Chemical Waste Disposal from Detector Chiller

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Chemical Crystallography Laboratory

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Distribution

Douglas R. Powell, Laboratory Manager
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Laboratory copy maintained by Douglas R. Powell

Revision Record

Date	Version	Responsible Person	Description of Change
9/12/2013	001	Douglas R. Powell	Initial Release
3/30/2017	002	Douglas R. Powell	Minor Revisions

The following laboratory users have read this manual.

Table of Contents

A. Scope and Availability

A copy of this manual will be publicly available on the Laboratory's web site. A written copy will be kept with the laboratory safety documents.

B. Summary of Method

The heat exchanger used to cool the CCD detector operates at 0° C. To keep the chiller from freezing, ethylene glycol is added to the fluid (mostly water). The storage tank for the fluid is not completely sealed, so water from the atmosphere condenses into the tank and eventually overflows the tank. The ethylene glycol helps depress the freezing point of the fluid and keeps most small organisms from growing in the tank. The presence of ethylene glycol in the fluid means that the waste material must be disposed as a hazardous chemical waste.

C. Responsibility

The lab manager or other designated person should perform these tasks.

D. Safety and Training

Laboratory Safety training from the OU Environmental Health and Safety office must be completed annually.

E. Equipment and Supplies

The carboy is currently kept in the lower right side of the lab benches. Ethylene glycol is kept in the right had gray metal storage cabinet in the lab.

F. Procedure

Emptying Excess Fluid from the Heat Exchanger

To prevent the overflow of fluid from the tank, the excess fluid is transferred from the heat exchanger to a chemical waste carboy. Move the carboy until it is adjacent to the side of the heat exchanger and remove the lid of the carboy. Use any convenient container, such as a small jar to bail the excess fluid out of the heat exchanger into the carboy. Inside of the tank of the heat exchanger are two lines marking the low and high fluid ranges. Continue removing fluid from the tank until the fluid reaches the lower limit. Secure the lid of the carboy. Add about 30-50 ml of ethylene glycol to the tank of the heat exchanger.

Close the door to the heat exchanger tank and clean up any fluid that may have spilled on the floor or side and bottom of the carboy. Return the carboy and transfer jar to the lab cabinet. Be sure to wash your hands when finished.

Disposal of the Chemical Waste
When the carboy is about 70-80% full, perform the following tasks to dispose of the chemical waste. Complete a waste manifest.xls form with the following information. The date on the form should be in the form of a 6 digit number, mmddyy that is the date of the Monday of the week. A Tag number is assigned to each waste container. The Tag numbers are assigned by the stockroom personnel. Both X-ray labs get the Tag numbers 551-570. Check with the Macromolecular Crystallography Laboratory personnel to make sure that each waste chemical container gets a unique Tag number. The Department code is CH. Prepare two copies of the waste manifest form, taping one form to the outside of the container. Submit the container and the signed copy of the form to the Stockroom personnel by Thursday afternoon or early Friday morning. The empty container will be returned to the Stockroom Friday afternoon for pickup.

A similar procedure is used to complete the waste manifest form for other chemical waste.

The blank waste manifest form is kept in the notes\safety\waste folder of the lab manager along with previously completed forms.

G. Records Management

Records of the waste disposal are kept by the lab manager or designate.

H. Quality Control and Quality Assurance

The copies of previous waste manifests show when disposal is completed.

I. References

http://compliance.ouhsc.edu/ehso/Home.aspx
Web site for the Environmental Health and Safety Office of the University of Oklahoma.