

## **Laboratory Safety Management System of Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences**

**Purpose:** The laboratory safety management work is a prerequisite to ensure the normal conduct of laboratory teaching and scientific research. In order to strengthen the laboratory environmental safety management, ensure the personal and property safety of faculty and students and employees, optimize the campus environment, and ensure the normal conduct of scientific research and teaching, these Measures are formulated in accordance with relevant provisions.

**Scope of Application:** All laboratories within the campus at No. 1068 Xueyuan Avenue, Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences

### **Chapter 1 Laboratory Safety Management Responsibilities**

**Article 1** Each laboratory must earnestly implement the principle of "Safety First, Prevention Foremost". According to the specific situation of each laboratory, corresponding safety management measures and operating procedures shall be formulated and displayed publicly. Leaders at all levels shall adhere to the principle of "who is in charge, who is responsible", conscientiously implement relevant national safety regulations, propose specific requirements to ensure safety, implement various safety precautions, and establish accident contingency plans.

**Article 2** Each laboratory shall appoint part-time safety officers responsible for the safety work of the laboratory. Safety officers shall undergo training and possess certain safety knowledge and skills. Safety officers are responsible for inspecting and supervising the safety of the laboratory, have the right to stop unsafe operations, and correct violations.

**Article 3** All personnel working or studying in the laboratory shall firmly establish the concept of "People-oriented" and ensure personal safety. It is necessary to firmly establish safety awareness, abide by laboratory safety management regulations, and master basic safety and rescue knowledge. Personnel conducting experiments for the first time must undergo safety education and training. Only after mastering various laboratory safety management measures and basic knowledge, and familiarizing themselves with various operating procedures, can they begin experimental operations.

**Article 4** Laboratories shall actively promote and popularize general first aid knowledge and skills, such as burn treatment, trauma management, poisoning treatment, and electric shock response.

**Article 5** When accidents occur in the laboratory, effective emergency measures shall be taken promptly to prevent the escalation and spread of accidents. Accidents shall be reported promptly, and the facts shall not be concealed.

**Article 6** Laboratories shall conduct safety inspections, establish systems, commend advanced practices, and strictly deal with accidents. The principle of self-check combined with random checks shall be adopted for laboratory safety inspections. Laboratories shall be inspected regularly (at least once every 2 months) to identify and eliminate hidden dangers promptly, and maintain safety technical records.

**Article 7** When laboratories undertake external teaching, scientific research, or experimental tasks, safety responsibilities shall be clearly defined.

## **Chapter 2 Laboratory Safety Management**

**Article 8** The laboratory is an important base for scientific research. Unauthorized personnel are strictly prohibited from entering. If visits in the laboratory are necessary, it must be accompanied by someone. Everyone working in the laboratory should be serious and conscientious and comply with SOP and laboratory rules. Loud noises, smoking, eating, and littering fruit peels are strictly prohibited in the laboratory.

**Article 9** The keys or access control of the laboratory are jointly managed by the laboratory director and the Department of Public Service Platform for Science and Technology. The issuance and distribution of keys must be registered with the Laboratory Chairman and the Department of Public Service Platform for Science and Technology, and keys must not be privately made or used by others.

**Article 10** Instruments and equipment, materials, tools, and other items in the laboratory shall be neatly arranged and reasonably laid out. Laboratories shall promptly clean up obsolete items, not store items unrelated to laboratory work, ensure unobstructed safety passages, and strictly adhere to the "four-prevention, four-close, one-check" principle (fire prevention, theft prevention, vandalism prevention, disaster prevention; door close, window close, water close, gas close; instruments and equipment check).

**Article 11** Fire prevention work in laboratories shall prioritize prevention; understanding various flammable and explosive knowledge and fire knowledge; all laboratories must be equipped with an adequate amount of fire-fighting equipment, placed in obvious and convenient locations, and designated personnel shall be responsible for proper storage. Various safety facilities are not allowed to be borrowed or misappropriated. They shall be inspected regularly, and if problems are found, remedial measures shall be taken promptly. It is strictly forbidden to stack items in the corridors to block fire safety passages, and fire hazards shall be strictly eliminated.

**Article 12** Laboratories shall strengthen the management of electrical safety, strictly prohibit overloading of electricity, unauthorized modification or dismantling of electrical facilities, indiscriminate wiring, exposed wire ends in the laboratory, and stacking items in electrical switch boxes to prevent electric shock or fire. When using high-voltage power, insulated shoes and gloves shall be worn, or safety poles shall be used for operation. Laboratories that do not require heating equipment are strictly prohibited from using electric heaters (including various types of electric furnaces, electric heaters, electric kettles, electric hot pots, electric cups, immersion heaters, electric irons, hair dryers, etc.). When someone is electrically shocked, the power shall be cut off immediately, or the wire shall be separated from the body with an insulating object before rescue is carried out. If electrical modifications are required, please apply to the Department of Public Service Platform for Science and Technology according to the process.

**Article 13** When using hazardous materials such as flammable, explosive, highly toxic, and bacterial vaccines in laboratories, they must be strictly used and stored in accordance with relevant management regulations. Reliable safety precautions shall be in place, and detailed records shall be kept.

**Article 14** When using radioactive substances in laboratories, measures shall be taken to avoid the entry of radioactive substances into the body, minimize the dose of external radiation received by the human body, minimize the harm caused by the diffusion of radioactive substances, radioactive waste shall be stored in special waste bins, and disposed of regularly according to regulations.

**Article 15** Laboratories shall have a full understanding of environmental safety management. Laboratories are not allowed to discharge waste gases, waste liquids, waste residues, and noise at will. The three wastes shall be properly treated, measures shall be actively taken to control noise, and environmental pollution shall be avoided.

**Article 16** Each laboratory or user department must collect toxic and harmful waste liquids, solid waste, and biological samples to designated locations, and the Department of Public Service Platform for Science and Technology shall arrange for qualified environmental protection companies to handle them.

**Article 17** When building, renovating, or expanding laboratories, the handling of hazardous substances and toxic gases must be included in the engineering plan for construction and the completion acceptance system must be adhered to.

**Article 18** For experimental animals and plants, dedicated personnel shall be responsible for implementing management measures. Properly handle the carcasses, organs, and tissues of experimental animals and plants, concentrate and store experimental samples, regularly destroy them uniformly, and strictly prohibit random disposal.

**Article 19** For bacteria, viruses, and vaccines, dedicated personnel shall be responsible for establishing and improving the registration system for receiving, storing, and distributing, and approval from the laboratory head is required for distribution. Experiment residuals shall be properly stored and handled immediately, with detailed records. It is strictly forbidden to randomly discard or dispose of them.

**Article 20** Before disposing of biological waste, it shall be disinfected and then collected centrally for disposal by qualified units. Sewage containing pathogens must be strictly disinfected and sterilized before being discharged and must meet national emission standards.

**Article 21** When laboratories are involved in operations and experiments related to pressure vessels, electrical work, welding, vibration, noise, high-temperature, high-pressure, radiation, strong light flicker, bacteria, vaccines, and radioactive substances, relevant operating procedures shall be strictly formulated, and corresponding labor protection measures shall be implemented.

### **Chapter 3 Instruments and Equipment Safety Management**

**Article 22** Departments shall provide places for installing and using instruments and equipment according to the requirements of the use environment, ensure water and electricity supply, and implement technical measures such as fire prevention, moisture-proofing, heat prevention, freeze prevention, dust prevention, shock prevention, magnetic prevention, corrosion prevention, and radiation prevention based on the different situations of instruments and equipment.

**Article 23** Departments must cooperate with the Division of Auxiliary Platform to formulate safety operating procedures for instruments and equipment. Personnel using instruments and equipment, especially large-scale instruments and equipments, must undergo training and pass assessments before being allowed to operate. Special equipment installation must be reported to the special equipment safety supervision and management department as required by regulations, and personnel responsible for management and operation must hold certificates.

**Article 24** Laboratories shall regularly maintain, verify, and calibrate instruments and equipment.

**Article 25** In the event of instruments and equipment failure, repairs shall be organized promptly, and maintenance records shall be kept. Maintenance and disassembly of general instruments and equipment must be carried out by personnel with professional maintenance knowledge. Maintenance of large-scale instruments and equipment mainly relies on manufacturers and specialized repair companies, and self-disassembly is generally not allowed.

**Article 26** Large instruments and equipment shall be protected against water and power outages to prevent damage caused by voltage fluctuations or sudden power or water outages.

**Article 27** Departments shall equip corresponding fire-fighting equipment and materials according to the nature of the instruments and equipment. Laboratory personnel shall learn how to use them correctly to enhance accident prevention capabilities.

**Article 28** Responsibility for instruments and equipment safety work shall be clearly defined, and the specific person in charge of each instrument and equipment is the safety responsible person for that instrument and equipment. Someone shall be responsible for managing instruments and equipment during use, and the person in charge of instruments and equipment shall regularly conduct safety inspections. Problems should be reported to the Department of Public Service Platform for Science and Technology for timely resolution.

**Article 29** Instruments and equipment requested or borrowed by individuals and kept by individuals shall be properly stored by the recipients or lendees to avoid damage or loss.

**Article 30** Departments or individuals responsible for instruments and equipment damage or loss due to liability accidents shall compensate according to relevant regulations.

#### **Chapter 4 Accident Handling and Reward/Punishment**

**Article 31** Effective emergency measures shall be taken promptly in the event of an accident to prevent its escalation and spread. In the event of a major risk, the police shall be called immediately.

**Article 32** Laboratories and individuals who violate these Regulations may be suspended from experiments and operations by the Institute, and they must rectify within a specified period. Laboratories ordered to rectify must take corresponding measures. After passing inspections by relevant departments, they can resume work.

**Article 33** Laboratory personnel, once finding those who neglect their duties, violate regulations, or disregard safety, resulting in theft, fire, poisoning, serious personal injury, pollution, damage to precision and valuable instruments, and damage to large-scale equipment, must protect the scene and immediately report to the principal leader of the Department of Public Service Platform for Science and Technology. They are not allowed to conceal or delay reporting. Those who conceal or distort the truth about accidents will be dealt with strictly.

**Article 34** The Department of Public Service Platform for Science and Technology and relevant departments shall promptly identify the causes of safety accidents, clarify responsibilities, and make handling suggestions. Those who cause serious safety accidents shall be held accountable, including those directly responsible, supervisors, and principal leaders. Those with serious consequences shall be disciplined and criminally prosecuted. Those who violate the law shall be handed over to judicial authorities for handling according to the law.

**Article 35** Those who consistently abide by laws and regulations, ensure the safe operation of equipment and civilized operation of experiments, and actively take measures to remedy and eliminate major accident hazards, thereby preventing casualties or avoiding significant losses to national property during accidents, as well as those who make outstanding contributions to life-saving and protecting national property during accidents, shall be commended and rewarded by the Institute.

## **Chapter 5 Bylaw**

**Article 36** This System shall come into effect from the date of its promulgation and shall be interpreted by the Department of Public Service Platform for Science and Technology. The original Laboratory Safety Management System of Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences (SYK ZI [2019] No. 133) shall be repealed simultaneously.