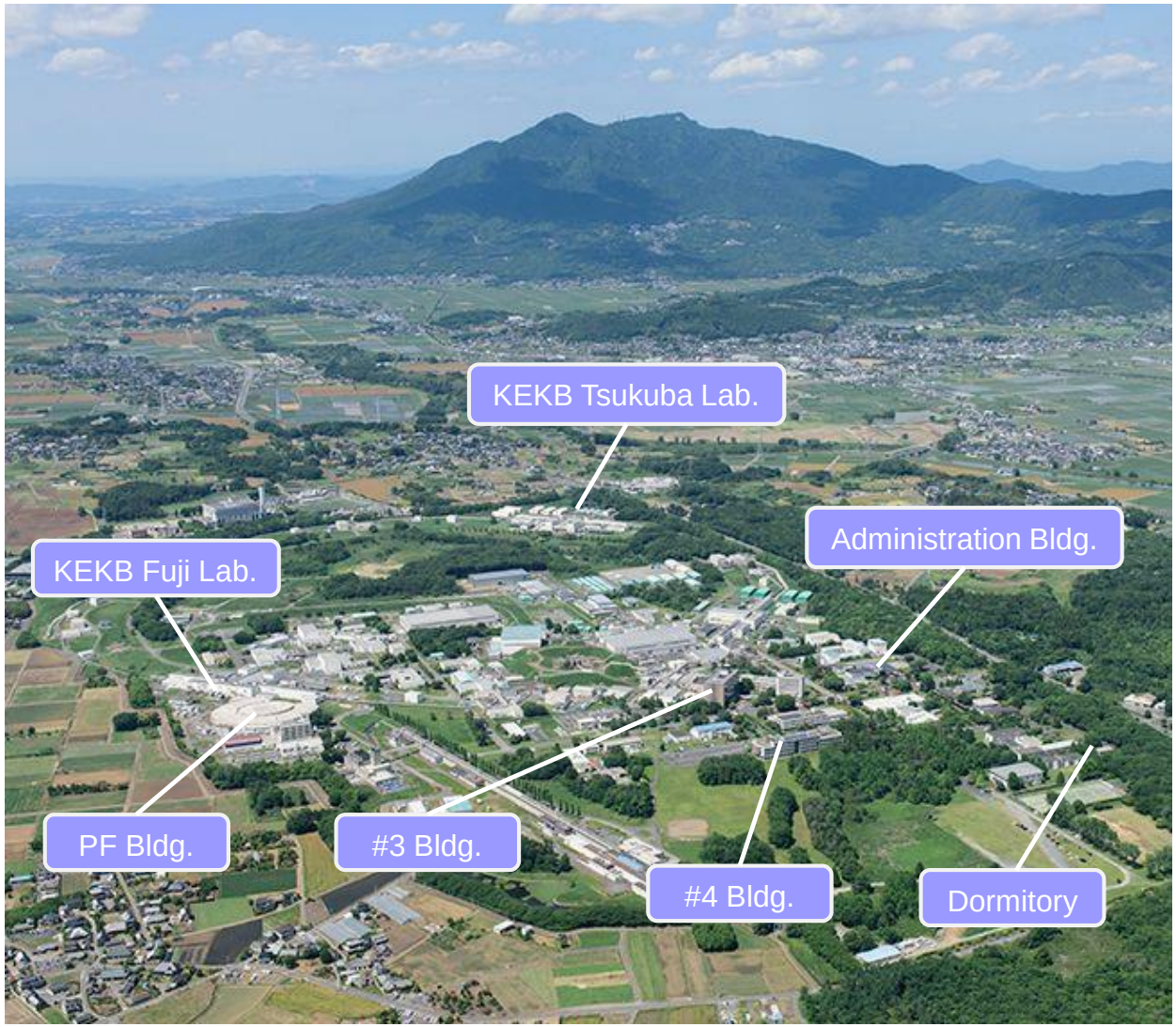
Safety at KEK:
General Safety Training for KEK Users



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In Case of Fire or Explosion: **First Action**

- Alert people in the area who may not be aware of the incident.
- Activate the fire alarm.
- Report the incident to your team leaders and the KEK Information Center (ext. 3399).
- If you can assist:
  - Get help first. Do not fight the fire alone.
  - Do not underestimate the threat of the incident.
  - Always make human life and safety the first priority.
  - Prevent a second incident.
  - Provide any requested information to staff members or firefighters and follow their instructions.

In Case of an Earthquake: **First Actions**

- If an earthquake occurs:
  - Protect yourself: take appropriate shelter (e.g., get under a sturdy desk) until the shaking stops.
- After the earthquake:
  - When it is safe to do so, evacuate to the predetermined emergency assembly area.
  - Do not leave the area until a roll call is conducted by your work or experiment team leader.
  - If you find a injured person, call ext. 3399.
  - Follow all directions from your team leader or KEK staff members.

- **Do not** resume operating any experimental equipment until an inspection has been completed by KEK staff members.

Reporting Emergency Situations

- If an accident or incident occurs, inform KEK Japan staff first.
- If you are in Tsukuba Hall, contact the Front Desk (ext. 3510).
- For detailed procedures and emergency contact numbers, refer to booklet or leaflet (shown here). They are posted in several areas around the KEK campus.
- You can also find information at KEK HP: https://stw.kek.jp/stpg/hso/kinkyu

Emergency Equipment:
Fire Extinguishers・AEDs・Stretchers

Examples of dry powder and liquid fire extinguishers.

Automated external defibrillators (AEDs) are located at the Front Desk in Tsukuba Hall.

Carbon dioxide fire extinguisher.
Caution: Handle with care to avoid depleting oxygen levels, which can cause suffocation.

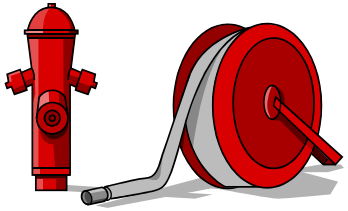
(Normal)

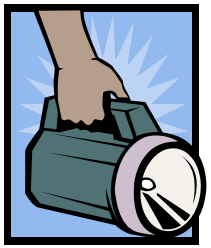
(Wheelchair)

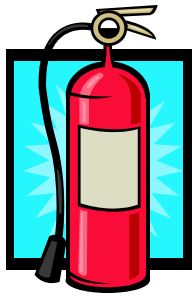
Stretchers are available in the Health and Safety Office.

Before Starting Experiments

- Clarify the your experimental team's contact procedure in case of emergency
- Appoint a leader for your work or experiment team.※
- Confirm the following:
  - Emergency procedures and contacts
  - Nearest assembly area
  - Escape routes and emergency exits
  - Location of fire extinguishers, fire hydrants, flashlights, and first-aid kits
  - How to use fire extinguishers and hydrants.







- Before starting experiments, have a meeting to confirm a work plan for safety.

※ University, laboratory, or company staff person who can direct work on site. The leader will act as a liaison with KEK staff.

Safety Precautions for Experiments: **Part Ⅰ**

- Do not put anything near machinery, electrical distribution boards, doorways (emergency exits), aisles or safety equipment that would impede access.
  - Keep safety equipment, such as fire extinguishers or flashlights, accessible.
- When stacking objects, assure they are positioned to avoid toppling over.
  - Do not place tall objects or stack items that may be at risk of falling in the evacuation routes.
  - Take extra precautions against items that may fall in the event of an earthquake.
- Lock gas cylinder casters or use wheel blocks for safety.

Safety Precautions for Experiments: **Part Ⅰ I**

- If you determine there is a workplace hazard, notify your team leader/contact person.
- Keep everything in order within your work area.
- Walk in safety aisles.
- Follow KEK staff's directions.
- Always work with more than one person inside an enclosed space and in known hazardous areas.
- Wear appropriate work clothing: helmets, safety boots, safety belts, protective glasses, earplugs, and/or gas masks.
  - Sandals are not allowed in Tsukuba or Fuji Hall B4 areas.
  - Short pants are also not allowed.

Warning Lights and Signs for Radiation-Controlled Areas

- When a warning light is on or flashing, stay away from the device and/or the area.

High Voltage/Intense Magnetic Field (Red)	
Radiation (Yellow)	
High-pressure Gas (Green)	

- The following sign is posted near the entrance to a radiation-controlled area. **Do not enter without permission**.

Radiation-controlled area

Note: Intensive training for Radiation Safety at KEK is conducted separately.

When Suspending Experiments

- Take appropriate measures to ensure the safety of any in-use devices and tools, especially watch out for fire hazards.
- If any safeguards (safety fences, etc.) are temporarily disengaged for your work/experiment, restore them to normal operation upon completion.
- When you suspend experiments during nights, weekends, or holidays, post a notice.
- If you require electricity during nights, weekends, or holidays, ask KEK staff or your team leader/ contact person in advance.

Work/Experiment Team Leader Roles: **Part I**

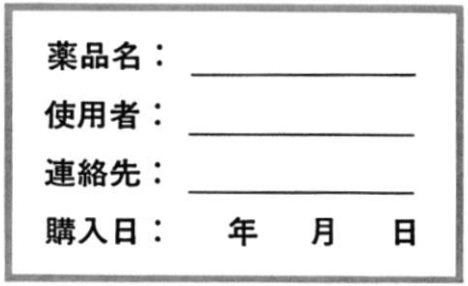
- Provide safety guidance to workers (e.g., students and co-workers) related to the work/experiments.
- Clarify the work plan and ensure safety procedures before starting any work/experiments.
- Have a meeting to confirm the work/experiment plan, procedures, and environment with your work/experimental team members.
- Exchange information related to your experiment with workers and KEK staff.
- When you begin, suspend, and complete work/experiments, confirm the situation is safe and report the current condition to the safety shift or your KEK contact person.

Work/Experiment Team Leader Roles: **Part II**

- Monitor your work/experiment area regularly during work/experiments.
- If a hazard is discovered, take appropriate action to ensure safety (e.g., installation of safety fences or protective covers).
- Instruct team members to wear protective equipment appropriately.
- In case of earthquake or emergency, take a roll call and report the result to a shift worker or your host staff member.
- In case of earthquake or emergency, confirm the location and condition of team members, including those staying in a residential facility (e.g., dormitory). Report the result to a shift worker or your contact person at KEK.

Using Chemicals: **Precautions**

- Approval is required to purchase or bring chemicals into the KEK facility. Before acquiring any chemicals, you should submit a "Request for Getting Chemicals" form to the Chemical Safety Control Office (ext. 5498).※
- Prepare the Material Safety Data Sheet, "MSDS."
- Label the chemical container to clarify the owner.
- For storing and/or using chemicals, follow directions from a chemical cabinet manager.
- Use all chemicals in the appropriate designated area.
- Waste liquid or empty bottles should not be disposed of in a sink or dust bin. Bring waste chemicals to the Chemical Safety Control Office for proper disposal.
- If you have questions, ask your contact person or a chemical cabinet manager.



Label for Chemicals

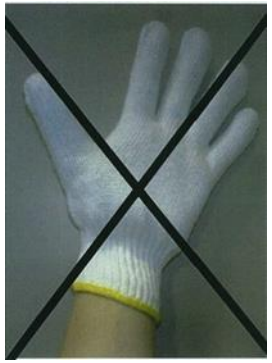
※ **Approval also is required for toxic metals (e.g., lead cadmium, mercury, selenium) and their compounds.**

Handling High-Pressure or Liquefied Gas Cylinders: **Precautions**

- Store cylinders vertically at a pre-assigned place using clamps.
  - Clamps can prevent cylinders from falling over in the event of an earthquake.
- Use a suitable reducing valve.
- Never put fire or heat source close to cylinders.
- Never connect electric wiring with cylinders and clamps.
- Shut a main valve and let pressure out of a reducing valve after use.
- If there is any problem, stop using the gas immediately and contact a KEK staff member.
- Put the label with a cylinder's information (e.g., "full-充" or "empty-空") along with the name of the gas and user's name on the cylinder.
- Use a dedicated carrier for moving any gas cylinders.
- When moving cylinders with a crane, use a basket or a bag, not a magnet or a wire.
- Do not impact a cylinder.
- When not in use, replace the cover on a cylinder.

Handling High-Pressure or Liquefied Gas: **Precautions**

- Use extreme caution to prevent:
  - Burst of a cryogenic container due to pressure increases by vaporization.
  - Blockage of pipe/valve with freezing moisture.
  - Frostbite due to ultra-low temperature.
  - Suffocation due to shortage of oxygen or inhalation of low-temperature gas.
- Install pressure gauges on cryogenic containers.
- Wear proper protective equipment (e.g., leather gloves).



High-Pressure Gas Facilities

- When dealing with high-pressure gas manufacturing and refrigeration facilities:
  - Do not enter the facility area without permission from authorized facility officers.
  - If you find a problem or malfunction, contact the responsible facility officers.
  - Whenever an incident occurs, follow instructions provided by the responsible facility officers.
- For inquiries about high-pressure gas facilities, consult your contact person at KEK.

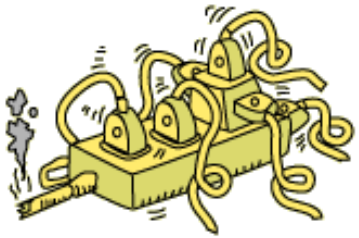
Operating Low-Voltage Electrical Equipment: **Precautions**

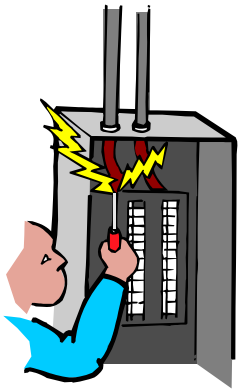
- Pay special attention to prevent an electric shock or electrical fire.
- Pay special attention to work near charging stations and equipment.
- Using electricity distribution boards requires specific permission from electrical system officers.
- A red warning light must be engaged during operation of high-current equipment/instruments.
  - Magnetic excitation is especially dangerous.

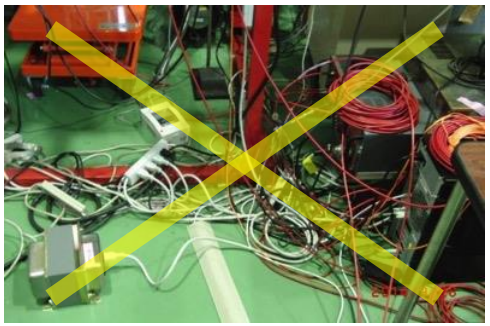
- **Important to Note:**
  - Low-voltage: under 600 V (alternating current) and under 750 V (direct current)
  - Consult responsible officers on electrical specifications for work/experiments using high-voltage electricity.

Maintaining Low-Voltage Electrical Equipment: **Precautions**

- Do not put too many plugs in one outlet.
- Use an unwound cable from a cable reel.
- Do not leave electrical wiring on the ground.
- Maintain your experiment equipment in normal operating condition.
- Do not use defective/damaged equipment.
- Try to switch breakers on or off only when there is no electrical load on the circuit.
- Cancel the remote operation function to check electrical equipment.
- Refrain from wearing metal while working with electrical equipment.







Crane Operation: **Precautions**

- A **Japanese license** and appropriate qualifications are required to operate cranes.
- To arrange for crane operation, consult with your contact person at KEK.
- When cranes are in operation, remain out of the way of the work and never stand under the loads.

Working in High Places (>2 m): **Precautions**

- Wear a helmet and appropriate shoes.
- Wear the proper safety belt or harness (provided at Tsukuba Hall B4 at the elevator).
- When using ladders, never stand on the top step.
- In case footholds or catch fences are not provided, ask your KEK contact person to install them before proceeding with any work.
- Be careful not to drop tools during high-place work.
- High-place work at night or in darkness is highly discouraged. Seek assistance from your KEK contact person to acquire the proper lighting.
- Do not conduct work in high places during inclement weather conditions (e.g., strong wind; heavy rain or snowfall).

Laser Operations: **Precautions**

- Prior to using a laser for your experiment, consult your KEK contact person.
  - Also read the “Manual for Laser Equipment” carefully and follow the instructions.
- Only authorized persons are allowed to enter laser-controlled areas.
- To operate a laser or enter laser-controlled areas, safety training by a laser operation manager is required.
- Do not bring reflective items (e.g., watch or mirror) into laser-controlled areas.
- When a laser is in operation, a warning sign should be posted.

- Do not set up a laser beam path at eye level or look directly into the laser when the main switch is on.
- Wear protection glasses suitable for the specific laser wavelength.

Additional Precautions for Experiments

- If the following work is necessary for your experiment, consult your KEK contact person:
  - Work causing fire or smoke, such as welding, burner operation, or grinder and soldering iron
  - Work in place with a potential risk of oxygen-deficiency, for example, a pit, tank, or other sealed places (a tunnel)
  - Handling experimental cooling water
  - Work at the machine shop
  - Work requiring a roadblock (for more than 30 minutes).

Local Traffic Rules at the KEK Site

- Essentially, local traffic rules at KEK follow Japan's Road Traffic Laws:
  - Yield to pedestrians in crosswalks.
  - The speed limit is 30 km/h.
  - Do not park in the road, sidewalks, lawns, etc.
  - A **vehicle permission pass** should always be visible and placed in the the vehicle's front window.

- Always carry your identification card (with photo) for security checks at KEK's main gate.
- When you ride a bicycle on the Tsukuba campus:
  - Yield to pedestrians
  - Turn on the bicycle headlight after dark.

Contacts: Belle II Safety Shift (**Ext. 2418**)

Safety Team at IPNS (**Ext. 4158, 4490**)

Health and Safety Office (**Ext. 5119**)