasing explosive hydrogen gas.	B, E	4	4.3	N/P-D or WF/I
sodium acetate anhydrous & trihydrate --------- crystals $CH_3COONa(s)$ & $CH_3COONa•3H_2O(s)$	A	1	1	0	May cause skin, eye and respiratory tract irritation; combustible if heated or ignited, particle-air mixture explosive.	D2	8	NR	T or D(aq)
sodium arsenite --- powder $NaAsO_2(s)$	D	3	0	0	Toxic; causes irritation to skin, eyes and respiratory tract; may be fatal by ingestion or inhalation; may cause liver and kidney damage; carcinogen.	D2	8	6.1	WF/I
sodium benzoate -- powder $C_6H_5COONa(s)$	B	1	1	0	May cause skin, eye and respiratory tract irritation; ignition possible if heated, dust-air mixture explosive.	NC	8	NR	T
sodium borate ------ powder decahydrate (*borax*) $Na_2B_4O_7•10H_2O(s)$	A	2	0	0	Causes irritation of the eyes, skin and respiratory tract; harmful if swallowed, inhaled or absorbed through skin.	NC	8	NR	T or D(aq)
sodium bromate --- powder $NaBrO_3(s)$	B	2	0	1 OX	Causes irritation to eyes, skin, digestive and respiratory tracts, oxidizing agent.	C, D1	6	5.1	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
sodium bromide -- granules NaBr(s)	B	2	0	0	May cause irritation to eyes, skin and respiratory tract; harmful if swallowed; affects the central nervous system and eyes.	NC	8	NR	D
sodium carbonate anhydrous --------- granular $Na_2CO_3(s)$	A	2	0	0	May cause eye and skin irritation with possible burns and irritation of respiratory and digestive tracts; harmful if inhaled or swallowed.	D1, D2	8	NR	T or D(aq)
sodium chlorate --- crystals $NaClO_3(s)$	B	2	0	2 OX	Causes irritation to eyes, skin and respiratory tract, harmful if swallowed; may cause damage to blood, liver or kidneys; strong oxidizing agent, contact with combustible material may cause fire.	C, D1	6	5.1	WF/I or N/P-T
sodium chloride -- granules NaCl(s)	A	1	0	0	Dust may cause irritation to eyes, skin and respiratory tract.	NC	8	NR	T or D(aq)
sodium chromate tetrahydrate --------- powder $Na_2CrO_4 \bullet 4H_2O(s)$	B - soln C - crystals	3	0	1 OX	Corrosive; causes severe burns to any area of contact; harmful if swallowed or inhaled; affects the respiratory system, kidneys, eyes, skin and blood; strong oxidizer, contact with combustible material may cause fire; human carcinogen.	C, D1, D2	6	5.1 (8)	N/P-T or WF/I
sodium citrate ------ powder dihydrate $Na_3C_6H_5O_7 \bullet 2H_2O(s)$	A	1	0	0	May cause irritation to eyes, skin, digestive and respiratory tracts.	NC	8	NR	T or D(aq)
sodium dichromate dihydrate ---------- powder $Na_2Cr_2O_7 \bullet 2H_2O(s)$	B - soln. C - crystals	3	0	2 OX	Corrosive; causes burns to skin, eyes, respiratory and digestive tracts; may be fatal if swallowed, harmful if inhaled or if absorbed through skin; causes cardiac disturbances, may cause blood and kidney damage; strong oxidizer, may cause fire if in contact with combustible material; human carcinogen.	C, D1, D2	6	6.1 (8)	WF/I or N/P-D

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
sodium dihydrogen-phosphate ---------- crystals (*sodium phosphate monobasic dihydrate*) $NaH_2PO_4 \bullet 2H_2O(s)$	A	1	0	0	May cause irritation of the skin, eyes, respiratory and digestive tracts.	NC	8	NR	WF/I
sodium ethanoate--crystals (*sodium acetate*) $CH_3COONa(s)$ & $CH_3COONa \bullet 3H_2O(s)$	A	1	1	0	May cause skin, eye and respiratory tract irritation; combustible if heated or ignited, particle-air mixture explosive.	D2	8	NR	T or D(aq)
sodium fluoride ---- crystals $NaF(s)$	B - soln. C - crystals	3	0	0	Toxic; causes irritation to skin and eyes, and severe irritation to respiratory tract, irritation effects may be delayed; may be fatal if swallowed or inhaled; prolonged exposure affects the respiratory, circulatory, central nervous system and kidneys; may cause mottling of teeth and bone damage.	D1, D2	8	6.1	WF/I
sodium hydrogen-carbonate ---------- powder (*sodium bicarbonate, baking soda*) $NaHCO_3(s)$	A	1	0	0	May cause slight irritation of the eyes, skin and respiratory tract.	NC	8	NR	T or D(aq)
sodium hydrogenphosphate anhydrous –------- granules *(sodium hydrogen phosphate dibasic*) $Na_2HPO_4(s)$	A	1	0	0	May cause irritation to skin, eyes and respiratory tract.	NC	8	NR	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
sodium hydrogensulfate monohydrate ------- crystals (*sodium bisulfate*) $NaHSO_4 \bullet H_2O(s)$	B - soln. C - crystals	3	0	2 ~~W~~	Corrosive; causes burns to any area of contact; may be harmful or fatal if swallowed; causes severe irritation and burns to respiratory tract; reacts violently with moisture in air or with water or steam.	E	8	8	WF/I
sodium hydrogensulfite (*sodium bisulfite*)- granules mixture: $NaHSO_3(s)$ ------- 58 - 99% $Na_2SO_5(s)$ -------- 1 - 42%	B	2	0	1	Causes irritation to eyes, skin and respiratory tract; harmful if swallowed or inhaled, reacts with acids and water releasing toxic SO_2 gas; oxidizes to the sulfate on exposure to air and moisture.	d2	8	NR	WF/I
sodium hydroxide -- pellets (*caustic soda*) NaOH(s)	B	3	0	1	Corrosive; causes burns to any area of contact, may be fatal if swallowed; harmful if inhaled; heat released when added to water.	D1, E	2	8	WF/I or N/P-D
sodium hydroxide- solution (*caustic soda*) mixture: H_2O ---------- 80 - 90% NaOH ---------- 10 - 20% NaOH(aq)	A - 5% or less B - more than 5%	3	0	1	Corrosive; causes burns to any area of contact, may be fatal if swallowed; harmful if inhaled; heat released when added to water.	D1, E	2	8	WF/I or N/P-D
sodium hypochlorite -------- solution (*bleach*) mixture: H_2O ---------- 80 - 99% NaClO----------– 1 - 20% NaOCl(aq)	B	2	0	2 OX	Skin irritant, may cause burns to skin and eyes; harmful by inhalation, ingestion or through skin contact; light and temperature sensitive, decomposes with release of chlorine gas; oxidizer.	C, D1	6	8	D

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
sodium iodate ------ powder $NaIO_3(s)$	B	2	0	1 OX	Causes irritation to skin, eyes and respiratory tract; harmful if swallowed or inhaled; strong oxidizer, may cause fire in contact with combustible material; may explode with strong mechanical shock or friction.	C	6	5.1	WF/I
sodium iodide ------ crystals $NaI(s)$	B	2	0	1	Causes irritation to skin, eyes and respiratory tract; harmful if swallowed or inhaled; chronic exposure produces "iodism" with headache, fever, laryngitis, bronchitis and iodine mumps; absorbs moisture; decomposes if heated releasing toxic fumes of iodine and sodium oxide. Note: Added to table salt for iodine source.	D2	8	NR	T or D(aq)
sodium metabisulfite ------ granules $Na_2S_2O_5(s)$	B	2	0	1	Causes irritation to eyes, skin and respiratory tract; harmful if swallowed or inhaled; slowly oxidizes to the sulfate on exposure to air and moisture; reacts with acids and water releasing toxic SO_2 gas.	D2	8	NR	D-(aq) or WF/I
sodium metasilicate pentahydrate ------- powder $Na_2SiO_3 \bullet 5H_2O(s)$	B	3	0	0	Corrosive when wet; severe irritant to skin, causes rapid burns to eyes and severe burns to mouth, throat and stomach if ingested; harmful if inhaled.	D2, E	8	8	WF/I or N/P-D
sodium nitrate ----- crystals $NaNO_3(s)$	B	2	0	1 OX	May cause irritation to eyes, skin and respiratory tract; harmful if swallowed or inhaled; strong oxidizer, contact with combustible material may cause fire; decomposes explosively if heated to >538°C or with severe impact.	C, D2	6	5.1	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
sodium nitrite ----- granules $NaNO_2(s)$	B	2	0	1 OX	Causes irritation to eyes, skin and respiratory tract; harmful if swallowed, inhaled or absorbed through skin; strong oxidizer, contact with combustible material may cause fire; explosion risk if heated to 537°C or with severe impact.	C, D1, D2	6	5.1	WF/I
sodium oxalate ---- powder $Na_2C_2O_4(s)$	D	3	0	0	Corrosive; causes burns to any area of contact; harmful if inhaled, may be fatal if ingested; may affect the kidneys.	D1, D2	8	6.1 (8)	WF/I
sodium peroxide --granules $Na_2O_2(s)$	C	3	0	1 OX ~~W~~	Corrosive; causes burns to any area of contact; harmful if swallowed or inhaled; reacts with water; strong oxidizer, contact with combustible material may cause fire.	C, D1, D2	6	5.1	WF/I
sodium phosphate tribasic dodecahydrate -- crystals $Na_3PO_4 \bullet 12H_2O(s)$	B	2	0	1 ~~W~~	Causes irritation of the skin, eyes and respiratory tract; harmful if swallowed or inhaled; reacts with water.	NC	8	NR	WF/I
sodium propionate- powder $NaC_3H_5O_2(s)$ or $CH_3CH_2COONa(s)$	A	1	0	0	Causes irritation of the skin and eyes.	NC	8	NR	T or D(aq)
sodium silicate ----- powder (*water glass*) $Na_2SiO_3(s)$	B	3	0	0	Corrosive; causes severe burns to any area of contact, harmful if swallowed or inhaled.	D2	8	8	WF/I
sodium silicate nanohydrate -------- powder (*water glass*) $Na_2SiO_3 \bullet 9H_2O(s)$	B	3	0	0	Corrosive; causes severe irritation to skin, eyes and respiratory tract; harmful if swallowed or inhaled.	D2	8	8	WF/I
sodium sulfate ----- powder $Na_2SO_4(s)$	A	1	0	0	May cause irritation of skin, eye, respiratory and digestive tract.	NC	8	NR	T or D(aq)

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
sodium sulfide nonahydrate -------- crystals $Na_2S•9H_2O(s)$	D	3	0	1	Corrosive; causes severe burns to any area of contact, harmful if swallowed or inhaled; unstable in storage, decomposes in contact with moisture and acids forming toxic combustible hydrogen sulfide gas.	B, D1	8	8	WF/I
sodium sulfite ------ crystals $Na_2SO_3(s)$	A	2	0	0	May cause irritation of skin, eye and respiratory tract; harmful if swallowed.	D2	8	NR	WF/I
sodium tetraborate decahydrate -------- crystals (*sodium borate, borax*) $Na_2B_4O_7•10H_2O(s)$	A	2	0	0	May cause irritation of skin, eye, respiratory and digestive tract, may cause adverse reproductive effects.	NC	8	NR	T or D(aq)
sodium thiocyanate --------- crystals NaSCN(s)	B	2	0	1	Causes irritation to skin, eyes and respiratory tract; harmful if swallowed or inhaled; may affect heart, blood, thyroid and central nervous system; decomposes on exposure to light.	D1, D2	8	6.1	WF/I
sodium thiosulfate--crystals $Na_2S_2O_3(s)$	B	2	0	0	May cause irritation of skin, eye and respiratory tract; may be harmful if swallowed or inhaled.	D2	8	NR	T or D(aq)
starch ---------- powder $(CH_2O)_n(s)$	A	0	1	0	May cause irritation to skin, eyes and respiratory tract; may form explosive dust-air mixture.	NC	8	NR	T
stearic acid --------- powder (*octadecanoic acid*) $C_{18}H_{36}O_2(s)$ or $CH_3(CH_2)_{16}COOH(s)$	A	1	1	0	May cause irritation of skin, eye and respiratory tract; combustible if heated or ignited, air-dust mixture explosive.	NC	3	NR	WF/I or N/P-D
strontium ---------- solid Sr(s)	C	3	4	2 ~~W~~	Corrosive; contact may cause burns; harmful or fatal if swallowed; flammable solid, granules ignite spontaneously with air; reacts with water.	D2, E	4	4.3	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
strontium acetate hemihydrate -------- crystals $SrC_4H_6O_4 \bullet 0.5\ H_2O(s)$	A	0	0	0	No adverse effects.	NC	8	NR	T
strontium chloride hexahydrate -------- powder $SrCl_2 \bullet 6H_2O(s)$	B	2	0	0	May cause irritation of skin, eye and respiratory tract; may be harmful if swallowed or inhaled.	D2	8	NR	WF/I or N/P-D
strontium nitrate --- powder $Sr(NO_3)_2(s)$	B	2	0	0 OX	Causes irritation of skin, eyes and respiratory tract; harmful if swallowed, inhaled or absorbed through skin; strong oxidant, fire risk in contact with organic material.	C, D2	6	5.1	WF/I
styrene –---------- oily liquid (*ethenylbenzene*) $C_8H_8(l)$	C	2	3	2	Causes irritation of skin, eyes and respiratory tract; harmful if swallowed, inhaled or absorbed through skin; affects the central nervous system, liver and reproductive system; flammable liquid and vapour; stabilized form polymerizes at room temperature.	B, D1, D2	5	3	WF/I
succinic acid ------- crystals (*butanedioic acid*) $C_4H_6O_4(s)$ or $HOOCCH_2CH_2COOH(s)$	A	1	1	0	Causes irritation of skin, eyes and respiratory tract, irritation to eyes may be severe; combustible if heated or ignited, air-dust mixture explosive.	D2	3	NR	T or D(aq)
sucrose ---------- crystals $C_{12}H_{22}O_{11}(s)$	A	0	1	0	High concentration of dust may irritate the eyes and respiratory tract; combustible if heated or ignited, air-dust mixture explosive.	NC	8	NR	T or D(aq)
sudan III ---------- powder $C_{22}H_{16}N_4O(s)$	A	0	1	0	No adverse health affects; combustible if heated or ignited, dust-air mixture explosive.	NC	8	NR	WF/I
sudan IV ---------- powder $C_{24}H_{20}N_4O(s)$	A	0	1	0	May cause skin, eye and respiratory tract irritation; combustible if heated or ignited, dust-air mixture explosive.	NC	8	NR	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
sulfamic acid ------- crystals (*amidosulfonic acid*) H_3NO_3S(s)	B - soln. C - crystals	3	0	0	Corrosive; causes severe irritation and burns to every area of contact; may be fatal if swallowed, harmful if inhaled.	D2, E	3	8	WF/I
sulfur –---------- solid S_8(s)	B	2	1	0	Dust irritating to skin, eyes and respiratory system; may be harmful if absorbed through skin, inhaled or ingested; sulfur dust-air mixture explosive; combustible if heated or ignited releasing toxic sulfur dioxide.	D2	8	4.1	WF/I
sulfuric acid –------- solution mixture: H_2SO_4 ---------- 52 - 100% H_2O ---------- 0 - 48% H_2SO_4(aq)	A - 5% or less B - more than 5%	3	0	2 ~~W~~	Corrosive; liquid and mist causes severe burns to all body tissues; may be fatal if swallowed or contacted with skin; harmful if inhaled; water reactive, releasing heat; cancer hazard with prolonged exposure to sulfuric acid mist.	D1, D2, E	1	8	WF/I or N/P-D
sulfurous acid ------ solution (*hydrogen sulfite*) mixture: H_2SO_3 ---------- 6 - 12% H_2O ---------- 88 - 94% H_2SO_3(aq)	A - 5% or less B - more than 5%	3	0	0	Corrosive with prolonged contact, causes burns to any area of contact; harmful if inhaled or ingested.	D1, D2, E	8	8	N/P-D
tannic acid ---------- powder (*tannin*) $C_{76}H_{52}O_{46}$(s)	A	2	1	0	Causes irritation to skin, eyes and respiratory tract; may be harmful if swallowed or inhaled; large amounts can cause liver and kidney damage; combustible if heated or ignited, dust-air mixture explosive.	D1, D2, E	3	NR	WF/I
L-tartaric acid ----- crystals (*2,3-dihydroxy-butanedioic acid*) $C_4H_6O_6$(s)	A	1	1	0	May cause irritation to skin and eyes; combustible if heated or ignited, dust-air mixture explosive.	E	3	NR	N/P-D or WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
tetrachloroethylene -- liquid (*ethylene tetrachloride*) $Cl_2CCCl_2(l)$	C	2	0	0	Harmful if swallowed, inhaled or absorbed through skin; causes irritation to skin, eyes and respiratory tract; severe or prolonged exposure affects the central nervous system, liver and kidneys; may be a human carcinogen.	D1, D2	1	6.1	WF/I
thallium metal --------- solid Tl(s)	C	3	0	0	Toxic metal; may be fatal by absorption through skin, ingestion or by inhalation of dust. Ingestion leads to nausea, vomiting, convulsions and death due to central nervous system damage; prolonged or repeated exposure may result in hair loss, kidney damage, paralysis and death.	D1, D2	8	6.1	WF/I
thioacetamide ----- crystals (*ethanethioamide*) $C_2H_5NS(s)$	A	2	1	0	Causes irritation to skin, eyes and respiratory tract; harmful if swallowed, inhaled or absorbed through skin; possible carcinogen; combustible if heated or ignited, dust-air mixture explosive.	D1, D2	8	NR	WF/I
thorium ---------- solid Th(s)	D	3	0	0	Toxic, radioactive element; avoid skin contact or inhalation of dust.	D1, D2	8	6.1	WF/I
thymol blue --------- powder (*thymolsulfonephthalein*) $C_{27}H_{30}O_5S(s)$	A	1	1	0	May cause irritation to skin, eyes and respiratory tract; combustible if heated or ignited.	NC	8	NR	WF/I
thymolphthalein --- crystals $C_{28}H_{30}O_4(s)$	A	1	0	0	May cause irritation to skin, eyes and respiratory tract.	NC	8	NR	WF/I
tin(II) chloride –--- crystals $SnCl_2(s)$	A	2	0	0	May cause severe eye and respiratory tract irritation, and digestive tract irritation with nausea, vomiting and diarrhea; may cause liver damage; hygroscopic.	D2	8	8	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
tin metal ---------- granules or mossy flakes Sn(s)	A	1	1	1	May cause irritation to skin, eyes and respiratory tract; oxidizes especially in presence of moisture; dust-air mixture explosive.	NC	8	NR	T
tin(II) oxide –------- powder SnO(s)	A	1	0	0	May cause irritation to skin, eyes and respiratory tract; may cause digestive tract irritation with nausea, vomiting and diarrhea; may cause central nervous system effects.	NC	8	NR	T
tin(IV) oxide –------ powder SnO_2(s)	A	1	0	0	May cause irritation to skin, eyes, digestive and respiratory tracts.	D2	8	NR	T
tin(II) sulfate ------- powder $SnSO_4$(s)	A	2	0	0	May cause irritation to skin and respiratory tract, causes irritation to skin and digestive tract with nausea, vomiting and diarrhea; may cause central nervous system and reproductive effects; moisture sensitive.	D2	8	NR	T or D(aq)
titanium(IV) chloride---------- powder $TiCl_4$(s)	C	3	0	2 ~~W~~	Corrosive; causes severe irritation and burns to every area of contact; may be fatal if inhaled, may cause lung damage; harmful if ingested; water reactive.	D2, E, F	8	6.1 (8)	WF/I
titanium metal ---------- solid Ti(s)	A	1	0	0	Relatively nontoxic, dust can cause mild irritation of the respiratory system; dust-air mixture explosive.	NC	8	NR	R or T
titanium(IV) oxide - powder TiO_2(s)	A	1	0	0	May cause irritation to skin, eyes and respiratory tract.	NC	8	NR	T
toluene ---------- liquid (*methylbenzene*) C_7H_8(l)	C	2	3	0	Causes irritation to skin, eyes and respiratory tract; harmful if inhaled or absorbed through skin, harmful or fatal if swallowed; may affect the liver, kidneys, blood system or central nervous system; flammable liquid and vapour.	B, D2	5	3	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
1,1,1-trichloroethane- liquid (*methylchloroform*) $C_2H_3Cl_3(l)$ or $CH_3CCl_3(l)$	C	2	1	1	Causes irritation of the skin, eyes and respiratory tract; harmful if swallowed, inhaled or absorbed through skin; affects the central nervous system, liver, kidneys, and cardiovascular system; possible carcinogen; hydrolyzes slowly in water to form hydrochloric and acetic acids; combustible if heated or ignited, causes ozone degradation.	D2	8	6.1	WF/I
1,1,2-trichloro-1,2,2-trifluoroethane -------- liquid (*freon*) $CCl_2FCClF_2(l)$	C	2	0	0	Causes irritation to eyes and respiratory tract; harmful if inhaled; affects the cardiovascular and central nervous systems. Destroys ozone in upper atmosphere.	D2	8	9	WF/I
triethanolamine ----- liquid (*trolamine*) $C_6H_{15}NO_3(l)$ or $(HOCH_2CH_2)3N(l)$	B	2	1	1	Causes skin irritation and severe irritation of the eyes; harmful if swallowed, chronic exposure may lead to liver and kidney damage; flammable, air-vapour mixture explosive; light and air sensitive.	D1	8	NR	WF/I
trisodium phosphate---------- crystals (*sodium phosphate tribasic, TPS*) $Na_3PO_4 \bullet 12H_2O(s)$	A	2	0	1 ~~W~~	Causes irritation of the skin, eyes and respiratory tract; harmful if swallowed or inhaled; reacts with water.	NC	8	NR	WF/I
tryptophan ---------- crystals $C_{11}H_{12}N_2O_2(s)$	A	1	0	0	May be irritating to skin, eyes, respiratory and digestive tracts.	NC	8	NR	T
tungsten –---------- solid W(s)	A	1	2	1	Dust may cause irritation to skin, eyes, digestive and respiratory tracts; flammable solid, may ignite spontaneously in air.	B	4	4.2	R or T
tungstic acid -------- powder $H_2WO_4(s)$	B	2	0	0	Causes eye irritation, harmful if swallowed or inhaled, chronic inhalation hazard.	D2, E	1	NR	WF/I or N/P-D

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turpentine –---------- liquid $C_{10}H_{16}$(l)	B	2	3	0	Causes irritation to skin, eyes, digestive and respiratory tracts; harmful by ingestion, inhalation or skin absorption; flammable liquid and vapours, flashpoint 35ºC.	B, D2	5	3	WF/I
tyrosine(L & DL) -- crystals $C_9H_{11}NO_3$(s)	A	2	0	0	May cause irritation to skin, eyes and respiratory tract; may be harmful if swallowed, inhaled or absorbed through skin.	D2	8	NR	T
universal indicator–solution mixture: methyl alcohol --- 10 - 20% ethyl alcohol –-- 60 - 100% methyl ethyl ketone- <0.5% ethyl acetate ----------<0.2% phenolphthalein ----- <1.0% methyl red ---------- <1.0% bromothymol Blue - <0.2% thymol blue ---------- <0.5% butter yellow -------- < 0.1% water ---------- balance	A	2	3	0	Causes irritation of the skin and respiratory tract, severe irritation of the eyes; may be fatal by excessive ingestion, inhalation or skin absorption; flammable liquid.	B, D1	5	6.1	WF/I
urea ---------- powder (*carbamide*) CH_4N_2O(s)	A	1	0	0	Causes irritation to skin, eyes and respiratory tract; dust can be an explosive hazard if heated.	NC	8	NR	T
urethane – crystals/powder (*carbamic acid, ethyl ester*) $C_3H_7NO_2$(s)	B	1	1	0	Causes irritation to skin, eyes and respiratory tract; may cause irritation to digestive tract; solid and dust-air mixture combustible; possible human carcinogen.	NC	8	NR	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
valeric acid ---------- liquid (*n-pentanoic acid*) $C_5H_{10}O_2(l)$	B	2	1	0	Irritates the skin, causes severe eye and respiratory tract irritation and possible burns; ingestion may cause irritation with nausea, vomiting and possible burns; flammable if heated or ignited.	E	3	8	WF/I or N/P-T
L-valine ----–-------- crystals $C_5H_{11}NO_2(s)$	A	1	0	0	May cause irritation to skin and severe irritation to eyes and respiratory tract.	NC	8	NR	T
vanadium ---------- powder V(s)	B	2	1	0	Causes irritation to skin and respiratory tract, and severe irritation to eyes; may cause irritation to digestive tract.	D2	8	NR	R or T
vinegar ---------- solution (*acetic acid*) mixture: CH_3COOH --------- 5 - 7% H_2O ----------93 - 95% $CH_3COOH(aq)$	A	1	0	0	Causes irritation of the nose, throat and respiratory tract; prolonged contact may cause burns and dermatitis.	NC	1	NR	N/P-D
vinyl acetate ---------- liquid $C_4H_6O_2(l)$	C	1	3	1	Irritant to skin, eyes and mucous membranes; highly flammable; possible human carcinogen.	B, D2	5	3	WF/I
vitamin C ---------- crystals (*ascorbic acid*) $C_6H_8O_6(s)$	A	1	1	0	May cause mild irritations of the skin, eyes, respiratory and digestive tracts; flammable if heated or ignited.	NC	3	NR	T or D(aq)
water glass --------- solution (*sodium silicate*) mixture: H_2O ----- 60 - 65% Na_2SiO_3- 35 - 40% $Na_2SiO(aq)$	B	2	0	0	Causes severe irritation to skin, eyes and respiratory tract; harmful if swallowed or inhaled.	D2	8	NR	WF/I
wintergreen oil ------- liquid (*methyl salicylate*) $C_8H_8O_3(l)$	A	2	1	0	Causes irritation of the skin, eyes and respiratory tract; harmful if swallowed, inhaled or absorbed through skin; affects the kidneys and central nervous system.	D2	8	NR	WF/I

Chemical Name(s), State and Formula	Use in School Category	H*	F*	R*	Hazards	WHMIS Class	Storage Class	TDG Hazard Class	Disposal Methods
xylene (1, 2 & 1, 4 forms)---------- liquid (*dimethylbenzene*) C_8H_{10}(l)	C	2	3	0	Causes irritation of the skin, eyes and respiratory tract; may be harmful if swallowed or inhaled; causes central nervous system depression; flammable liquid and vapour, vapour-air mixture explosive.	B, D1, D2	5	3	WF/I
zinc acetate --------- powder $ZnC_4H_6O_4$(s)	A	2	1	0	Causes irritation of the skin, eyes and respiratory tract; harmful if swallowed or inhaled; combustible if heated or ignited.	D2	8	NR	WF/I or N/P-T
zinc carbonate ----- powder $ZnCO_3$(s)	A	2	0	0	May cause irritation to skin, eyes and respiratory tract; may be harmful if swallowed, inhaled or absorbed through skin.	D2	8	9	WF/I or N/P-T
zinc chloride ------ granules $ZnCl_2$(s)	B - soln. C - granules	3	0	0	Corrosive; causes burns to any area of contact; harmful if swallowed or inhaled, extremely destructive to mucous membranes; affects the cardiovascular system.	D1, D2, E	8	8	WF/I or N/P-T
zinc metal--(mossy) chunks Zn(s)	A	2	1	1	Dust may cause irritation to skin, eyes and respiratory tract; harmful if swallowed or inhaled; dust-air mixture explosive, water reactive.	D2	8	NR	R or T
zinc nitrate hexahydrate -------- crystals $Zn(NO_3)_2 \bullet 6H_2O$(s)	A	2	0	2 OX	Causes irritation to skin, eyes and respiratory tract; harmful if swallowed or inhaled; strong oxidizer, increases flammability of combustible substance in contact with it.	C, D1	6	5.1	WF/I
zinc oxide ---------- powder ZnO(s)	A	1	1	0	May irritate the respiratory tract; dust-air mixture explosive.	NC	8	NR	T
zinc sulfate heptahydrate ------- crystals $ZnSO_4 \bullet 7H_2O$(s)	A	2	0	0	Causes irritation to skin, eyes and respiratory tract; harmful if swallowed, inhaled or absorbed through skin.	D2	8	NR	WF/I or N/P-T

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zinc sulfide ---------- powder ZnS(s)	A	1	0	1 ~~W~~	Causes irritation to skin, eyes and respiratory tract; harmful if swallowed or inhaled; contact with stomach acid produces toxic hydrogen sulfide; reacts with water to produce zinc sulfate.	D2	8	NR	T
zirconium ---------- chunks Zr(s)	A	0	1	0	Metal nontoxic; combustible if heated.	NC	8	4.1	R or WF/I
zirconium ---------- powder Zr(s)	A	1	2	0	Causes some irritation to skin, eyes and respiratory tract; ingestion causes severe irritation to mucous membranes; flammable.	B, D1	4	4.1	WF/I