

Acceptable Chemicals for Nova Scotia School Laboratories Updated 2024

All chemicals must be stored appropriately and permission to use/store a chemical is dependent on the availability of safe storage facilities. Safe use and handling of chemicals should be in accordance with WHMIS 2015 guidelines. Regional Centres for Education (RCE) and the Conseil Scolaire Acadien Provincial (CSAP) are responsible for ensuring that teachers are trained in WHMIS. Fume hood extraction should be used as required for respective chemicals. Where applicable, the anhydrous form of a chemical as well as the related hydrates are permitted. It is a school-based decision whether to purchase and store the hydrated or anhydrous form of these chemicals.

Household products are permitted and should be used and stored according to package instructions (eg. Baking soda, food colouring, table salt, sugar etc...).

A note on Biological Samples:

- Preserved specimens should only be purchased from a scientific supply company. Disposal of preservation liquid and used specimens should be in accordance with the regulations from the supply company.
- -Fresh or frozen mammalian tissue should only be purchased from a federally inspected source. Experiments using mammalian blood, urine and fecal materials, human cells or fluids are prohibited.

Should a teacher wish to use a chemical not on this list, they must apply to their RCE/CSAP for approval (please see attached form). The approval request should be directed to the program coordinator and should include: a description of the chemical being requested (including the desired amount), the program-based proposed use of the chemical, a rationale as to why an approved chemical is not suitable and justification that safe handling and storage will be ensured.

Note: This list replaces the list of approved chemicals found in the Nova Scotia Science Safety Guidelines (2005). Chemicals not on this list are not permitted in school laboratories. A copy of this list should be included in the Fume Hood Documentation binder where appropriate

| Chemical | Elementary Lab Spaces | Middle School Labs | High School Labs |
|--|-----------------------|--------------------|------------------|
| Acetaldehyde, C ₂ H ₄ O | | | ✓ |
| Acetic acid, HC ₂ H ₃ O ₂ | ✓ | ✓ | ✓ |
| Acetone, CH ₃ H ₆ O | | ✓ | ✓ |
| Agar Powder, (C ₁₂ H ₁₈ O ₉) _x | ✓ | ✓ | ✓ |
| Aluminum, Al (forms other than powder) | ✓ | ✓ | ✓ |
| Aluminum chloride, AlCl ₃ | | | ✓ |
| Aluminum sulfate, Al ₂ (SO ₄) ₃ | | ✓ | ✓ |
| Ammonia (ammonium hydroxide, NH ₄ OH), NH ₃ | | ✓ | ✓ |
| Ammonium acetate NH ₄ CH ₃ COO | | | ✓ |
| Ammonium chloride, NH ₄ Cl | | ✓ | ✓ |
| Ammonium dihydrogen phosphate, NH ₄ H ₂ PO ₄ | | | ✓ |
| Ammonium hydrogen phosphate, NH ₄ HPO ₄ | | | ✓ |
| Ammonium nitrate, NH ₄ NO ₃ | | | ✓ |
| Ammonium sulfate, (NH ₄) ₂ SO ₄ | | | ✓ |
| Ascorbic Acid (Vitamin C), C ₆ H ₈ O ₆ | | | ✓ |
| Barium chloride, BaCl ₂ | | | ✓ |
| Barium hydroxide, Ba(OH) ₂ | | | ✓ |
| Barium nitrate, Ba(NO ₃) ₂ | | | ✓ |
| Barium sulfate, BaSO ₄ | | | ✓ |
| Benedict's solution | ✓ | ✓ | ✓ |
| Benzoic acid, C ₆ H ₅ COOH | | | ✓ |
| Bromothymol blue, C ₂₇ H ₂₈ Br ₂ O ₅ S | ✓ | ✓ | ✓ |
| Biuret reagent | | ✓ | ✓ |
| Bromine, Br ₂ (Use bromine water where possible) | | | ✓ |
| 1-Butanol, C ₄ H ₉ OH | | | ✓ |
| Butane, C ₄ H ₁₀ | | ✓ | ✓ |
| Calcium, Ca | | | ✓ |
| Calcium acetate, (CH ₃ CO ₂) ₂ Ca | | | ✓ |
| Calcium carbide, CaC ₂ | | | ✓ |
| Calcium carbonate, CaCO ₃ | ✓ | ✓ | ✓ |
| Calcium chloride, CaCl ₂ | ✓ | ✓ | ✓ |
| Calcium dihydrogen phosphate, Ca(H ₂ PO ₄) ₂ ·H ₂ O | | | ✓ |
| Calcium hydroxide, Ca(OH) ₂ | | ✓ | ✓ |

| Chemical | Elementary Lab Spaces | Middle School Labs | High School Labs |
|--|-----------------------|--------------------|------------------|
| Calcium nitrate, $\text{Ca}(\text{NO}_3)_2$ | | ✓ | ✓ |
| Calcium sulfate (gypsum), CaSO_4 | | ✓ | ✓ |
| Calcium oxide, CaO | | | ✓ |
| Camphor | | | ✓ |
| Chlorine, Cl_2 (aqueous) | | | ✓ |
| Citric acid, $\text{C}_6\text{H}_8\text{O}_7$ | ✓ | ✓ | ✓ |
| Cobalt (II) nitrate, $\text{Co}(\text{NO}_3)_2$ | | | ✓ |
| Copper, Cu (forms other than powder) | ✓ | ✓ | ✓ |
| Copper (II) nitrate, $\text{Cu}(\text{NO}_3)_2$ | | | ✓ |
| Copper (II) sulfate, CuSO_4 | | | ✓ |
| Dichloromethane, CH_2Cl_2 | | | ✓ |
| Lactose, $\text{C}_{12}\text{H}_{22}\text{O}_{11}$ | | | ✓ |
| Dimethylamine, $\text{C}_2\text{H}_7\text{N}$ | | | ✓ |
| Dry ice (Carbon Dioxide, CO_2) | | | ✓ |
| Ethanol, $\text{C}_2\text{H}_5\text{OH}$ | | ✓ | ✓ |
| Ethyl acetate, $\text{CH}_3\text{COOC}_2\text{H}_5$ | | | ✓ |
| Formic acid, HCOOH | | | ✓ |
| Fructose, $\text{C}_6\text{H}_{12}\text{O}_6$ | ✓ | ✓ | ✓ |
| Graphite (carbon) | ✓ | ✓ | ✓ |
| Glucose, $\text{C}_6\text{H}_{12}\text{O}_6$ | ✓ | ✓ | ✓ |
| Glycerol, $\text{C}_3\text{H}_8\text{O}_3$ | ✓ | ✓ | ✓ |
| Guaiacol Solution, $\text{C}_6\text{H}_4(\text{OH})(\text{OCH}_3)$ | | | ✓ |
| Hexane, C_6H_{14} | | | ✓ |
| Hydrochloric acid, HCl | | ✓ | ✓ |
| Hydrogen peroxide, H_2O_2 | | ✓ (3%) | ✓ (30%) |
| Indigo Carmine, $\text{C}_{16}\text{H}_8\text{N}_2\text{Na}_2\text{O}_8\text{S}_2$ | | | ✓ |
| Iodine (solid), I_2 | | | ✓ |
| Iodine (Lugol's) | ✓ | ✓ | ✓ |
| Iron, Fe (forms other than powder) | ✓ | ✓ | ✓ |
| Ferric ammonium citrate, $\text{C}_6\text{H}_8\text{FeNO}_7$ | | | ✓ |
| Ferric chloride, FeCl_3 | | | ✓ |
| Ferric nitrate, $\text{Fe}(\text{NO}_3)_3$ | | | ✓ |
| Ferric oxide, Fe_2O_3 | | ✓ | ✓ |
| Ferrous ammonium sulfate, $(\text{NH}_4)_2\text{Fe}(\text{SO}_4)_2$ | | | ✓ |

| Chemical | Elementary Lab Spaces | Middle School Labs | High School Labs |
|--|-----------------------|--------------------|------------------|
| Ferrous chloride, FeCl ₂ | | | ✓ |
| Isoamyl alcohol (2-methylbutanol), C ₅ H ₁₂ O | | | ✓ |
| Isopropanol (2-propanol), (CH ₃) ₂ CHOH | | ✓ | ✓ |
| Lead, Pb (forms other than powder) | | ✓ | ✓ |
| Luminol, C ₈ H ₇ N ₃ O ₂ | | | ✓ |
| Lycopodium Powder | | | ✓ |
| Lithium chloride, LiCl | | ✓ | ✓ |
| Magnesium, Mg (forms other than powder) | | | ✓ |
| Magnesium oxide, MgO | | ✓ | ✓ |
| Magnesium sulfate, MgSO ₄ | | ✓ | ✓ |
| Magnesium Chloride, MgCl ₂ | | | ✓ |
| Magnesium Nitrate, Mg(NO ₃) ₂ | | | ✓ |
| Malachite Green Oxalate (Powder), C ₅₂ H ₅₄ N ₄ O ₁₂ | | | ✓ |
| Maltose (Malt Sugar), C ₁₂ H ₂₂ O ₁₁ | ✓ | ✓ | ✓ |
| Manganese (II) Sulfate, MnSO ₄ | | | ✓ |
| Manganese dioxide, MnO ₂ | | | ✓ |
| Methanol, CH ₃ OH | | ✓ | ✓ |
| Methylene blue, C ₁₆ H ₁₈ ClN ₃ S | | ✓ | ✓ |
| Methyl orange, C ₁₄ H ₁₄ N ₃ O ₃ SNa | | | ✓ |
| Methyl red, C ₁₅ H ₁₅ N ₃ O ₂ ·HCl | | | ✓ |
| Methyl violet, C ₂₄ H ₂₈ N ₃ Cl | | | ✓ |
| Nickel (electrode), Ni | ✓ | ✓ | ✓ |
| Nickel (II) nitrate, Ni(NO ₃) ₂ | | | ✓ |
| Nitric acid, HNO ₃ | | | ✓ |
| Octyl alcohol, CH ₃ (CH ₂) ₇ OH | | | ✓ |
| Oxalic acid, C ₂ H ₂ O ₄ | | | ✓ |
| Pepsin | | | ✓ |
| Phenolphthalein, C ₂₀ H ₁₄ O ₄ | | ✓ | ✓ |
| Phenol (Carbolic acid), C ₆ H ₅ OH | | | ✓ |
| Phenol red, C ₁₉ H ₁₄ O ₅ S | | ✓ | ✓ |
| Phenyl 2-hydroxybenzoate, C ₁₃ H ₁₀ O ₃ | | | ✓ |
| Phosphoric acid, H ₃ PO ₄ | | | ✓ |
| Potassium acetate, KCH ₃ CO ₂ | | | ✓ |
| Potassium aluminum sulfate, KAl(SO ₄) ₂ | | | ✓ |

| Chemical | Elementary Lab Spaces | Middle School Labs | High School Labs |
|--|-----------------------|--------------------|------------------|
| Potassium bromide, KBr | | | ✓ |
| Potassium carbonate, K_2CO_3 | | | ✓ |
| Potassium chlorate, $KClO_3$ | | | ✓ |
| Potassium chloride, KCl | | ✓ | ✓ |
| Potassium chromate, K_2CrO_4 | | | ✓ |
| Potassium dichromate, $K_2Cr_2O_7$ | | | ✓ |
| Potassium dihydrogen phosphate, KH_2PO_4 | | | ✓ |
| Potassium ferricyanide, $K_3[Fe(CN)_6]$ | | | ✓ |
| Potassium hydrogen phthalate, $C_8H_5KO_4$ | | ✓ | ✓ |
| Potassium hydrogen tartrate, $KHC_4H_4O_6$ | | | ✓ |
| Potassium hydroxide, KOH | | | ✓ |
| Potassium iodate, KIO_3 | | | ✓ |
| Potassium iodide, KI | | ✓ | ✓ |
| Potassium nitrate, KNO_3 | | ✓ | ✓ |
| Potassium permanganate, $KMnO_4$ | | | ✓ |
| Potassium thiocyanate, KSCN | | | ✓ |
| Propane, C_3H_8 | | ✓ | ✓ |
| Salicylic Acid, $C_7H_6O_3$ | | | ✓ |
| Silver nitrate, $AgNO_3$ | | ✓ | ✓ |
| Sodium acetate, CH_3COONa | | | ✓ |
| Sodium benzoate, $C_6H_5CO_2Na$ | | | ✓ |
| Sodium bisulfate, $NaHSO_4$ | | ✓ | ✓ |
| Sodium Borate, BNa_3O_3 | | ✓ | ✓ |
| Sodium carbonate, Na_2CO_3 | | ✓ | ✓ |
| Sodium hydroxide, NaOH | | | ✓ |
| Sodium oxalate, $Na_2C_2O_4$ | | | ✓ |
| Sodium sulfate, Na_2SO_4 | | ✓ | ✓ |
| Sodium sulfite, Na_2SO_3 | | ✓ | ✓ |
| Sodium thiocyanate, NaSCN | | ✓ | ✓ |
| Sodium thiosulfate, $Na_2S_2O_3$ | | ✓ | ✓ |
| Stannic chloride, $SnCl_4$ | | | ✓ |
| Strontium chloride, $SrCl_2$ | | | ✓ |
| Strontium nitrate, $Sr(NO_3)_2$ | | | ✓ |
| Sulfuric acid, H_2SO_4 | | ✓ | ✓ |

| Chemical | Elementary Lab Spaces | Middle School Labs | High School Labs |
|--|-----------------------|--------------------|------------------|
| Tannic acid, $C_{76}H_{52}O_{46}$ | | ✓ | ✓ |
| Thymol blue sodium salt, $C_{27}H_{30}O_5Na$ | | ✓ | ✓ |
| Tin, Sn (forms other than powder) | ✓ | ✓ | ✓ |
| Urea (Crystals), H_2NCONH_2 | | ✓ | ✓ |
| Zinc, Zn (forms other than powder) | | ✓ | ✓ |
| Zinc chloride, $ZnCl_2$ | | ✓ | ✓ |
| Zinc nitrate, $Zn(NO_3)_2$ | | ✓ | ✓ |
| Zinc oxide, ZnO | | | ✓ |
| Zinc sulfate, $ZnSO_4$ | | | ✓ |
| Zinc sulfide, ZnS | | ✓ | ✓ |

Application for use of a chemical not on the acceptable chemical list

All chemicals must be stored appropriately and permission to use/store a chemical is dependent on the availability of safe storage facilities. Please submit this form to the Program Coordinator at your RCE/CSAP.

| | |
|---|---------|
| Teacher name: | School: |
| Description of chemical requested (including desired amount): | |
| Proposed program-based use of the chemical: | |
| Rationale as to why an approved chemical is not suitable: | |
| What safety hazards does this chemical pose? | |
| How will the safety hazards be mitigated? | |
| Teacher Signature: | Date: |

For Regional Centre for Education use only

Approved: Yes _____; No _____

Comment:

RCE Personnel Signature:

Date: