

Breaking glass

The biggest problem with glass from a health and safety point of view is linked to its biggest drawback – the fact that it is brittle and likely to break. But there are a few lesser issues as well.

Cuts

The edge of a piece of broken glass can be phenomenally sharp. It is possible to obtain scalpel blades made from glass what are many times sharper than steel with an edge only 3 nm or so thick!

Clearly then any broken glass should be handled with care. It is usually easy to see when glass is broken and pick or sweep them up carefully with appropriate precautions. Beware of tiny slivers that can sometimes be missed. If it is not easy to sweep these up, you can use a piece of blu-tac to pick them up.

You need to particularly beware of glassware piled in a washing up bowl. It is always wise to check it before filling with water and detergent. Once it is full, you will not be able to tell if there is broken glass there and can easily give yourself a serious cut.

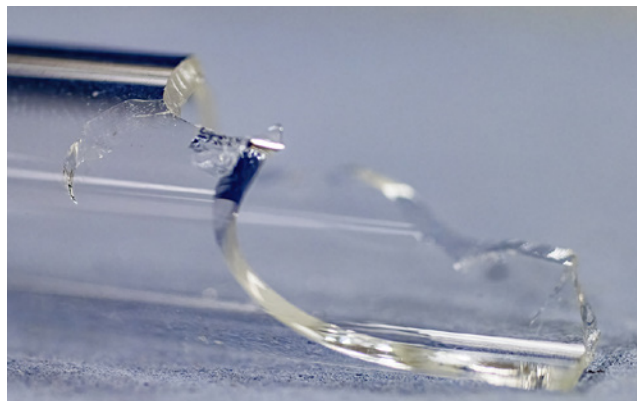
Another potential cause of nasty cuts is inserting glass tubing into bungs or corks. It is important to use the correct technique for this to avoid injury:

- Insert a cork borer, wide enough for the glass tube to fit through, into the hole in the bung. You can use propan-1,2,3-triol (glycerol) as a lubricant for this.
- Insert the glass tube through the cork borer.
- Remove the cork borer, leaving the glass tubing in place.

Inserting pipettes into fillers can also be a hazard. To avoid breakage and stabbing themselves, learners should be taught to hold the pipette only a centimetre or two from the end and not to push too hard.



A shard of glass.



A broken test tube.

Burns

Glass can get extremely hot and looks no different from cold glass. Moreover, it has quite a high specific heat capacity and so will stay hot for a long time. So be very careful before picking up any glass item that has been strongly heated.

Spillage

Another problem with the brittle nature of glass is that if it breaks the contents will spill out, and these could be hazardous. In addition to the normal precautions you would take with any container: watch out for cracks – a crack, even a hairline one, in glass can lead to sudden failure particularly when heated.

Stuck stoppers

Stoppers, particularly in storage bottles, can become stuck in place. This is most common with ground glass stoppers. These should be avoided for bottles containing sodium hydroxide or other alkaline solutions as the alkalis can react with the glass and cement the stopper in place.

Similarly, alkaline solutions should not be left in burettes or pipettes as they will cement the jets closed.

Gentle tapping or warming can sometimes loosen them but even if not then it is usually no more than an annoyance.

Sometimes, however, the chemical inside the bottle can release gases that produce an increase in pressure that can cause the bottle to explode. Silicon tetrachloride is known for this.

