






Food testing (1)

See also CLEAPSS Student Safety Sheet 5, Food Testing (2)

Substance	Hazard	Comment
Food		Uncooked samples of food may be contaminated with microbes. (See CLEAPSS Student Safety Sheet 1, Microorganisms.) Some people are allergic to some foods, especially peanuts.
Fehling's solution Used to test for reducing sugars	 CORROSIVE	See CLEAPSS Student Safety Sheets 31 and 40. Solution A contains slightly-acidic copper sulfate solution. Solution B contains 3M sodium hydroxide solution. Solution A DANGER: Causes serious eye damage and skin irritation. Solution B DANGER: Causes severe eye damage and skin burns. As the mixture has to be heated in a test tube, there is a risk of alkali spitting out.
Benedict's solution Used to test for reducing sugars	 IRRITANT	See CLEAPSS Student Safety Sheet 40. Contains slightly-alkaline 0.07M copper sulfate solution. WARNING: Irritant to skin and eyes. Some risk of spitting when heating test tubes.
Ethanol Used to test for fats (lipids)	 HIGHLY FLAMMABLE HARMFUL HEALTH HAZARD	Most schools in fact use IDA (industrial denatured alcohol) rather than pure ethanol. See CLEAPSS Student Safety Sheet 60. DANGER: highly flammable, harmful by ingestion, may cause damage to organs. If Bunsen burners are being used nearby for other food tests, there is a serious fire risk.
Iodine solution Used to test for starch	LOW HAZARD	See CLEAPSS Student Safety Sheet 56. The solution is so dilute (about 0.01M) that it presents only a LOW HAZARD.
Biuret test Used to test for proteins	 CORROSIVE	See CLEAPSS Student Safety Sheets 31 and 40. DANGER/WARNING: The very dilute copper sulfate solution is LOW HAZARD. Sodium hydroxide solution may be CORROSIVE, IRRITANT or LOW HAZARD depending on concentration.

Typical control measures to reduce risk

- Do not taste foods in laboratories; avoid using products containing peanuts etc if there is a known allergy.
- Wear eye protection and use the smallest possible amounts of chemicals.
- Use Benedict's solution rather than Fehling's solution and heat with a water bath.
- Do not use ethanol if there are naked flames nearby.

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 chemicals spit out of a heated test tube, or might somebody using a Bunsen be unaware of ethanol being used nearby?
- How can the risk(s) be controlled for this activity?**
eg, can it be done safely? Does the procedure need to be altered? Should goggles or safety spectacles be worn?

Emergency action

- In the eye** Flood the eye with gently-running tap water for 10 minutes. Consult a medic.
- Swallowed** Do no more than wash out the mouth with drinking water. Do **not** induce vomiting. Consult a medic.
- Spilt on skin or clothing** Remove contaminated clothing. Then drench the skin with plenty of water. If a large area is affected or blistering occurs, consult a medic.
- Clothing catches fire** Push casualty to the floor, roll the body or smother flames on clothing or skin with fire blanket or other material. Cool burnt skin with gently running tap water for 10 minutes. Unless trivial consult medic.
- Other ethanol fires** Allow fires in sinks, etc to burn out. Fires at the top of test tubes, beakers etc can be smothered with a damp cloth or heat-resistant mat if this can be done safely.
- Spilt on floor, bench, etc** For small amounts, use a damp cloth. Rinse well. For larger amounts, cover with mineral absorbent (eg, cat litter) and scoop into a bucket. Neutralise alkali with citric acid. Rinse with water.