



## Safety and Science/Pūtaiao:

### 33.6 What should I be aware of when culturing microorganisms?

- Human or animal sources of microorganisms, other than skin, should not be used (for example, blood, saliva, pus, urine, and faecal material).
- Skin surfaces may be used only if cultures remain sealed.
- Samples should not be taken from toilets and toilet areas, including sinks and door handles.
- Known pathogens, other than genetically crippled strains of *Escherichia coli*, should not be used.
- Samples should not be taken from rubbish bins and drinking taps.
- Sterile swab sticks should be used to inoculate plates.
- All cultures should be labelled with student names and the date.
- Petri dishes should be covered and sealed to prevent contamination and the spreading of spores. Adhesive tape can be used to securely seal the dishes.
- Petri dishes should be incubated upside down.
- Subculturing should be carried out only on known non-pathogenic organisms that can be obtained commercially.
- Lids of petri dishes must be held open, at an angle to the base, for the minimum time that allows a transfer of material.
- All microbiological transfers should be conducted close to a Bunsen burner flame. Safety glasses should be worn.
- Incubating at 25 to 40 degrees Celsius (°C) should be avoided because this tends to select organisms adapted to the human body. Temperatures of 25°C or below should be used.
- Glassware used for fermentation experiments must either be lightly plugged with cotton wool or be covered with aluminium foil and not sealed.
- All cultures should be destroyed before disposal by heating in a pressure cooker for at least twenty minutes.

- Plastic dishes must be disposed of or could be soaked in a 10% hypochlorite (bleach) solution for three days.
- Spillages of cultures should be dealt with by a teacher or technician wearing disposable gloves. The broken container and/or spilled culture should be covered with a cloth soaked in a disinfectant of 10% hypochlorite (household bleach). After ten minutes the spillage must be cleared away using paper towels and a dustpan. The contaminated material should be placed in a disposal bag, along with the gloves, and then be disposed of. The dustpan should also be disinfected.

#### 33.6.1 Which microorganisms are suitable to use in school?

- soil microorganisms (for example, *Azotobacter* spp.)
- vinegar-producing microorganisms (for example, *Acetobacter* spp.)
- baker's yeast
- mildew and rust from plants
- yoghurt bacteria
- cheese bacteria and fungi
- some fungal diseases on plants and rotting fruits
- potato blight
- black spot on roses
- yeasts from grapes
- fungi from jams and jellies.

Note: Some microorganisms that are part of the normal flora of humans or animals may be pathogenic for immuno-compromised persons.