

## MEDICAL COLLEGE OF OHIO

Subject: RESEARCH USE OF HAZARDOUS CHEMICALS

Policy No.: 03-004

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The Medical College of Ohio (MCO) has established an Academic Chemical Hazard Committee (ACHC), appointed by the Executive Vice President and Provost, to assist implementation of the guidelines for research involving chemical hazards. The objective of this policy is to ensure that a safe and healthful environment is maintained which limits employee and environmental exposures to carcinogenic chemicals and highly toxic chemicals used in the Medical College of Ohio research laboratories to the lowest feasible levels.

1. The responsible party (i.e., principal investigator/program director) for MCO-related research submitted to the MCO ACHC for approval must be a salaried MCO faculty member or other salaried MCO contract personnel. The PI/PD must be in a position to provide direct, personal, day-to-day oversight of activities and personnel associated with the Hazardous Chemical use protocol. Any exceptions to the above criteria regarding the eligibility of an individual to serve as the PI/PD of a Hazardous Chemical use protocol must be approved by the Associate Vice President for Research.
2. All research involving the use of potentially highly toxic or carcinogenic chemicals to be introduced into live animals must be submitted to MCO IACUC for review and approval. In such instances, final approval of the associated animal use protocol by the MCO Institutional Animal Care and Use Committee (IACUC) will be contingent upon chemical hazardous use approval of the associated protocol(s) for use of highly toxic or carcinogenic chemical(s).

### Definitions

The Academic Chemical Hazard Committee will consider these definitions in its selection of chemical substances used at the Medical College that pose a carcinogenic, or highly toxic risk to research laboratory personnel and Division of Laboratory Animal Medicine staff.

A potential carcinogenic chemical is defined by the MCO Academic Chemical Hazard Committee (ACHC) as: "Any substance, or combination or mixture of substances, which causes an increased incidence of benign and/or malignant neoplasms, or a substantial decrease in the latency period between exposure and onset of neoplasms in one or more experimental mammalian species as the result of oral, respiratory, or dermal exposure, or any other exposure which results in the induction of tumors at a site other than the site of administration. This definition also includes any substance which is metabolized by mammals into one or more potential carcinogens." The substance or mixture of substances may be subclassified as follows:

- Group 1 Human Carcinogen: Sufficient evidence in humans.
- Group 2 Probable Human Carcinogen: Limited evidence in humans or no evidence in humans but sufficient evidence in animals.
- Group 3 Possible Human Carcinogen: Limited evidence in animals in the absence of human data.
- Group 4 Not Classifiable as to Human Carcinogenicity: Inadequate or no data available.
- Group 5 Evidence of Non-Carcinogenicity for Humans: Negative evidence in at least two species.

A potential highly toxic chemical is defined by the MCO Academic Chemical Hazard Committee (ACHC) as: "Any substance, or combination of or mixture of substances other than chemical carcinogens, which, based on toxicological data reported in Material Safety Data Sheets or relevant scientific literature, meet one or more of the following criteria:

- 1) A chemical that has a median lethal dose (LD50) of 50 milligrams or less per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.
- 2) A chemical that has a median lethal dose (LD50) of 200 milligrams or less per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between two and three kilograms each.
- 3) A chemical that has a median lethal concentration (LC50) in air of 200 parts per million by volume or less of gas or vapor, or 2 milligrams per liter or less of mist, fume, or dust, when administered by continuous

inhalation for one hour (or less if death occurs within one hour) to albino rats weighing between 200 and 300 grams each. In addition, the substance or mixture of substances may exhibit strong irritant or sensitization properties."

#### Responsibilities of the Academic Chemical Hazard Committee

The Academic Chemical Hazard Committee is primarily responsible for the following when the hazardous compound(s) will be administered to live animals, and will also be available for consultation at the request of the Department of Safety and Health about its/their use in in vitro projects:

1. Recommending to the Executive Vice President and Provost, policies which provide for the safe conduct of research work involving highly toxic chemicals, and chemical carcinogens;
2. Assisting review of research protocols involving the use of carcinogens or potential carcinogens, and potentially hazardous compounds on the premises of the Medical College;
3. Identifying chemical substances used or proposed for use at the Medical College which may pose a carcinogenic risk;
4. Developing and instituting procedures for approving high risk operations involving chemical carcinogens, and highly toxic chemicals;
5. Maintaining communication with the Safety and Health Council by appointing a liaison to that Council
6. Assisting the principal investigator in the selection of laboratory practices and engineering control, such as fume hoods, biological safety cabinets, or glove boxes;

#### Responsibilities of the Principal Investigator

The principal investigator has the primary responsibility for:

1. Acquiring the knowledge and information needed to recognize and control highly toxic chemicals and chemical carcinogens in the laboratory;
2. Selecting and employing laboratory practices and engineering controls that reduce the exposure highly toxic chemicals and chemical carcinogens to the lowest practicable level;
3. Ensuring that laboratory personnel receive training in the safe handling and use of any and all hazardous substances being utilized in the laboratory.
4. Obtaining approval, when required, from the Academic Chemical Hazard Committee to conduct a high-risk operation involving highly toxic chemicals and chemical carcinogens in the lab;
5. Informing those employees, for whom the investigator is responsible, of the hazards associated with the use of chemical carcinogens and highly toxic chemicals, and instructing them in the use of laboratory practices, engineering control, and procedures for dealing with accidents involving highly toxic chemicals, and chemical carcinogens;
6. Supervising the safety performance of his or her staff to ensure that the required laboratory practices and engineering controls are employed;

7. Arranging for immediate medical attention and Occurrence Reporting of any incident that results in (a) inoculation of highly toxic chemicals or chemical carcinogens, (b) ingestion of highly toxic chemicals and chemical carcinogens, or (c) any incident resulting in overt exposure of personnel or danger of environmental contamination by chemical carcinogens;
8. Written notification of the Department of Laboratory Animal Medicine at least 24 hours in advance of housing any animal treated with hazardous substances in that facility. This written notification must contain the name, dose and route of administration of hazardous substances administered, as well as, instructions on any special precautions that DLAM staff should take in handling treated animals. All cages containing animals treated with hazardous substances must be labeled clearly with the name of the substance (abbreviations are unacceptable) and the type of hazard it may impose (e.g., CARCINOGEN).
9. Assisting representatives of the MCO Safety and Health Council Accident Investigation Task Force in investigating accidents;
10. Investigating and reporting to the Health and Safety Coordinator any problems pertaining to operation and implementation of laboratory practices and engineering controls.

#### Responsibilities of the Employee

Each employee is responsible for:

1. Knowing and complying with safety guidelines, regulations and procedures required for the task assigned;
2. Reporting unsafe conditions to the principal investigator, immediate supervisor, or the Department of Safety and Health;
3. Reporting to the principal investigator or immediate supervisor all facts pertaining to every accident resulting in exposure or exposure to highly toxic chemicals and chemical carcinogens.

Additional information regarding the process for applying for approval for research involving hazardous materials may be obtained from Research and Grants Administration. The most current version of the application form is available through Research and Grants Administration, Room 148, Health Science Building (extension 4252) or via the MCO Research Office Web page (<http://www.mco.edu/research>) and should be returned to the same office for MCO regulatory review. The most current version of the application must be used for all submissions.

Additional information regarding hazardous chemical substances can be obtained through the Department of Safety and Health (Ext. 5069).

All accidents and spills involving hazardous materials must be promptly reported to the Department of Safety and Health according to the procedures described in MCO Policy HM-08-013.

See also the following MCO policies:

HM-08-001	Collection, Storage, Transport, and Disposal of Hazardous Waste
HM-08-005	Handling of Hazardous Drugs (HD), i.e., Antineoplastic and Carcinogenic Agents
HM-08-010	Radiation Safety
HM-08-016	Industrial Hygiene Monitoring and Medical Surveillance
HM-08-018	Hazardous Communication
HM-08-019	Infectious Waste Disposal
HM-08-020	Disposal of Sharps
HM-08-021	Biohazardous Agents Standard (Universal) Precautions for Laboratories
HM-08-026	Laboratory Chemical Hygiene Plans
HM-08-027	Hazardous Material Fire Safety
HM-08-028	Teratogens Safe Work Practices
S-08-018	Occurrence Reporting
S-08-031	Laboratory Fume Hoods and Cabinets
S-08-032	Personal Protective Equipment
S-08-034	Respiratory Protection Program

Source: Executive Vice President and Provost

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