



Enzymes

includes Amylase, Catalase, Cellulase, Diastase, Lipase, Proteases (eg, pepsin, trypsin), Urease

Substance	Hazard	Comment
Enzymes Powders 'Biological' detergents contain enzymes.	 HARMFUL	All enzymes may be sensitisers (see below) and may produce allergic reactions. They can cause asthma and irritate the eyes, nose and skin.
Enzymes Concentrated solutions	 IRRITANT	All enzymes may be sensitisers (see below) and may produce allergic reactions. They can cause asthma and irritate the eyes, nose and skin.
Enzymes Dilute solutions Biological systems are, of course, rich sources of enzymes, eg, liver (catalase), saliva (amylase).	LOW HAZARD	The enzymes at these concentrations are unlikely to offer any significant risk.

Note: Some people are *allergic* to particular substances; their bodies' immune system reacts to these substances to an unusual extent. *Asthma* is one type of allergy which results in breathing difficulties. A *sensitiser* is a substance that may produce only a small or even no allergic reaction when humans are first exposed to it (sometimes over an extended period of time) but can produce a much more severe reaction on subsequent occasions, even when the body is exposed to much smaller amounts.

Typical control measures to reduce risk

- Use the lowest concentration/smallest amount possible.
- Reduce the risk of skin contact by wearing disposable gloves.
- Wear eye protection.
- **Avoid powdered enzymes escaping into the air; use a fume cupboard when handling enzyme powders.**

Assessing the risks

- *What are the details of the activity to be undertaken? What are the hazards?*
- *What is the chance of something going wrong?*
Eg, Could enzyme dust be breathed in?
- *How serious would it be if something did go wrong?*
- *How can the risk(s) be controlled for this activity?*
Eg, Can it be done safely? Does the procedure need to be altered?

Emergency action

- **In the eye** Flood the eye with gently-running tap water for at least 10 minutes. See a doctor.
- **Swallowed** Wash out the mouth. Give a glass of water to drink. Do **not** make the casualty vomit. See a doctor.
- **Dust breathed in** Remove the casualty to fresh air. See a doctor if breathing is difficult.
- **Spilt on the skin or clothing** Remove contaminated clothing. Wash off the skin with soap and plenty of water. Rinse contaminated clothing.
- **Spilt on the floor, bench, etc** Scoop up powders (take care not to raise dust). Wipe up solution spills or any traces of powders with a damp cloth.