

## Investigations with Micro-Organisms

When using micro-organisms for investigations there are certain regulations that must be followed so as to allow projects to be entered into the NIWA Auckland City Science and Technology Fair.

These regulations are from the **Safety and Science Guidelines** from the Ministry of Education. The full document can be downloaded from here -Heading: Safety and science: Guidance document <https://scienceonline.tki.org.nz/Teaching-science/Science-equipment/Planning-for-science-programmes> Information relating to micro-organisms can be found on P 94.

The important regulations that must be followed are:

### 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 being heating in a pressure cooker for at least twenty minutes. 94
- 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.

### Using Micro-organisms?

If you are using Micro-organisms in your investigation you must complete the **Care and Safety Form** on the next page, have it checked by your teacher and put it into your log book to be available for judges to view as required

# Review of Care and Safety Using Micro-organisms

Student(s) Name(s): \_\_\_\_\_

School: \_\_\_\_\_

Name of Teacher Supervisor: \_\_\_\_\_

Date:            /            /202

For use of  
reviewer

1. **Investigation's Title:** \_\_\_\_\_

2. **Aim of Investigation:** \_\_\_\_\_

3. **Type of Micro-organisms:** What general type of micro-organisms will I be using?

4. **Source:** Where will I get these micro-organisms from?

5. **Incubation:** How will I incubate / grow these micro-organisms

6. At what **temperature** will the micro-organisms be kept?

7. **If growing micro-organisms in agar plates will I:**

seal the plates using Sellotape

place the plates upside-down when incubating them?

not open the plates again during the experiment?

take pictures to record the growth of the micro-organisms?

get rid of the plates as soon as I have completed my experiment?

8. **At the end of the investigation how will I dispose of the micro-organisms?**

**Signature of Student(s)** \_\_\_\_\_

## For Reviewer to Fill Out

- Proceed as planned**
- Please reconsider these points and re-present for review**

\_\_\_\_\_  
\_\_\_\_\_

Date: \_\_\_\_\_

Signature \_\_\_\_\_