Name of Appendix: **Basic rules of conduct for a laboratory with chemical and biological materials**

1. Dress code
   1. Full dress: lab coat with long sleeves, long pants (or skirt + socks). Emphasis: Clothes without/or with a minimum of elements that are synthetic – flammable. No nylon socks! Closed shoes that are laboratory safety shoes (chemical resistant).
   2. A contaminated lab coat must be changed immediately.
   3. Those with long hair – hair should be gathered.
   4. Protective goggles. For the sake of supervision and uniformity this should be mandatory.
   5. In certain situations, according to the experiments planned – “wind” goggles that block anything from entering the eyes. When operating around vacuum systems, consider a face mask, or a Perspex or polycarbonate panel.
   6. Gloves must be worn when doing any manual work with materials. The gloves must be appropriate for the materials being used. Do not touch the telephone, handles, elevators, and so on when wearing the gloves. Additionally, do not touch equipment that is essential to the experiment with the gloves. Gloves must correspond to the materials – see the chart on page 5-6 of this directive.
   7. Do not leave the lab wearing the lab coat and gloves! (These are to be removed only in laundry bags.) The reason is to prevent the transmission of contaminants. When moving between labs with materials, the hand carrying the material must be covered with a glove.
2. Eating, smoking, hygiene
   1. Eating, drinking, smoking and makeup are forbidden in the laboratory.
   2. Do not keep equipment and items for eating and cooking, such as a coffee-making kit, etc. Do not store food in the lab.
   3. After working in the lab, wash your hands (even if you were wearing gloves).
   4. An employee should not work in the lab if he has a cut on his hand, unless it is properly bandaged and protected with a rubber covering/glove. Generally speaking, an employee should not work in the lab if he is sick, feeling unwell, or has any kind of temporary physical impairment.
   5. Do not use parts of your body in place of lab equipment (using the mouth for suction, sense of smell).
3. Emergency preparedness

The following is true for every workplace, but essential for laboratories: Every employee/student in the lab must have the following information:

* 1. Electricity panel – know its location and how to disconnect the electricity;
  2. Location of main gas and water cutoff valves;
  3. Location of additional gas regulator valves that can be used for flow to or within the lab;
  4. Location of the alarm button;
  5. Know the telephone numbers of agencies to be called (security, safety, first aid).
  6. Location of firefighting equipment; fire extinguishers (suitable for the lab type) should be located inside the lab space or next to the door outside the lab.
  7. First aid kit – information regarding its contents (including respiratory equipment) and its location.
  8. Location of the emergency equipment box and its contents: Masks and filters and/or open respiratory system, additional protection (helmet, protective coverall, temperature-resistant gloves, explosion-proof flashlights). This type of equipment will usually be shared by several labs and their location must be known.
  9. Location of emergency showers and eye wash stations. These installations shall be found in every laboratory. Each lab should also have several portable eye washes ready for use.
  10. Employees/students in the lab must know the location of firefighting stations in and near the lab, and accessible escape routes.

1. Equipment in the laboratory
   1. An employee in the lab must be familiar with the electrical equipment at his disposal and should be versed in the safety rules when using electricity. In the case where his work includes “entering” electrical systems he must have special training beyond what is mentioned here, or an electrician with the proper license must be involved and take responsibility.
   2. A lab employee that operates any kind of mechanical equipment must be updated as to the safety rules for operating mechanical equipment, “safe protection” rules and should know what protective equipment is required.
   3. Handling glass:
      1. It is preferable to use equipment made of non-breakable materials (plastic, rubber, metal) instead of glass.
      2. Before using glass equipment, check that it is not broken and is suited to the materials with which it will come into contact and the temperature and pressure to which it will be subjected.
      3. Pipes and other glass equipment used in the lab must always have rounded edges without any corners / sharp edges.
      4. When storing materials in glass containers (liquids, powders) make sure the stoppers are resilient to the material. When storing volatile materials consider using a stopper with a slit, and in such cases see that these are stored in a place that will allow the release of gases (active fume hood, cooler or cold room).
      5. Heavy components of a glass system (bath, mercury tank) must be supported with appropriate separate installations. The connection from these to the pipes shall be using flexible connectors (pipe sections).
      6. When assembling a glass system, observe the dress code rules (goggles, gloves) mentioned in paragraph 1. Do not struggle with glass components that “refuse to cooperate,” and contact someone who is a professional in this sphere for assistance.
      7. Single use glass equipment (test tubes, pipettes, etc.) shall be placed into a designated plastic waste container when you are finished using them.
      8. Glass equipment must be stored in a safe place to prevent falling and breakage.
      9. Glass equipment should be order from the professional in the glass workshop.
2. Fire and heating tray:
   1. Heating and boiling liquids over an open fire or on a heating tray must be done in an area that is insulated and set aside in the lab, on a fireproof surface, using maximum precautions.
   2. Liquids and other flammable materials must be kept away from the area where there is fire/heating tray.
   3. Do not leave the fire/heating tray unattended, and do not leave the lab before you are finished using them.
   4. Inform employees and others in the lab when using the heating tray and place a prominent warning sign next to it.
3. Signage
   1. The door of each laboratory shall have a sign with the name of the researcher/instructor responsible for it, and his office and home telephone numbers where he can be reached. Another line on the sign should list the telephone numbers of his replacement in the event he is on vacation/out of the country.
   2. Refrigerators that contain chemical substances (hazardous materials) and biological materials (biohazard) must be labeled with signs that indicate the groups contained and with a warning against bringing in food and drink.

Refrigerators for food shall have a sign that reads, “For Food Only.”

**Table of suitable gloves for use with organic materials**

| **Type of glove**  **Type of**  **material** | **Natural rubber** | **Neoprene** | **Acryl (PVA)** | **Nitrile** | **Polypropylene** | **P.V.C.** | **Polyethylene** | **Polyethylene /**  **Polypropylene** | **Teflon** | **Coated Polyethylene** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1. Aldehydes |  |  |  |  |  |  |  |  |  |  |
| Acetaldehyde | 8 | 10 | - | 10 | - | - | - |  |  |  |
| Benzaldehyde | 7 | 7 | - | 10 | - | - | - |  |  |  |
| Formaldehyde |  | +10 | -4 | 10 | +9 | +9 | -4 | + | + | - |
| 2. Alcohols |  |  |  |  |  |  |  |  |  |  |
| Ethylene glycol | 8 | 8 | - | 10 | - | 10 | - |  |  |  |
| Glycerol | 8 | 8 | 10 | 10 | 10 | 10 | - |  |  |  |
| Ethyl alcohol | 10 | 10 | 10 | 10 | 8 | 10 | 8 |  |  |  |
| Isopropyl alcohol | 10 | 10 | - | 10 | - | 10 | - |  |  |  |
| Amyl alcohol | 10 | 10 | - | 10 | - | 10 | - |  |  |  |
| Butyl alcohol | 10 | 10 | - | 10 | - | 10 | - |  |  |  |
| Methyl alcohol | 10 | 10 | - | 10 | - | 10 | - |  |  |  |
| Phenol |  | 10 | - | +10 | +10 | +10 | - | + | + | - |
| 3. Esters | + | + | - |  | + | + | - | + | + | - |
| Ethyl acetate | 6 | 8 | - | 8 | +10 | +6 | - |  |  |  |
| Ethyl butyrate | 6 | 8 | - | 8 | 1- | 6 | - |  |  |  |
| Amyl acetate | 6 | 8 | - | 8 | 10 | 6 | - |  |  |  |
| Butyl acetate | 6 | 8 | - | 8 | 10 | 6 | - |  |  |  |
| Methyl butyrate | 6 | 8 | - | 8 | 10 | 6 | - |  |  |  |
| 4. Aromatics | - | + |  |  | + | + |  | + | + | + |
| Benzene | 4 | 6 | - | 8 | 8 | 6 |  |  |  |  |
| Toluene | 4 | 6 | - | 8 | - | 6 | - |  |  |  |
| Turpentine | 6 | 8 | - | 10 | - | 6 | - |  |  |  |
| Naphtha | 4 | 6 | - | 10 | - | 6 | - |  |  |  |
| Naphthalene | 8 | 8 | - |  | - | 8 | - |  |  |  |
| Xylene | 8 | 8 | - | 10 | - | 8 | - |  |  |  |
| Styrene |  | + | + |  | + | + | - | + | + | - |
| 5. Ethers |  |  | - |  | - |  | - |  |  |  |
| Diethyl ether | 6 | 8 | - | 10 | - | 6 | - |  |  |  |
| Petroleum ether | 6 | 8 | - | 10 | - | 6 | - |  |  |  |
| 6. Organic acids |  |  | - |  | - |  | - |  |  |  |
| Oleic acid | 10 | 10 | - | 10 | - | 10 | - |  |  |  |
| Acetic acid | 10 | 10 | - | 10 | - | 10 | - |  |  |  |
| Oxalic acid | 10 | 10 | - | 10 | - | 10 | - |  |  |  |
| Arsenic | 8 | 8 | - | 8 | - | 8 | - |  |  |  |
| Lactic acid (milk) | 10 | 10 | - | 10 | - | 10 | - |  |  |  |
| Maleic acid | 10 | 10 | - | 10 | - | 10 | - |  |  |  |
| Stearic acid | 10 | 10 | - | 10 | - | 10 | - |  |  |  |
| Formic acid | 10 | 10 | - | 10 | - | 10 | - |  |  |  |
| Propionic acid | 10 | 10 | - | 10 | - | 10 | - |  |  |  |
| Citric acid | 10 | 10 |  | 10 | 10 | 10 |  | - |  |  |
| Tannic acid | - | + | + |  | + | + | + | + | + | + |
| 7. Halogenic Hydrocarbons | - | + | + |  | + | + | + | + | + | + |
| Ethylene dichloride | 10 | 10 | - | 8 | - | 6 | - |  |  |  |
| Benzoyl chloride | 10 | 10 | - | 8 | - | 6 | - |  |  |  |
| Trichloroethylene | 10 | 10 | - | 8 | - | 6 | - |  |  |  |
| Chloroform | 10 | 10 | - | 8 | - | 6 | - |  |  |  |
| Methylene Chloride | 10 | 10 | - | 8 | - | 6 | - |  |  |  |
| Carbon tetrachloride | 10 | 10 | - | 8 | - | 6 | - |  |  |  |
| Vinyl chloride | - | + | - |  | + | + | - | + | + | - |
| 8. Others |  |  |  |  |  |  |  |  |  |  |
| Isocyanates | + | + |  |  | + | + | - | + | + | - |
| Acrylics | + | + | + |  | + | + | - | + | + | + |