

# **LABORATORY SAFETY MANAGEMENT POLICY**

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## **1. Preamble**

If hazardous activities in laboratories are not well controlled, they could be dangerous to those inside and nearby. This policy provides a comprehensive management framework for controlling the risk of laboratories with the following hazards:

- (a) hazardous chemicals;
- (b) biological agents;
- (c) ionising radiation (radioactive substances and irradiating apparatus); and
- (d) non-ionising radiation (e.g. high-power lasers).

This is in line with the existing UGC guidelines on safety approval of hazardous research activities.

This policy is also applicable to non-laboratory facilities such as workshops, clinics and stores which also involve the use or storage of the above hazardous items.

This Policy only outlines the basic elements of a laboratory safety management system that is adopted in PolyU, the responsible personnel in a department may have to build into the operation of a laboratory many more management tools to control the risks involved. What exactly needs to be done to ensure safety in a laboratory should be based on risk assessment. There are no fixed rules as to how risk assessment should be made, but the responsible person may refer to other sections of the Health and Safety Guide for guidance.

## **2. Responsibilities for Laboratory Health and Safety**

This section lays down the responsibilities of all those who are involved in the design, building, use, maintenance and monitoring of the relevant laboratories. While the general delineation of responsibilities is spelt out in this section, the detailed allocation of responsibilities is dealt with in individual sections of this Policy.

### **2.1 Campus Development Office (CDO)**

CDO has the overall responsibility for coordinating the design of new laboratories within the campus, including the health and safety aspects. This includes:

- (a) playing a leading role in the project team, which may comprise colleagues from the user department, FMO, HSEO and external consultants;
- (b) achieving the requirements of the new laboratory with the consensus of the user department, FMO, HSEO and external consultants;
- (c) referring matters on health and safety to the appropriate authority for advice if a decision cannot be made within the project team;

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- (d) obtaining the requirements from the user department concerned;
- (e) seeking advice from HSEO on health and safety;
- (f) consulting FMO on future repair and maintenance;
- (g) providing information as required to the user department and FMO to ensure that all building-related facilities can be operated and maintained according to the agreed design intent;
- (h) co-ordinating among various parties involved during the design and building stage; and
- (i) managing the building project to the satisfactory completion including testing and commissioning.

## 2.2 Facilities Management Office (FMO)

FMO is responsible for the repair and maintenance of the building-related facilities of the laboratory. This includes:

- (a) repairing and maintaining all systems which are part of building infrastructure such as fire protection systems, building ventilation systems and local extraction systems connected to fume cupboards or other equipment. The fume cupboards themselves and other equipment should be taken care of by the department concerned;
- (b) advising CDO during the design and building stage on maintenance issues; and
- (c) handling emergencies in the laboratory which include:
  - (i) coordinating actions to minimize damage
  - (ii) communicating with internal and external parties
  - (iii) consulting HSEO on issues such as chemical, biological and radiation emergencies.

## 2.3 User Departments

The day-to-day health and safety management of a laboratory rests ultimately with the department to which the laboratory belongs. While the detailed arrangements of managing health and safety are to be set up and implemented by the department, the department head should ensure that the following are implemented as a minimum:

S/he should:

- (a) consider all safety matters in relation to the operation of the laboratory at its design stage and communicate these issues to CDO;

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- (b) provide CDO with all information and requirements for every room of the proposed laboratory to facilitate the design of laboratory;
- (c) provide CDO, FMO and HSEO with the necessary information on the operation of the laboratory including technical data of equipment to be accommodated inside the premises so that these offices can carry out their duties to facilitate the safety design and operation of the laboratory;
- (d) arrange and implement repair and maintenance programme for their safety-related equipment;
- (e) designate a person-in-charge for each laboratory to ensure effective liaison on health and safety issues;
- (f) establish and implement safety rules and procedures for each laboratory to address specific hazards identified in that laboratory;
- (g) ensure all personnel who are to work in a laboratory undergo the necessary safety training and are registered as a laboratory user with HSEO when such a registration system exists;
- (h) ensure regular laboratory safety inspections are carried out by relevant departmental staff to identify and minimize risks; and
- (i) report all accidents and incidents to the appropriate units according to established procedures.

## 2.4 Individual Persons-in-charge of Laboratories and Users

The person designated as a person-in-charge of a laboratory by his/her department head has the operational duty to manage on a day-to-day basis the health and safety of the laboratory according to the system established by the department.

All laboratory users have a duty to ensure their own health and safety and cooperate with the department in implementing all reasonable safety measures.

## 2.5 Health, Safety and Environment Office (HSEO)

HSEO is the central advisory and monitoring body for laboratory safety. Specifically, HSEO will:

- (a) advise CDO, FMO, user departments and the University Management on all aspects of laboratory safety such safety design, international standards, best practice in laboratory safety operations, etc.;

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- (b) carry out inspections and audits to ascertain if user departments have adequately managed their safety matters in laboratories and to assess their safety performance; and
- (c) monitor the progress of safety improvement in laboratories as necessary and draw Management's attention to critical issues that cannot be resolved at departmental level.

## **3. Essential Elements of Laboratory Safety Management**

Commitment and effort at all levels are necessary to ensure laboratories are designed and operated in a safe manner. Many safety initiatives can be put in place to cater for various types of laboratories. The following, however, are the elements that are essential to a good laboratory safety system, and the implementation of which would lead to substantial reduction in risk and liability to the University. All relevant laboratories, therefore, are required to implement the following:

### **3.1 Laboratory Safety Design**

A department planning to build a new laboratory or renovate an existing laboratory for hazardous activities (i.e. using hazardous chemicals, biological agents, radioactive substances, irradiating apparatus or lasers) should consult FMO in advance on feasibility by providing detailed requirements. If FMO does not advise otherwise, the department should formally submit the work request to FMO in accordance with the established procedures. Depending on the nature and the value of the work involved, FMO may pass the work request to CDO to follow up on implementation. CDO will then consult HSEO, FMO and the user departments as necessary to come up with a design that meets:

- (a) the user's needs;
- (b) FMO's requirements in respect of future repair and maintenance ;and
- (c) the safety standards set by PolyU.

The final list of health and safety requirements on which the design will be based should be sent to HSEO for endorsement.

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## **3.2 Pre-occupation Safety Checks**

It is the responsibility of CDO to manage the building/renovation of a laboratory to its completion and make sure that all testing and commissioning is done to demonstrate satisfactory completion. Before the laboratory is handed over to the user department, CDO should request that HSEO and FMO do a pre-occupation safety check. Besides a physical walk-through inspection, the pre-occupation safety check should include examination of the relevant testing and commissioning reports of critical safety facilities and random verification of such tests.

## **3.3 Registration of Laboratory Users**

All laboratory personnel who work regularly in laboratories with hazardous activities (i.e. using hazardous chemicals, biological agents, radioactive substances, irradiating apparatus or lasers) should be registered with HSEO. However, undergraduates who work under close supervision of staff do not need to be registered. Laboratory personnel should not start working in a relevant laboratory before he/she is duly registered. Registration comes under 4 main categories: chemical hazards, biological hazards, ionizing radiation hazards, non-ionizing radiation hazard. A person may choose to be registered under one or more categories depending on the work he/she is required to do.

Adequate training and/or experience in the relevant fields is a pre-requisite for registration. Those who are already working in a relevant laboratory at the implementation of the registration system may be granted registration by grandfathering. Persons who start work after the registration system comes into operation would need to demonstrate that they are trained in health and safety and pass a written test administered by HSEO before they can be registered. This register will be kept at HSEO.

For radiation work, there are additional requirements for registration as users of radioactive substances or irradiating apparatus in order to comply with the legislation. The details are described in the Code of Practice for Ionizing Radiation Safety.

## **3.4 Safety Training of Laboratory Personnel**

In general, the supervisor of a laboratory worker should identify the training needs of the worker and arrange for such training as soon as practicable. However, each laboratory worker should at least be trained to a basic safety level before he/she is allowed to work in a laboratory. This basic safety training and the passing of a relevant written test administered by HSEO is a pre-requisite for registration for working in laboratories. One of the ways of receiving basic laboratory safety training is to undergo the self-learning package developed by HSEO. Other forms of safety training may also be acceptable for registration, and should be submitted to HSEO for consideration.

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## **3.5 Designation of Person-in-Charge**

In order to ensure that the duties of laboratory safety within a department/unit are effectively delegated, communicated and discharged, the department head should designate a person to be in-charge of safety in each laboratory. The name and contact details of the person-in-charge should be clearly displayed at the entrance of each laboratory so that laboratory safety issues can be communicated to him/her without any ambiguity. The person-in-charge should be a full-time staff member who is familiar with the operation of the laboratory concerned. The particulars should be passed to HSEO who will keep a centralized database. If it is a newly designed laboratory, CDO will prepare the door plate. For existing laboratories, the information should be passed to FMO for preparation of door plates.

## **3.6 Making of Local Safety Rules and Procedures**

While HSEO is charged with the duty of issuing guidelines on various laboratory safety issues, each laboratory should develop local safety rules and procedures for its specific operations, and make them readily available to all those who work in the laboratory. Local safety rules and procedures should be based on a risk assessment process, and activities of inherently high risk should be regulated by detailed local safety rules (e.g. permits-to-work, standard operating procedures and emergency procedures).

## **3.7 Self-Inspection Programmes**

As the duty of managing laboratory safety rests with individual departments, relevant departmental staff should conduct safety inspections on their laboratories. A standard self-inspection checklist developed by HSEO is available on HSEO's homepage. Such inspection should be conducted for each laboratory every two months. Records of the completed checklists and follow-up action should be kept by the person-in-charge or DHSO, depending on departmental arrangements, for future audit by either HSEO, external auditing bodies or government authorities. Advice and technical assistance on implementing the self-inspection programme are available from HSEO.

## **3.8 Laboratory Safety Compliance Audits**

The safety performance of each laboratory will be reviewed by HSEO through compliance audits which comprise comprehensive physical inspections, checks of relevant documentation, reviews of self-inspection reports and interviews with laboratory personnel. Each laboratory will be audited at least twice a year. Deficiencies identified in the audits will be related to the department for rectification.