

IBO Laboratory Health and Safety Regulations



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1. Scope

These regulations are intended to set boundaries on acceptable risks during the practical tasks of the International Biology Olympiad. They intend to ensure a safe laboratory environment for all persons involved: students and supervisory personnel. These regulations aim to follow common best practices in research and educational labs around the world. The host country is expected to strictly follow these regulations in preparation and execution of their practical tasks (IBO Operational Guidelines §3.7.2(4)).

2. General remarks

1. As a rule of thumb when setting practical tasks: if a safer alternative is available with the same experimental use, use that instead. (e.g. there are several alternatives to ethidium bromide).
2. Students must be informed in advance of the IBO competition about the prevailing safety measures in the laboratory environment. This includes a specific notice to bring long trousers, closed shoes and a hair band (in case of long hair).
3. Students must get the opportunity during the IBO competition to get sufficiently familiarized with the laboratory environment they will work in. This specifically includes familiarization with non-standard or potentially dangerous equipment or chemicals (e.g. high voltage systems for electrophoresis, potentially harmful substances, open flame burners, etc.). See IBO Operational Guidelines §3.7.2(3).
4. Students need to be reminded of the general safety measures, including the emergency evacuation protocol, at the beginning of their practical work.
5. Eating and drinking is not allowed in the laboratory environment. Application of cosmetics, lip balm, etc. is also not allowed.
6. Students must have the opportunity to wash their hands before and after each practical as a general hygiene and safety measure.
7. General safety equipment such as spill kits, first-aid kits, and a list of telephone numbers for emergency services, should be readily available in the laboratory environment.
8. The host needs to provide sufficient safety training to all laboratory volunteers. Training should cover the specific chemicals and devices being used, general safety measures and how to act in emergencies. The IBO Steering Committee receives a summary of the training program and a list of all participating volunteers.
9. Students that do not follow the general safety measures or ignore specific safety related requests from the volunteers will be removed from the laboratory environment.

3. Clothing

General protective measures must be taken to prevent biological and chemical exposure to skin and eyes, and to prevent accidental contamination.

1. A lab coat must be worn at all times during laboratory work (sleeves down, buttoned-up). Lab coats must not be worn outside of the laboratory environment, e.g. during lunch breaks.
2. Safety goggles and safety gloves must be worn when appropriate, e.g. when hazardous materials are used or when there is a risk of a liquid spill or splashing. Damaged or worn gloves must be replaced.
3. Jewelry, rings, watches or other accessories on hands are not allowed.
4. Long trousers and closed shoes must be worn.
5. Long hair must be tied up properly.
6. Headdresses are not allowed, except for religious reasons and with the requirement that they are close-fitted and made of non-flammable materials.

4. Chemicals

The use of various potentially hazardous chemicals requires careful consideration for use, and a clear inventory of their risks.

1. All chemicals must be labeled to indicate their name. The label may be placed on the container (preferred), or in an accompanying document (e.g. exam paper or separate list). Use of abbreviations or coded labels is allowed.
2. All chemicals must be labeled with their respective GHS symbol(s) (Global Harmonized System of Classification and Labelling of Chemicals). The label may be placed on the container (preferred), or in an accompanying document (e.g. exam paper or separate safety sheet).
3. Safety Data Sheets of all chemicals must be available in the laboratory room, either in print or electronic format. The information is preferably available in the local language and in English.
4. Chemicals may not be used if they are categorized as one of the following:
 - a. Acutely toxic or fatal to humans or the environment (e.g. H300, H310, H311, H330, H331, H400, H410)
 - b. Explosive or highly reactive (e.g. most H2xx hazard statements)
 - c. Gasses under pressure (H229, H280, H282, H283)
 - d. Known reprotoxic or teratogenic.
5. Exceptions to the above can only be made after written approval of the IBO Steering Committee.
6. Use of volatile compounds should be minimized. They must only be used in properly ventilated areas.

5. Biological samples

The IBO Operational Guidelines specify some regulations for handling organisms. These are repeated below, and additional regulations are specified.

1. No experiment may cause suffering or death of vertebrates. See IBO Operational Guidelines §3.7.2(5).
2. No experiment may use species protected by law or international conventions (CITES). See IBO Operational Guidelines §3.7.2(6).
3. Dissection is only allowed on invertebrates, fish and vertebrate parts or organs that are available for consumption. Animals should be dead before the competitors handle them. See IBO Operational Guidelines §3.7.2(7) and (8).
4. Experiments requiring Biosafety Levels 1 (BSL-1) are allowed if the appropriate protocols are followed. Experiments on Bio Safety Levels 2 must be approved by the IBO Steering Committee (or Health and Safety Committee).
5. Working with potentially infectious blood is strongly discouraged.

6. Waste handling

Disposing of used materials that may have been contaminated should be done responsibly.

1. Specific waste (biological, sharp objects, etc.) should be disposed of according to the local regulations. The disposal protocol should be sufficiently documented.
2. Ideally, biological waste should be autoclaved prior to disposal.
3. Disposable materials should generally not be reused.
4. Potentially contaminated surfaces or objects that will be reused should be cleaned after use (either with water, 70% ethanol, isopropanol, hypochlorite, etc.)
5. It is recommended to autoclave used lab coats before handing them back to students as a souvenir (or have spare coats ready).

7. Open flame

Working with an open flame is generally discouraged. If it is necessary, additional safety precautions must be taken. The host needs to inform the team leaders in advance that students will have to work with an open flame.

1. Lab coats must not be made of easily flammable materials.
2. Use of the open flame burner must be demonstrated to the students.
3. Safety gloves must not be used when working with an open flame.
4. Open flames must only be used in properly ventilated areas.