THOMPSON RIVERS UNIVERSITY

**SCIENCES HEALTH AND SAFETY COMMITTEE**
**Toxic Chemical Reduction Protocol for Science Laboratories**

September 2008

## Background

Formaldehyde and naphthalene are both chemicals that until recently, have been routinely used in science laboratories to preserve organic material. However, updated toxicology information on these chemicals has resulted in concerns of the impact of these chemicals on employee and student health at Thompson Rivers University. In June 2004, the International Agency for Research on Cancer (IARC) reclassified formaldehyde as a known human carcinogen. Formaldehyde is also a sensitizer where exposure levels exceeding 0.1ppm can lead to headaches, watery eyes, burning in the throat, difficulty breathing and also exposure can trigger asthma and allergy attacks. Naphthalene has been classified by the IARC as a possible human carcinogen, and also exposure to this chemical leads to detrimental health effects.

## Scope of the Protocol

The following protocol applies to all research and teaching in the Science Department and Health Sciences at Thompson Rivers University starting September 2008.

## Review and Revisions

The Sciences Health and Safety Committee will evaluate the success of this protocol in reducing formaldehyde exposure, and make revisions to the protocol as they deem necessary at least once every two years.

## A. Dissections

1. Dissection specimens preserved in formaldehyde must not be used for dissections in Science laboratories. However, dissection specimens preserved with other less-toxic preservatives may be used. An exception to this may be made for specimens already purchased before May 1st 2008. Such exceptions must be approved by the Dean of Science as well as the Sciences Health and Safety Committee.
2. Dissection protocol must be followed for all dissection specimens. These protocols must be prominently displayed in all dissection laboratories. (See the guidelines at the end of this document).
3. Dissection fume hoods must have a flow rate equal to or greater than 150 feet/minute, and must be checked at least once a year for flow rate.
4. Preserved dissection specimens must be kept in tightly sealed containers when not being used for dissection.
5. Fresh or frozen specimens for dissection should be used as much as possible.
6. When impossible to find fresh specimens, alternatives to dissections such as computer simulations, models, displays etc. should be considered.

7. Containers that have been exposed to formaldehyde in the past should not be used in any of the laboratories.
8. Preserved specimens must be disposed of in biohazard disposal containers to the appropriate Waste Disposal Company.

**B. Preserved Display Specimens -** *Due to the length of time required to obtain such alternatives, a one year extension will be given before the following must be followed (September 1st 2009).*

1. All preserved specimens that have been exposed to formaldehyde at some point must be only displayed in laboratories in tightly sealed containers. At no point, should these specimens be removed from these containers. Lids to these containers must allow no leakage of formaldehyde gas.
2. Preserved display specimens in jars must not be stored in formaldehyde, but rather should be stored in alcohol in sealed containers.
3. Where possible alternatives should be found such as living or fresh specimens, display specimens in acrylic mounts, dry or wet display mounts, photographs, computer images etc.
4. Napthalene must not be used in the display collection as a pest-control method, but rather alternatives must be sought, such as freezing specimens, cedar chips etc.
5. All preserved display specimens in jars must be stored either in the Museum Room (S372A) or S378.

**C. Preservation of Organic Material**

1. When new specimens are to be added to our preserved collection they may be preserved with formaldehyde only under the dissection fume hood (with a flow rate of 150 feet/minute) in the Museum Room (S372A).
2. Once preservation is complete they must then be stored in alcohol in sealed containers.
3. Alternative methods of preservation to formaldehyde should be used where possible. Possible alternatives may include use of alcohol, freeze drying, or Borealene.
4. Small quantities of formaldehyde may be used in the preservation of material for research and or fixing tissue for the purpose of histology, only under a fume hood that has a flow rate of equal to or greater than150 feet/minute and is annually checked.

## TRU Lab Dissection Guidelines:

*The following procedures will help minimize hazardous chemicals and odours in our workplace.*

*Please:*

1. Ensure bench top fume hoods are properly in place before opening specimen bags or storage bins (fume hoods are mandatory for ALL preserved specimen dissections).

2. Open specimen bags in the fume hood sink only (with fan on) and rinse to remove any preservative or storage solution.

3. Dispose of specimen bags in garbage and tie to seal once preparation is complete.

4. Place specimen on appropriate dissection tray under the fume hood and transfer as quickly as possible to the bench top fume hood to proceed with dissection.

5. If specimens MUST be retained for use at a later date, SEAL in heavy duty plastic bags and store in white dissection bins. Bins must be properly closed to ensure a leak proof seal.

6. Have students clean plexiglass hoods after dissection to ensure they are in good shape for the next class. Bench tops must also be wiped clean and sterilized with paper-towels and the spray-bottles of disinfectant provided.

7. To prepare specimens for disposal, place in the red biohazard containers and seal the lids. Contact Stericycle for supply of the containers and for pickup of the specimens when needed (604)574-4644.

THANKS FOR YOUR COOPERATION!