

SAFETY RULES AND REGULATIONS ADOPTED AT IChO

Extracts from the Regulations of the International Chemistry Olympiad (IChO)

§ 12 Safety

- (1) During the experimental part, the competitors must wear laboratory coats and eye protection. The competitors are expected to bring their own laboratory coats. Other means of protection for laboratory work are provided by the organizer.
- (2) When handling liquids, each student must be provided with a pipette ball or filler. Pipetting by mouth is strictly forbidden.
- (3) The use of acutely toxic substances (GHS hazard statement H300, H310, H330) is strictly forbidden. The use of toxic substances is not recommended, but may be allowed if special precautions are taken. Substances with GHS hazard statements H340, H350, H360 (proven mutagens, carcinogens, and teratogens) must not be used under any circumstances (see Appendix B for definitions of these categories).
- (4) Detailed recommendations involving students' safety and the handling and disposal of chemicals can be found in Appendices A 1, A 2, and B.
 - a) Appendix A 1: Safety Rules for Students in the laboratory.
 - b) Appendix A 2: Safety Rules and Recommendations for the Host Country of the IChO.
 - c) Appendix B contains a reference to the hazard symbols and statements of the Globally Harmonized System of Classification of Chemicals (GHS), the use of which is expected in labeling and classifying materials used at the IChO.

APPENDIX A

A 1: SAFETY RULES FOR STUDENTS IN THE LABORATORY

All students of chemistry must recognize that hazardous materials cannot be completely avoided. Chemists must learn to handle all materials in an appropriate fashion. While it is not expected that all students participating in the International Chemistry Olympiad know the hazards of every chemical, the organizers of the competition will assume that all participating students know the basic safety procedures. For example, the organizers will assume that students know that eating, drinking or smoking in the laboratory or tasting a chemical is strictly forbidden.

In addition to the common-sense safety considerations to which students should have been previously exposed, some specific rules, listed below, must also be followed during the Olympiad. If any question arises concerning safety procedures during the practical exam, the student should not hesitate to ask the nearest supervisor for direction.

Rules regarding personal protection

1. Eye protection must be worn in the laboratories at all times. If the student wears contact lenses, full protection goggles must also be worn. Eye protection will be provided by the host country.
2. A laboratory coat is required. Each student will supply this item for himself/herself.
3. Long pants and closed-toed shoes are recommended for individual safety. Long hair and loose clothing should be confined.
4. Pipetting by mouth is strictly forbidden. Each student must be provided with a pipette bulb or pipette filler.

Rules for Handling Materials

1. Specific instructions for handling hazardous materials will be included by the host country in the procedures of the practical exam. All potentially dangerous materials will be labeled using the GHS symbols. Each student is responsible for recognizing these symbols and knowing their meaning (see Appendix B).
2. Do not indiscriminately dispose chemicals in the sink. Follow all disposal rules provided by the host country

**A 2: SAFETY RULES AND RECOMMENDATIONS FOR THE HOST COUNTRY OF
THE INTERNATIONAL CHEMISTRY OLYMPIAD**

Certainly it can be assumed that all students participating in the IChO have at least modest experience with safety laboratory procedures. However, it is the responsibility of the International Jury and the organizing country to be sure that the welfare of the students is carefully considered. Reference to the Safety Rules for Students in the Laboratory will show that the students carry some of the burden for their own safety. Other safety matters will vary from year to year, depending on practical tasks. The organizers of these tasks for the host country are therefore assigned responsibility in the areas listed below. The organizers are advised to carefully test the practical

tasks in advance to ensure the safety of the experiments. This can best be accomplished by having students of ability similar to that of IChO participants carry out the testing.

Rules for the Host Country (see also A 1):

1. Emergency first-aid treatment should be available during the practical examination.
2. Students must be informed about the proper methods of handling hazardous materials.
 - a) Specific techniques for handling each hazardous substance should be included in the written instructions of the practical examination.
 - b) All bottles (containers) containing hazardous substances must be appropriately labeled using internationally recognized symbols (see Appendix B).
3. Chemical disposal instructions should be provided to the students within the written instructions of the practical examination. Waste collection containers should be used for the chemicals considered hazardous to the environment.
4. The practical tasks should be designed for appropriate (in other words, minimum) quantities of materials.
5. The laboratory facilities should be chosen with the following in mind:
 - a) Each student should not only have adequate space in which to work, but should be in safe distance from other students.
 - b) There should be adequate ventilation in the rooms and a sufficient number of hoods when needed.
 - c) There should be more than one emergency exit for each room.
 - d) Fire extinguishers should be nearby.
 - e) Electrical equipment should be situated in an appropriate spot and be of a safe nature.
 - f) There should be appropriate equipment available for clean-up of spills.
6. It is recommended that one supervisor be available for every four students in the laboratory to adequately ensure safe conditions.
7. The organizers should follow international guidelines for the use of toxic, hazardous or carcinogenic substances in the IChO.

APPENDIX B**HAZARD WARNING SYMBOLS AND HAZARD DESIGNATIONS**

Chemicals used in the IChO laboratory experiments need to be labeled according to the Globally Harmonized System of Labeling of Chemicals (GHS) standard developed by the United Nations. The organizing country should use the locally legislated GHS system (pictograms, hazard statements, etc.) if it exists. If such rules do not exist, the original GHS directives (http://www.unece.org/trans/danger/publi/ghs/ghs_welcome_e.html) and the GHS compliant documentation by the chemical providers should be used

GHS HAZARD STATEMENTS

Code	Hazard Statement
Physical Hazards	
H225	Highly flammable liquid and vapor
H232	May form combustible dust concentrations in air
H260	In contact with water releases flammable gases which may ignite spontaneously
H271	May cause fire or explosion; strong oxidizer
H272	May intensify fire; oxidizer
H290	May be corrosive to metals
Health hazards	
H301	Toxic if swallowed
H302	Harmful if swallowed
H303	May be harmful if swallowed
H304	May be fatal if swallowed and enters airways
H311	Toxic in contact with skin
H314	Causes severe skin burns and eye damage
H315	Causes skin irritation
H316	Causes mild skin irritation
H317	May cause an allergic skin reaction
H318	Causes serious eye damage
H319	Causes serious eye irritation
H320	Causes eye irritation

H332	Harmful if inhaled
H333	May be harmful if inhaled
H335	May cause respiratory irritation
H336	May cause drowsiness or dizziness
H351	Suspected of causing cancer
H361	Suspected of damaging fertility or the unborn child
H373	May cause damage to organs through prolonged or repeated exposure
Environmental hazards	
H400	Very toxic to aquatic life
H402	Harmful to aquatic life
H410	Very toxic to aquatic life with long lasting effects
H411	Toxic to aquatic life with long lasting effects
H412	Harmful to aquatic life with long lasting effects