

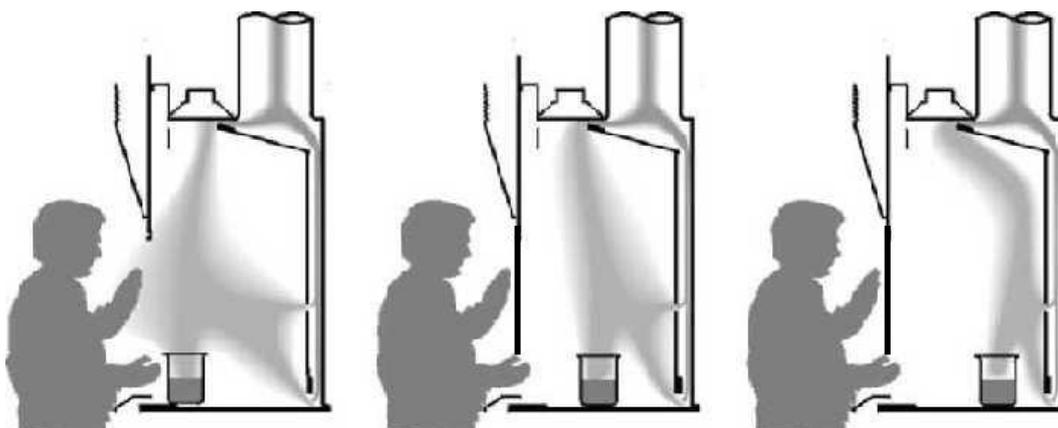
lechyd a Diogelwch – Health and Safety

LABORATORY SAFETY – SAFE USE OF FUME HOODS / CUPBOARDS

This Information Sheet provides guidance on how to use Fume Hoods properly to ensure your health and safety when handling chemicals and other dangerous products within them.

A fume hood or fume cupboard is a large piece of laboratory equipment which is designed to limit a person's exposure to hazardous and / or unpleasant fumes by dragging airflow away to prevent it being inhaled / ingested. The pictures below show how sensitive airflow is and how even the position of materials in the fume hood affect the airflow.

There are two main types of units, ducted and re-circulating. However, the principle is the same for all units; air is drawn in from the front of the cabinet by a fan, and either expelled outside the building or made safe through filtration and then fed back into the room. The vast majority of Fume Hoods at the University are ducted to the outside.



Bad Placement
of Materials

Good Placement
of Materials

Best Placement
of Materials

Fume Hood Hazards



If fume hoods aren't used and maintained properly the following hazards can result:

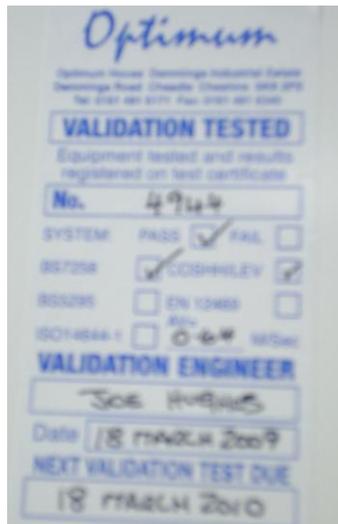
- Exposure to hazardous vapours, gases and particulates.
- Dirty fume hoods cause unnecessary exposure as the user cannot see the contamination and was not expecting it to be present.
- Possible fire / explosion if fume hoods are not washed down when required leading to a build up of chemicals which can react with each other (exothermic reaction).
- Fumes may leak if the airflow is restricted by too many items being stored in the Cabinet.

Before you Start

The following basic principles should always be followed when using a Fume Hood:

General

- **CHECK** you know how to use the Fume Hood. If you don't, ask someone!
- **ALWAYS** refer to the COSHH Assessment to make sure you understand any chemical or biological hazards associated with the sample before working with it.
- **CHECK** the Fume Hood. The Test Certificate will look something like this. If the fume hood does not have an in-date Test sticker – don't use it and report it to your Supervisor:



Test Certificate

- **ALWAYS** wear appropriate PPE eg gloves and goggles (the following chart and the COSHH Assessment should help you). But remember, different thicknesses of gloves are needed dependent on what you are doing eg thicker gloves or the correct type will be needed if you are handling concentrated acids or bases.

Chemical group	Glove material					
	Natural rubber	Nitrile rubber	Neo-prene™	PVC	Butyl	Viton™
Water miscible substances, weak acids/alkalis	✓	✓	✓	✓	-	-
Oils	-	✓	-	-	-	-
Chlorinated hydrocarbons	-	-	-	-	-	✓
Aromatic Solvents	-	-	-	-	-	✓
Aliphatic solvents	-	✓	-	-	-	✓
Strong acids	-	-	-	-	✓	-
Strong alkalis	-	-	✓	-	-	-
PCBs	-	-	-	-	-	✓

- **NEVER** place your face inside the fume hood.
- **ALWAYS** place the item you are working on at least 15cms into the hood to ensure contaminants are drawn away from you.
- Move in front of the hood and in and out slowly as quick movements may affect the air flow.
- Wash your hands before eating and drinking after working in a fume hood.
- To allow safe access, keep the area immediately surrounding the fume hood clear.

Using a Fume Hood

- Always make sure the fan and the air flow meter or alarm are working ^(1 & 2).
- Check for loose or an excessive number of items within the fume hood. These could block the vents and stop it working properly.
- Make sure the sash is set as low as possible and always below the safe working limit ⁽³⁾.

1



Display

2



The direction of paper movement shows the air is being drawn into the Fume Hood

3



Red tab indicates the Safe Working Limit. But try and work with the sash lower if possible

- **Check Lab doors, windows etc are shut** as this could affect the air flow through the fume hood.
- Always label any items you leave in a fume hood with your name, date, the name of the substance and it's hazards.
- Do not place electrical equipment or other ignition sources inside the fume hood when you are working with flammable liquids / gases (specific risk assessments may be required for such use).
- Be careful when using liquids with low flash points as hot plates or steam lines could ignite them.
- Clean up spills immediately, disposing of waste in accordance with the COSHH Assessment.
- Always check the COSHH Assessment before disposing of waste chemicals.

NEVER

- Use the fume hood for storage purposes.



- Dispose of waste in the fume hood ie allow solvents to evaporate – this contravenes Environmental legislation and is extremely hazardous!
- Tamper with sashes or use the fume hood without lowering the sash as it can affect the effectiveness of the fume hood which is there to protect you.



See the difference in capture efficiency when the sash is lowered properly

FINALLY:



- If you think there is something wrong with the fume hood, **STOP** using it, place a sign on it to ensure others don't use it and report it immediately to your Supervisor / Lab Technician.
- All fume hoods at the University are examined regularly by an external contractor. This is to ensure the correct functioning of the fume hood to protect you.