MANCHESTER 1824
The University of Manchester

SafetyMatters

Issue 5, February 2015

Cracking under pressure?

The mystery of breaking bottles revealed

During the summer when the weather was very warm, Safety Services had several reports of solvent bottles spontaneously cracking and releasing their entire contents into the laboratory.

Spontaneously shattered bottle

A solvent bottle usually contains 2.5 litres of liquid, which can result in a large chemical spill to deal with.

If the solvent in the bottle, which might be fresh solvent or waste, can create gas or vapour which cannot escape, then the pressure in the bottle may build up resulting in a sudden and unexpected rupture. This can happen even if no-one is touching or using the bottle at the time.

How can you prevent this happening?

1) Use High Density Polyethylene (HDPE) plastic waste containers where possible as these won't shatter (but do check that they are compatible with your chemicals first).

2) Pay attention when segregating your waste chemicals. Put like wastes with like, and don't store waste for long periods of time.

This edition focusses on laboratory-related incidents. Read about:

- Winchesters which have shattered spontaneously
- Leaking gas cylinders
- Formaldehyde reclassified as a carcinogen
- Protecting your eyes

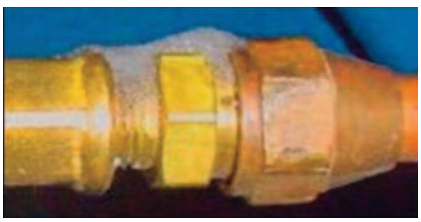
3) Don't overfill containers.

4) Leave containers capped loosely and make sure that the containers are standing in a tray that could contain all the contents of the bottle if it were to fracture.

Leaking gas cylinders

Following two incidents with leaking gas cylinders, users of compressed gas cylinders are reminded to check thoroughly for leaks whenever a regulator is changed. Also periodically check all joints within a system or rig.

BOC recommend using either their own brand leak detector



Bubbles form if a leak is present

spray or a 1% Teepol HB7 solution in demineralised water to do this. ***Do not use*** soapy water or washing up liquid which could cause an explosion when used on certain cylinders.

Any unexpected or unusually high gas usage should be investigated.

Formaldehyde reclassified

Formaldehyde has been reclassified as a category 1B carcinogen as cancer-causing effects have been proven in animals and are likely in humans.

The hazard information you will see on new bottles of formaldehyde is shown below.

Danger

The signal word Danger will be underneath the pictogram and the hazard statement 'H350 May cause cancer' will be used.

For information on the University requirements for using chemicals known to cause cancer, cell mutations and damage to unborn children, (CMRs) please follow the link to the University documentation at

http://www.healthandsafety.manchester.ac.uk/toolkits/chemicals/specific_chemical_hazards/

Have you an eye for safety or are you blinded by bad habits?

There are many accidents in the University that could be prevented if people thought about protecting their eyes before carrying out certain tasks.

Don't forget to think about whether there is anything that might become airborne, for example, swarf from a drill that could go into your eye, or chemicals which might splash into your eye. Or if you are working with lasers, could the beam go directly or bounce off a surface into your eye?

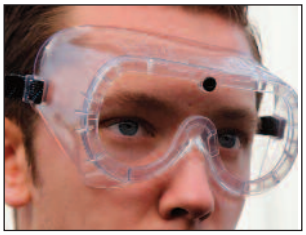
Then consider the level of eye protection you might need to ensure you buy the correct type for your needs.

Normal spectacles designed just to correct vision are generally not suitable as safety spectacles as they won't stop the swarf or chemical from getting behind the frame.

Normal spectacles

Depending on the task you are doing you might need safety spectacles, goggles or in some instances a visor for protection.

Safety spectacles



Safety goggles

Safety Visor

Myth: - People must wear goggles to play conkers

This is one of the oldest myths around. A well-meaning person decided children should wear safety goggles to play conkers. Then some schools either banned playing conkers or made children wear goggles, or even padded gloves!

Eye protection is needed for activities where there is a real risk of eye damage. The risk of getting unintentionally hit in the eye by conker debris is incredibly low and doesn't usually need goggles for protection.

Remember:

You can eat with false teeth, but you cannot see with a glass eye!