



Safe Method of Use 3

Personal Protective Equipment (PPE)

Introduction

The Health and Safety in Employment Act, HSNO Code of Practice and the University Injury and Illness Prevention Program all require that appropriate Personal Protective Equipment is worn when handling chemicals

Personal Protective Equipment (PPE) in the laboratory comprise of combinations of the following:

1. Laboratory coat, or overalls
 2. Closed footwear
 3. Safety glasses or face shield
 4. Gloves
 5. Fume Hood
- Lab coats, safety glasses, gloves and closed shoes **must** be considered mandatory minimum requirements for all personnel handling chemicals in the laboratory.
 - The use of volatile or toxic compounds chemicals **must** be restricted to fume-hoods. Refer to specific Safe Methods of Use and MSDS databases.
 - All laboratories **must** have access to at least one MSDS database (ChemWeb Gold and CCOHS databases can be accessed electronically via LEARN databases)
 - In the case of highly hazardous chemicals (i.e. HSNO 3.1A; 4.1A, 4.2A, 4.3A and 6.1A), it is highly recommended that a hard copy MSDS be available.

1. Safety Glasses

Safety glasses **must** be worn at all times in laboratories, except in the following circumstances:

- a) no foreseeable eye hazards exist in the room space; or
- b) eye protection will significantly interfere with the intended task (an example might be microscopy) and there is no imminent risk of eye injury in the immediate vicinity; or

while in transit through the laboratory via the safest and most direct route and there is no imminent risk of eye injury in the immediate vicinity of the route.

Prescription glasses **do not** constitute safety glasses and provide no protection for splashes coming from the sides. Those wearing prescription lenses must wear safety glasses over the top of prescription lenses or have plastic side covers fitted to prescription lenses .

While not an exhaustive list, activities that would present a higher risk of eye injury include:

- Opening centrifuge tubes
- Using syringes (particularly when forcing solutions through cartridges, or unblocking tubing or columns)***
- Vigorous mixing/vortexing
- Pouring solutions
- Using any system where a liquid/solvent is under any pressure

*** Wherever possible, syringes with Leur locks **shall** be used for this type of procedure.

A full face shield **must** be worn when handling cryogenic liquids such as liquid nitrogen where there is a significant risk of facial burn.

2. Use of Gloves

Gloves are an important method of preventing absorption of chemicals through the skin on your hands and **must** be worn when handling chemicals. It is important therefore to choose gloves that are resistant to the chemical that is being handled.

Note that some of the more chemically resistant gloves have very poor dexterity and so if precise handling is required then PVC or PVA gloves may not be the most appropriate choice.

Chemical group	Latex	Nitrile	Neoprene	PVC	PVA
Solvents	x	✓	✓	x	x
Organic solvents	x	✓	✓	x	✓
Ketones	✓	x	✓	x	✓
Caustics	✓	✓	✓	✓	x
Hydrocarbons	x	✓	✓	x	✓
Acids	✓	✓	✓	✓	x
Oils	x	✓	✓	✓	✓
Fats	x	✓	✓	✓	x

Source: Ansell Protective Products Chemical Resistance Guide, 6th edition.
See also Ansell Glove Chemical Resistance Guide.

Note

- The above table is quite generic and somewhat of a simplification of the matter. A more detailed chemical resistance information chart for latex, neoprene and nitrile gloves is available on the chemical safety website.
- Note in the above table that nitrile gloves are rated as being adequate for organic solvents. More detailed analysis shows that nitrile gloves have poor resistance to several common organic solvents including chloroform, and diethyl ether. Thus due caution should be used in determining the appropriate gloves to use in a given situation.
- ***Always refer to recommendations in individual MSDS for more specific guidance***

3. Fume Cupboards.

Fume cupboards ***must***:

- (i) Used when handling volatile or toxic compounds chemicals
- (ii) be operated long enough, after the hazardous substances has been removed from the cupboard, to flush the hazardous substances substantially from the exhaust ducting.
- (ii) have a means to indicate they are operating (such as a 'tell tale'). While not mandatory, it is strongly recommended that fume cupboards intended to extract hazardous substances while unattended should have an alarm that is activated if the airflow drops by more than 20% or stops. It is also strongly recommended that the alarm is monitored.
- (iii) ***not*** be used to store closed containers of chemicals. Exception may be made for the storage of small cylinders of toxic gases (see Safe Method of Use for Gases)