Advice regarding the safe use of bacteria in schools

Background:
Microbiology is the specialised field which studies biological organisms impossible to see with the naked eye.

Staff involved in using bacteria for teaching purposes should be familiar with microbiological techniques including aseptic techniques and safety precautions in the classroom.

Advice to schools:
All microbiological samples should be regarded as potentially hazardous or infectious. Schools considering the use of bacteria in the science curriculum should conduct a risk assessment prior to conducting any activity. The risk assessment should identify all hazards and provide an outline of risk mitigation strategies.

Safety precautions and procedures:

1. Staff involved in using bacteria for teaching purposes should be appropriately trained in microbiology.

2. Laboratories should be the equivalent of a Physical Containment Level 1 (PC1).

3. Schools should have the necessary equipment for sterilisation and decontamination procedures.

4. The reference to a particular strain of bacteria in a text book does not mean that it is suitable for use in school based activities. Only Risk Group 1 bacteria, those bacteria that are unlikely to cause human, plant or animal disease, should be used. These bacteria should only be purchased from a reputable scientific supplier to ensure that acceptable pure strains are provided.

5. Staff or students who are immunocompromised or immunosuppressed should not participate in microbiological activities using bacteria. Although the risk is very low, some Risk Group 1 bacteria can be pathogenic to at risk people.

6. Any teaching and learning activities using bacteria should be closely supervised and be limited to Year 11 and 12 students.

7. Microbiological activities must be done on a designated work area, not on student desks. Before and after practical activities using bacteria, disinfection of work area surfaces with 70% alcohol is required.

8. Methods should be employed to prevent the generation of aerosols, for example the use of sterile disposable inoculating loops.

9. Bacteria should only be grown on a general nutrient agar or broth. Do not use selective, differential or enriched media such as blood, chocolate or MacConkey agars, as these promote the growth of human pathogens.

10. Agar plates must be kept closed once inoculated, with either parafilm or three to four pieces of sticky tape, to allow for aerobic conditions. Do not open the agar plates after they have been inoculated. Disposable petri dishes for bacterial growth practicals are recommended.

11. Agar plates should be incubated at room temperature or up to a maximum of 30°C. Do not incubate at 37°C as this provides ideal conditions for the growth of human pathogens.

12. Do not subculture from plates or broths inoculated by students.

13. Correct hand washing techniques must be followed by staff and students before leaving the laboratory.

14. At the end of the activity agar plates must be correctly sterilised in an autoclave or pressure cooker at 121°C or 100kPa/15psi for 20 minutes. A sterile confirmation strip (Class 5) should be used with every batch of plates being sterilised to verify the process was sufficient.

For further queries contact:
The Regional Laboratory Technician Group rltteam@education.wa.edu.au.