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Use of human body tissue and fluids

Posted by Anonymous on Fri, 2020-04-17 09:36

Use of human body tissue and fluids: Is it ok to use human body tissue or fluids such as cheek cells or tears in science experiments in schools?

Voting:



No votes yet

Year Level:

7

8

9

10

Senior Secondary

Laboratory Technicians:

Laboratory Technicians

Showing 1-2 of 2 Responses

DNA Extraction

Submitted by sat on 17 April 2020

Answer updated 17/01/2023

In brief, we do not recommend using human body tissue and fluids in experiments in schools.

- Currently there is no consistency throughout Australia concerning the use of human tissue (for example cheek cells) and body fluids in school science activities.
- Each state and territory in Australia is governed by its own regulators, who enforce compliance with the acts and regulations. Each state/territory has its own health department, which deals with the control of infectious diseases. Government educational jurisdictions establish policies for their own state/territory school sector and educational sectors outside the government schools systems will also establish their own policies based upon legislation, Australian Standards and their own risk assessments.
- Schools must follow the policies and procedures in their jurisdiction.

To the best of our knowledge the table below indicates the current status of what is permitted/prohibited in the Australian state and territory jurisdictions regarding the use of body tissues and fluids. Most schools in government jurisdictions prohibit the use of fresh human tissues or body fluids.

State/Territory Use of human body tissue and fluids

ACT	Experiments involving the use of fresh human tissues or body fluids, e.g. cheek cell smears, blood typing, blood smears & urine samples are prohibited.
NSW	Experiments using fresh human blood products, urine and fresh human tissue, e.g. cheek cell smears should not be used. A student using their own saliva is permitted.
NT	A risk assessment must be conducted prior to the use of biological materials and all appropriate control measures must be implemented
QLD	Subject to a Risk Assessment. Students must only use their own cheek cells.
SA	Subject to a Risk Assessment. Students must only use their own cheek cells.

TAS	Testing of body fluids, i.e. blood, vomit, urine and faeces, must not be conducted in schools by staff or students. Experiments that involve saliva or cheek cells may be undertaken, but appropriate risk management and disposal procedures need to be in place, including consideration of whether blood is visible in the saliva.
VIC	Any uses of body fluids/cells are subject to individual school risk assessment. Taking of blood is banned.
WA	Experiments on any human body fluid or tissue including cheek cell and skin scrapings are banned.

Human tissue and body fluids (including tears) have the potential to transmit infectious diseases.

Science ASSIST is aware of the great diversity in science facilities and staff training in the areas of microbiology and knowledge of infectious diseases.

For more information regarding microbiology, see the [GUIDELINES for best practice for microbiology in Australian schools](#) which Science ASSIST has developed.

It is important to remember that schools may not be aware of potential infectious diseases that staff or students may have and whilst these situations may be rare, there may also be other people in the vicinity who are immunosuppressed that are at greater risk of acquiring infections.

As a result of all of these different factors, Science ASSIST does not recommend the use of human tissue or body fluids in school science practical classes due to the risk of disease transmission.

Some alternative activities include:

- using commercially prepared microscope slides of cheek cells;
- using Biosets (photomicrographs) of cells with Bioviewers that are available from various scientific suppliers;
- preparing slides of animal cells from dissection material such as sheep kidneys.

Additional Information:

The oral cavity normally has a large microbial flora, some of which can be pathogenic. Numerous disease-causing microbes can reside in this area such as: *Neisseria meningitidis* (meningococcal disease), *Candida albicans* (thrush), Group A streptococcus (strep throat) and Epstein Barr virus (glandular fever). Anaerobes, some of which are disease causing, can also be found in the gingival (or gum) crevice areas.

There is the risk also that any cheek cell samples collected may be contaminated with blood, hence there is a possibility of contracting viruses such as HIV, Hep B and Hep C from contact with the sample. A student may be unaware that they have bleeding gums or sample too vigorously and cut the gum area.

Regarding the use of tears in an activity, we do not recommend the use of tears in a school science activity, particularly considering the recent study which confirmed that tears can transmit the hepatitis B virus (HBV).

Schools may not be aware of potential infectious diseases that staff or students may have and there may also be people who are immuno-suppressed, who are at risk of acquiring infections.

Generally, school science laboratories are classified as Physical Containment level 1 (PC1), if they conform to the requirements specified in Section 5 of AS/NZS 2243.3:2022 Safety in Laboratories – Microbiological safety and containment. If they conform to these requirements, then they are only suitable for work with microorganisms where the hazard levels are low, and where laboratory or facility personnel can be adequately protected by standard laboratory practice. Body fluids should not be handled in a PC1 laboratory.

Microorganisms that are classified as Risk Group 1 are the only ones that should be used in PC1 laboratories. Higher levels of Physical Containment are required for handling fresh human tissues or body fluids and microorganisms of Risk Groups 2–4.

Schools considering using cheek cells or human tears for a science activity should carefully evaluate their facilities, the level of staff training, student behaviour management and all the risks associated with handling human tissue. Appropriate risk management, risk assessment and disposal procedures will need to be in place. A good understanding of the handling of potentially infectious material using aseptic techniques is required by the supervising teacher and technician to make sure that students only handle their own sample to prevent any cross infection. A requirement to use soft cotton buds, as opposed to sharp implements such as toothpicks, should be mandatory. All used cotton buds, slides and any other contaminated items would need to be decontaminated using either of the following methods.

- Soaked in a bleach solution of sufficient strength for a sufficient length of time. A freshly prepared 0.5–1% v/v (5000–10000 ppm) chlorine solution is recommended and items left for a minimum of 10 minutes before discarding into the bin. This is the concentration required for the inactivation of viruses such as HIV and Hepatitis in blood.
- Put through an autoclave or pressure cooker (121° C, 15 psi for 15–30 minutes) to decontaminate the material for disposal.

References

NSW Department of Education and Communities 'Chemical Safety in Schools (CSIS)' resource package. NSW DoE website <https://education.nsw.gov.au/> DoE Intranet, login required.

'8. Biology Laboratory Safety Specifications C. Bloodborne pathogens' Connecticut State Department of Education website. <https://portal.ct.gov/sde/publications/connecticut-high-school-science-safety/biology-laboratory-safety-specifications>

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Science ASSIST. 2017. Guidelines for best practice for microbiology in Australian schools. Retrieved from the Science ASSIST website, <https://assist.asta.edu.au/resource/4196/guidelines-best-practice-microbiology-australian-schools>

Standards Australia. 2022. AS/NZS 2243.3:2022 Safety in Laboratories – Part 3 Microbiological safety and containment., Sydney Australia, see Section 5

DNA Extraction

Submitted by on 09 September 2020

Not during COVID. We can't even have food stalls till it's over.

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