

## Guidelines of Health Officer Inspections

In order to ensure the safety and security of University staff during research and education activities, it is extremely important to secure the safety and hygiene of laboratories and offices. For this reason, health officers and industrial physicians inspect the facilities regularly to provide everyone a safe and comfortable work environment.

We have produced this guideline for standardizing instructions related to workplace inspection at each division of the university headquarters and other business sites. We hope these guidelines will be helpful to health officers and industrial physicians who cooperate with the workplace inspection.

### Tidying Up

### Organizing the room

When a room is disorganized, it raises the prospective risk of injury from falling objects. Moreover, a lack of regular cleaning can only increase risks to health. Furthermore, objects that are piled up near the entrance obstruct evacuation in the case of an emergency.

Instructions for tidying the workplace are difficult because the tidying up of the workplace is largely dependent on the individual character of the manager. One might hesitate to instruct others what seems to be a matter of preference, but a supervisor/researcher should be advised that tidying up the workplace is necessary to ensure the safety and health of all. A supervisor/researcher can be instructed to keep the workplace organized.



Need to be organized



These items are preventing the switchboard from opening and closing. When some cluttering is unavoidable, change to a stand with casters, etc.

### Falling Prevention

### Securing furniture such as bookshelves and lockers

Many bookshelves and lockers on campus fell during the Great East Japan Earthquake of March 11, 2011. Based on that experience, workplace supervisor/researcher must be instructed to secure bookshelves and lockers higher than 150 cm by seismic retrofit.

The following methods can be used to prevent falling of objects.

- ① Fasten to a wall or floor using L-brackets and screws.
- ② Attach tension poles between the ceiling and the tall furniture. Earthquake-proof fixtures can be made by installing devices to shorten gaps between tall furnishings and the ceiling.
- ③ Install furniture anti-fall stabilizers (so-called “Funbaru-Kun”) between the bottom of the furniture and floor.
- ④ Use the connection plate to connect overlapping bookshelves.



Example of fixed with L-shaped bracket.

Decreasing the gap between furniture and a ceiling makes earthquake-resistance stronger. You can advise if a user asks you about layout.

## Falling Objects

## Falling Objects Injuries Prevention

Storing objects in high places such as tall cabinets is extremely dangerous when an earthquake occurs. Do not place heavy objects in high places. Be sure to take measures to prevent falling objects when you cannot remove them.



It is necessary to arrange objects and not to put things in high places.



Example of falling objects prevention measures: books secured using string. Dedicated products are also commercially available.

## Gas cylinder

## Overturn prevention and appropriate management of high-pressure gas cylinders

High-pressure gas cylinders used in each laboratory are likely to fall over because of their shape. Such objects are extremely dangerous when they fall. Therefore, place them on a cylinder stand and fix them with a chain (preferably two places). Also, fix the cylinder stand to the floor or wall with anchor bolts, etc. We strongly recommend the adoption of these measures.

It is also important to prevent secondary accidents caused by objects falling over. For example, install flammable gas cylinders and the supporting gas cylinder separately. Alternatively, do not install such objects in a place that blocks the evacuation route when a gas cylinder falls. Please encourage proper management by the following rules:

- Return unnecessary cylinders and old cylinders quickly.
- Register gas cylinders in the reagents/ gas cylinders management web system (Tsukuba-CRIS)
- Do not store cylinders laid.



Example of fixing the cylinder stand to the floor.

## Wiring

### Organize cords and table outlet to prevent short circuits

Power cords exposed and scattered in an aisle or walkway might entail risks of electrical leakage and fall to when a person stumbles on the cord.

Accumulated dust in the outlets placed on the floor or outlets behind the bookshelves might cause a fire. Instruct workplace managers to arrange wires so as not to put cords and outlets on the floor to prevent fire, current leakage, and falls. When such placement is unavoidable, protect the wiring with a cover.



Cords are scattered here.



Example of improvement (Cover the cords.).

## Aisle

### Securing emergency evacuation routes

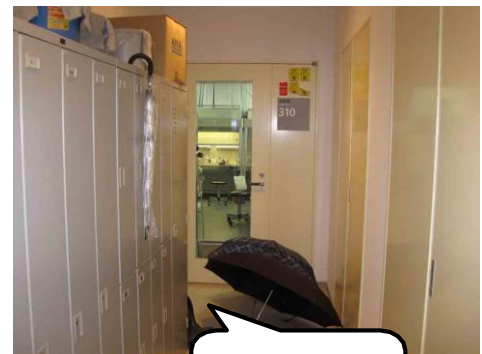
On campus, many students and faculty members are engaged in various activities at various locations. When disasters such as fires and earthquakes occur, confusion and chaos might arise unless an evacuation route is ensured.

You should arrange passage width as described below. The passage width of a corridor is 120 cm or more (one corridor) or 160 cm or more (a central corridor). A passage width in a room should be 80 cm or more.

objects must not be put in corridors as a general rule. However, you should instruct others according to the conditions at the site.

The current guidelines are the following.

- ① Even if an object that is placed in the corridor falls, make sure that the evacuation route and fire shutters are not blocked by the fallen object.
- ② When objects placed in the corridor fall, they must not hinder the use of fire extinguishers or hydrants.
- ③ Are bookshelves that are 150 cm or more in height fixed to the wall or floor?



Lockers are not fixed



As they cannot bring in shoes and umbrella in their laboratory, we confirm securing of refuge passage and admit.

Proper management of chemicals will not only protect the safety and health of researchers; it will also minimize the damage posed by natural disasters. Crisis management tends to loom large among daily research activities. Please give instructions while keeping in mind crisis awareness during inspection. The points of instruction are as presented below.

- ① Reagents must be registered in the reagents/ gas cylinders management web system (Tsukuba-CRIS); discarded chemicals and waste liquid must be discarded promptly and not be left for long periods in the laboratory.
  - ② When storing a reagent (chemical) bottle on the storage or on a laboratory table, put it in a tray to prevent it from tipping over.
  - ③ Reagents with high vapor pressure are stored in zippered plastic bags.
  - ④ Store the substances designated by the "Poisonous and Deleterious Substances Control Act" in a dedicated storage area that can be locked. Indicate that it is poisonous and hazardous.
  - ⑤ Use protective glasses and avoid skin exposure while working with chemicals.
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- ⑥ Storage of poisons and toxic materials
    - ☐ Is the storage cabinet secured?
    - ☐ Is the key left in the keyhole of the storage cabinet?
    - ☐ Are poisons and toxic materials left as they are in the laboratory?  
(Excluding those which are used very often, when used in washing bottles)
    - ☐ Presence or absence of an inventory control sheet
    - ☐ State of inventory implementation



Experimental waste liquid tanks left in the laboratory.

We recommend this product, which is displayed by searching for "refrigerator door lock with padlock" on Amazon for the retrofit key





## Signs

## Chemicals hazard information and handling precautions

When transferring and providing chemical substances that present hazards such as reactivity, flammability, acute toxicity, and corrosivity display hazards to containers, etc a safety data sheet (SDS) is required by law.



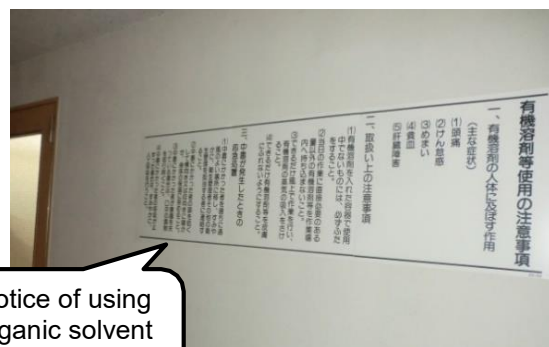
Pictograms of GHS

The United Nations "Chemicals Globally Harmonized System of Classification and Labeling of Chemicals (GHS)" has been adopted. Therefore, it is necessary to make effective use of GHS pictograms and to inform others of the types and degrees of hazards of the chemicals handled.

Also, in the laboratory handling organic solvents, etc., it is obligatory to notify "Effects on the human body," "Precautions for handling," and "First aid treatment when poisoning occurs." Therefore, please check it if it is posted in a place where one can easily see the information. In addition, let's instruct them to wear protective equipment, prohibit fires, prohibit access, and clearly indicate experimental sinks when necessary. Many types of agents are used. For that reason, judging the hazards simply from their colors and shapes is difficult. Therefore, to protect the health of faculty and students, it is most important to provide useful, relevant information.



Hazards are notified to others using a "GHS Display Sheet"



Notice of using organic solvent is posted.



Put a sticker on the experiment sink.

## Comfortable workplace

## Creation of a safe working environment in terms of noise, illumination, CO<sub>2</sub>, etc.

It is important to create a safe working environment that incorporates consideration of the noise, air pollution and other factors to achieve a comfortable working environment with low fatigue and stress.

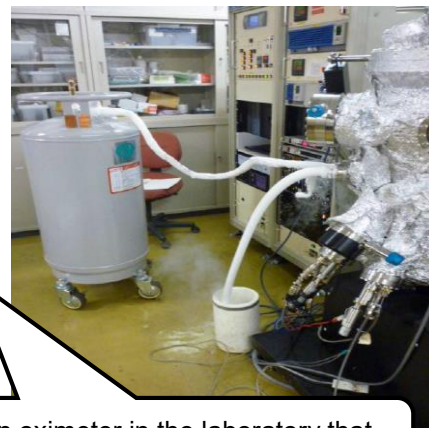
Nevertheless, presenting a standard value for all work is difficult because various activities are conducted on campus. Therefore, it is important to hear about situations directly during patrols.

It might be possible to consider how to improve a situation (office illumination has a standard of 300 lux or more). Additionally, when working, devote attention to your working posture. Because various activities are being conducted on campus, indicating a numerical value that is the basis for all work is difficult. Therefore, it might be possible to hear about a situation directly during a patrol and to think about how to improve it.

- ① It is very important to understand the risk of handling cryogenic materials (liquid nitrogen, liquid helium, etc.). Risk of asphyxiation increases when someone uses large quantities of cryogenic materials in a small laboratory.

Therefore, when you instruct others to check the flow of air in the laboratory before an experiment in a laboratory with insufficient ventilation, instruct them to install an oximeter with an alarm.

In addition, a laboratory with a soldering tool or a gas boiler needs some caution for ventilation.



An oximeter in the laboratory that uses cryogenic materials.

- ② A local exhaust system typified by a draft chamber installed in the laboratory is an experimental system that requires voluntary inspections on a regular basis.

A lifeline system must be installed for workers who handle harmful substances. Please confirm when periodic inspections are carried out to prevent difficulties.

※ Form is in the website of Division of Risk Management.

⇒ [http://anzenkanri.tsukuba.ac.jp/?page\\_id=1953#tenken](http://anzenkanri.tsukuba.ac.jp/?page_id=1953#tenken)



Example of a posted record of periodical inspection.

- ③ Periodic checks are required for an autoclave and a centrifuge installed in the laboratory. Please confirm the following check items.

● Autoclave

- ☐ Are periodic voluntary checks performed? (Confirm inspection card, management log, etc.)
- ☐ Does the device draw current when connected to the electrical outlet?
- ☐ Are heat resistant gloves provided or not? (This item can be skipped when the machine is equipped with some temperature control function.)
- ☐ Is some space available for waste heat (at least 5 cm)?
- ☐ Are some materials blocking space reserved for waste heat?
- ☐ Does water for sterilization give off a foul odor when left alone?

● Centrifuge

- ☐ Are periodic voluntary checks performed or not? (Confirm inspection card, management log), etc.
- ☐ Are old rotors used? (Confirm a lack of cracking, scratching, and dirt.)

【関係規則】

<学内>

- 国立大学法人筑波大学本部等職員就業規則
- 国立大学法人筑波大学職員の安全衛生管理規則
- 国立大学法人筑波大学毒物及び劇物管理規程
- 国立大学法人筑波大学廃棄物管理規程
- 国立大学法人筑波大学危険物管理規程

<学外>

- 労働安全衛生法
- 労働安全衛生法施行令
- 労働安全衛生規則
- 有機溶剤中毒予防規則
- 特定化学物質障害予防規則
- 消防法
- 建築基準法施行令

〔担当〕

総務部リスク・安全管理課 (tel.029-853-2105)

Division of Risk Management, Department of General Affairs

e-mail : so.anzen@un.tsukuba.ac.jp