Animal skeleton

Posted by Anonymous on Tue, 2016-10-18 14:25

Animal skeleton: One of our teachers can get a sheep skeleton from someone. The sheep died in a field and the bones are now devoid of any flesh. The teacher wants to know if there is a way in which the skeleton can be cleaned/sterilised so it can be used in the classroom to show the structure of the long bones and the spine etc. I know that we are not allowed to use anything not sourced from a reputable supplier (because of possible disease, fungus and pathogens it may be carrying) but the teacher would like to know if there is something that can be done so she can use it.

Voting:
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Year Level:
6
7
8
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Senior Secondary
Laboratory Technicians:
Laboratory Technicians

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Animal skeleton

Submitted by on 26 October 2016

Updated 19th January 2023

Source of animal:

We recommend you check with your school jurisdiction for regulations regarding the use of dead animals or animal body parts that may not be sourced from a certified abattoir, butcher or science supply company. More information can be found on the Science ASSIST website link: Dissection materials [1]

Zoonotic diseases:

There is a risk of contracting a zoonotic disease from handling living or dead animals. Zoonotic diseases are any diseases or infections that can be transmitted between animals and humans generally caused by bacteria, parasites, fungi and viruses. However, by following the safety procedures outlined below, you will reduce any risk to quite a low level. Sheep do potentially carry a number of diseases and pathogens transmissible to humans but the risks associated with old skeletal remains would be less than those associated with handling a fresh carcass. The following link gives a good overview of potential hazards in this area. https://agriculture.vic.gov.au/biosecurity/animal-diseases[2]

Science ASSIST recommendations:

It is important to follow the safety precautions outlined below:

- Conduct a site-specific risk assessment to assess and control any biological and chemical risks. Refer to the specific SDS for any chemicals being used. We have developed a Risk Assessment template for schools to use, see Risk Assessment Template.[3]
- Work in a fume cupboard or well-ventilated area when handling the hydrogen peroxide.
- Wear appropriate PPE (i.e., safety glasses, nitrile gloves, laboratory coat or preferable in this case disposable coveralls and face mask suitable for biological hazards).
- Use plastic, glass or ceramic containers with loose fitting lids only. Do not use metal containers.
- Good hygiene practices should be observed at all times: Keep hands away from the mouth, nose, eyes and face.
- Disinfect work surfaces and equipment with hospital grade disinfectant, diluted according to the manufacturer’s instructions.
- Wash hands thoroughly.

Recommended procedure for cleaning and sterilising dry animal bones:

The Tasmanian Museum[4] recommends the following method for cleaning and sterilising dry animal bones for collections.

Pre-treatment

- Freeze the bones for a week before handling and cleaning to slow down the growth of pathogens and therefore reduce the risk even more.

Cleaning

- Rinse bones in running water to remove any organic matter.
- Place the bones in a plastic tub or bucket and soak them in biological washing powder dissolved in warm to hot water (use according to manufactures instructions). The biological washing powder (which is available from supermarkets) contains enzymes which degrease the bone by breaking down any remaining fat and soft tissue that may still be present.
- Make sure the bones are fully immersed and leave for a few days to soak. Label the container accordingly.
- Remove the bones and rinse well with running water (otherwise the enzymes will continue to break down the bone).[5,6]

Sterilising and whitening

- In a fume cupboard or well-ventilated area place the bones in 3% hydrogen peroxide solution (made with 1 part 35% hydrogen peroxide[7] and 11 parts water). Hydrogen peroxide is a powerful oxidiser. Use a loose lidded plastic container to reduce pressure build up and evaporation. Label appropriately and leave in a well ventilated, cool dark place for 3 to 5 days depending on how white you want the bones to appear.
- Remove the bones from the peroxide using tongs and rinse well in running water
- Pour the peroxide into a suitable, labelled container for waste disposal. Dispose according to safety data sheet instructions.
- Lay the bones out to dry in the sun on absorbent towels or dry inside using a fan.
- When bones are completely dry, label and store under conditions to prevent any deterioration i.e., a cool dry place in low light levels and out of direct sunlight.

Additional information:

Alternatives:

For examining skeletal and muscle systems you could also consider using the following:

- Animal bones from the supermarket, pet meat supplier, butcher or abattoir.
- Whole dead chickens, purchased from the supermarket, or butcher.
- Prepared specimens such as animal skeletons and plastic models sourced from biological supply companies.

Small animals and animal parts can also be purchased through biological supply companies. See the Science ASSIST School science suppliers[8] list.

References:

[1] Science ASSIST website, (2023, January 7), *'Dissection materials'*, retrieved from https://assist.asta.edu.au/question/637/dissection-materials

[2] Victorian government, Department of agriculture, (accessed 2023, January 19), *'Animal diseases'*, retrieved from https://agriculture.vic.gov.au/biosecurity/animal-diseases

[3] Science ASSIST website, (2014, July), *'Risk assessment template'*, retrieved from https://assist.asta.edu.au/resource/2298/risk-assessment-template

[4] Gordon, T., (2016), Natural Science Collections Officer, Queen Victoria Museum and art gallery, Launceston, Tasmania. Personal communication.

[5] McGowan – Lowe, J., (2016), *'How to clean animal bones – the complete guide: Jake's Bones'*, retrieved from http://www.jakes-bones.com/p/how-to-clean-animal-bones.html

[6] Tennant, H., (2021, October 5), *'How to clean animal bones for display'*, retrieved from https://empressofdirt.net/how-clean-animal-bones/

[7] Chem-Supply website, (2023), *'35% Hydrogen peroxide'*, Safety Data Sheet. Search https://shop.chemsupply.com.au/ to source the latest Safety Data Sheet via the product information page.

[8] Science ASSIST website, (2020, June), *'School science suppliers'* retrieved from https://assist.asta.edu.au/resource/664/school-science-suppliers

Science ASSIST website, (2021, March), *'List of recommended chemicals for science in Australian schools 2021'*, retrieved from https://assist.asta.edu.au/resource/4669/list-recommended-chemicals-science-australian-schools-2021
