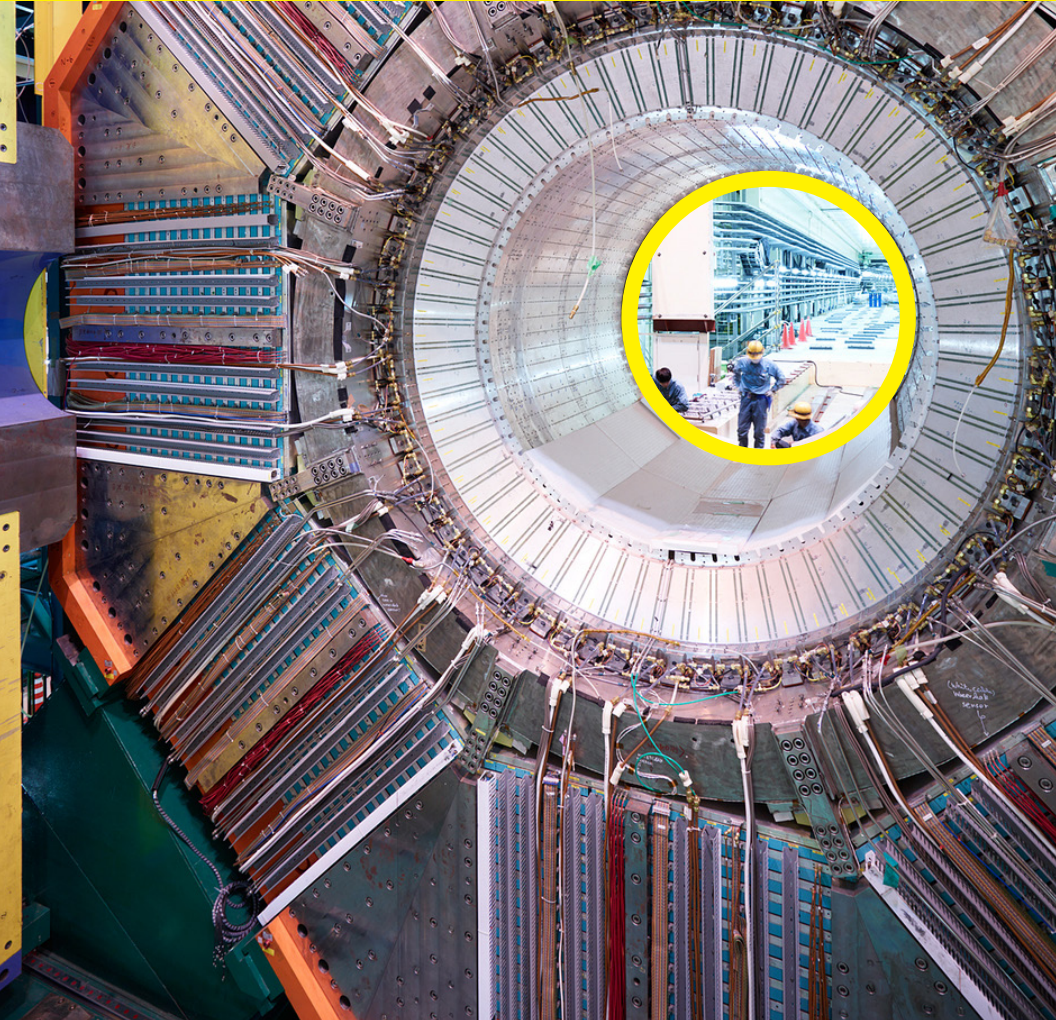


The High Energy Accelerator
Research Organization

Working Safely at KEK



**In the event of an injury or other emergency at KEK,
contact the KEK Information/Emergency Center at ext. 3399
(mobile +81 (0)29-864-5572).**

For non-emergency medical assistance, contact KEK's Medical Care Section at ext. 5600.

Additional information:

<https://www2.kek.jp/rso/eng/yellowpage.html>

About KEK

The High Energy Accelerator Research Organization, known as KEK and located in Tsukuba, Japan, is the country's largest particle physics laboratory and hosts a multitude of international collaborators annually.



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Introduction

Safety at KEK starts with you

This booklet has been prepared for KEK users, primarily working on the Belle II experiment, with useful information for maintaining a safe working environment. In it, topics from initiating and fulfilling a work plan to radiological and electrical safety to fall prevention are introduced with instructions and hints for keeping your workplace safe.

All users are reminded that **you must do your part** by performing work safely and contributing to the overall safety environment at KEK. You should know and understand your surroundings at all times and be prepared to ask questions. Users should contact their assigned KEK liaison with safety questions or concerns.

Additional information from (inside KEK only)
<https://stw.kek.jp/stpg/hsol/files/2014/11/>.

When it comes to safety, all KEK users should recognize that they are empowered to suspend their work and walk away should a situation be unsafe. Notify others if you observe an unsafe situation or an unsafe action. Always report unsafe conditions to the building manager or safety officer.

Thank you for working safely as you pursue important research tasks at KEK.

Work Planning

Work planning is a process that will help you to focus on your job tasks and decide what steps are needed to achieve particular goals. Deviations from the plan should be reevaluated and discussed with your supervisor and team members prior to continuing.

Guidelines for Job Task Planning

- Review work scope and confirm that all participants have a mutual understanding of the work.
- Discuss each person's role in the tasks to be completed.
- Identify the tools and any personal protective and safety equipment required to complete the tasks.
- Discuss any hazards or risks involved with the work, e.g., "If anything could go wrong, what would it be?"
- Verify emergency contacts including appropriate phone numbers, as well as emergency alarms and staging areas.
- Review the process for suspending or stopping work if a hazardous situation develops.

In the event a hazardous condition or unusual event occurs during execution of work, KEK users should consider the following steps:

1. Stop work.
2. Warn others.
3. Isolate the area, if possible.
4. Evacuate the scene.
5. Call 3399 in case of emergency.



Personal Protective and Safety Equipment

Hard Hats

- Hard hats are a requirement throughout most of the KEK facilities and will be provided to you at the entrance area of each building.

Eye Protection

- Protection of the eyes is essential for many research activities. Eye protection should be used:
 - When chemicals, glassware, or a heating source is being used.
 - When working with solid materials or equipment under stress, pressure, or force that might cause fragmentation or flying particles.
 - When an activity generates projectiles, or uses elastic materials under stress (e.g., springs, wires, rubber, glass), or causes collisions including soldering and wire-clipping.
 - When dust or fumes are present (eye protection reduces dust or fumes reaching the eye).
- Safety glasses with side shields provide adequate protection for activities involving projectiles.
- Only safety goggles provide the level of protection needed for activities involving hazardous liquids.

If you need safety glasses, please contact the Belle Secretary (ext. 5342).

Hearing Protection

If it is necessary to speak loudly or shout into someone's ear to be heard, it is likely that the noise levels in your work environment are high enough to warrant hearing protection. Using hearing protection can prevent hearing loss and ringing in the ears.

If you determine that your work environment is excessively loud, please contact the Belle Secretary (ext. 5342) to obtain hearing protection.

Hand Protection

- The most common causes for hand injuries include:
 - Pinch or crush points.
 - Hot surfaces.
 - Rotating devices.
 - Chemicals.
 - Machinery not properly locked out.

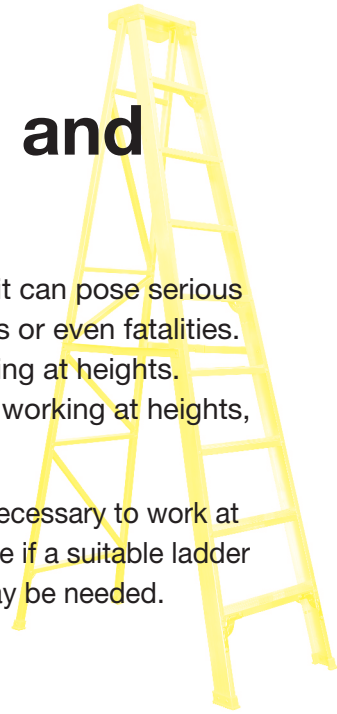
Protective gloves prevent or minimize the risk to these dangers. You also may need to use leather gloves for mechanical hazards or nitrile, vinyl, or rubber gloves for chemical hazards. Damaged protective gloves should be replaced.

If you need protective gloves, please contact the Belle Secretary (ext. 5342).

Safety at Elevation and Fall Protection

Working at elevation is a common activity, but it can pose serious hazards. Falls frequently result in severe injuries or even fatalities. Protect yourself by managing the risks of working at heights. Learn to assess and control hazards related to working at heights, including fall prevention and fall protection.

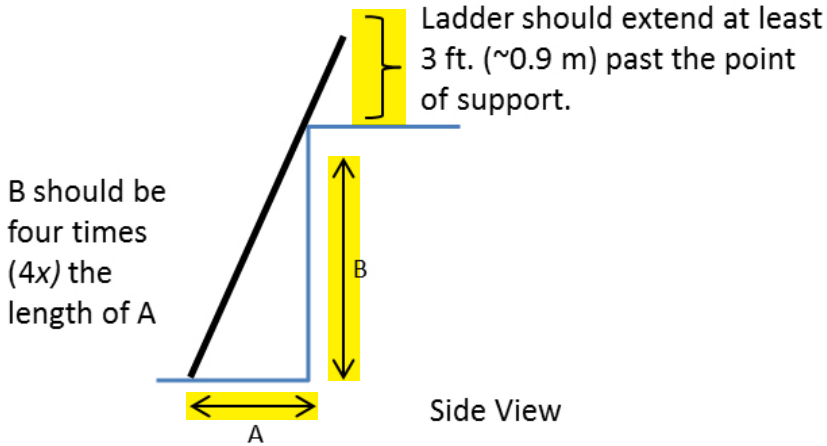
During the work planning phase, if it is deemed necessary to work at an elevation of several meters or higher, determine if a suitable ladder can be used first. If not, a fall-restraint system may be needed.



Ladders and Step Stools

Many injuries occur due to falls from step stools and ladders. Ladder setup and placement are important in staying safe. Straight ladders should be positioned so the horizontal distance between the foot of the ladder and the support it is placed against is equal to one-fourth the ladder's height at the top point of support. The top of the ladder should extend at least 3 feet (~0.9 m) past the point of support. The following tips also can prevent accidents and injuries while using ladders and step stools:

- Use the appropriate ladder for the job (determining when a ladder is needed should be part of the initial work planning process).
- Place the ladder base on a firm, solid surface.
- A straight or extension ladder should be placed 1 foot (~0.3 m) away from the surface it rests against for every 4 feet (~1.2 m) of ladder height.
- When climbing, always face the ladder and grip the rungs—not the side rails.



- Keep your body between the ladder side rails.
- Always keep at least three points of contact with the ladder (i.e., two hands and one foot or two feet and one hand).
- Do not climb with tools in hand. Use a tool belt.
- Only reach for items directly in front of you.
- Never stand on the top rung.
- Climb down the ladder one rung at a time.
- Wear closed-toe shoes.

A safety belt is not suitable as a fall-arrest system.



Fall Restraint Systems

- Safety belts or body belts should not be used for personal fall arrest systems, but they may be used as part of a fall-restraint or positioning-device system. Safety and/or body belts used as part of a positioning-device system should be rigged so a worker cannot free-fall more than a meter.

- A full-body harness may be used in a personal fall-restraint, positioning, or fall arrest system.
- Body belts are not suitable for fall arrest because of the concentration of fall forces on the abdomen. Full-body harnesses distribute fall forces throughout the body, substantially reducing the chance for injury.



A full-body harness is ideal for a fall-arrest system.

Again, fall protection and related safety equipment should be identified and addressed as part of the work planning phase of any task.

If a safety restraint system is used, remember the following:

- Inspect your equipment before each use. It is elemental to your safety.
- Request that defective equipment be replaced.

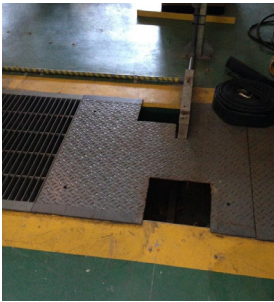
If there is any doubt about the safety or usability of the fall protection equipment, do not use it. Refer defects to your project manager and KEK’s Building Manager. The Belle Secretary also can assist in determining the proper contact. Contact the safety officer at F1 if you are in Tsukuba Hall.

Slips, Trips, and Falls

Be aware of tripping hazards throughout the KEK facilities. Conditions change constantly. As such, there may be a tripping hazard where there were none before.

Common Locations for Falls:

- Doorways.
- Cluttered hallways.
- Uneven surfaces.
- Unguarded heights.
- Ladders.
- Uncovered channels (for rails) in the concrete floors.
- Ramps.
- Areas with heavy traffic.
- Areas prone to wetness or spills.
- Unstable work surfaces.
- Stairs.



Fall Prevention Tips:

- Secure electrical and phone cords out of traffic areas.
- Remove tripping hazards from stairs and walkways.
- Never stand on a chair, table, or other surface with wheels.
- Clean up all spills immediately. Call emergency personnel x3399 for hazardous material spills.

Signage

At KEK, there has been an effort to add signs in English wherever any critical safety information is being communicated. However, there still may be areas where safety signs are exclusively in Japanese. While working at KEK, if you do not understand a sign, please ask the Building Manager for a translation. Always obey signage instructions as appropriate.

Examples of signage at KEK:





- 1 This sign may be seen in several areas around campus, warning staff of the risk for falling. Doors with this sign should not be unlocked or opened.
- 2 This red sign means this is a flammable storage area and warns to keep ignition sources away.
- 3 This group of signs may be found on transformers/electrical substations within KEK. They indicate it is a dangerous, high-voltage area where access is restricted to qualified electrical workers.
- 4 This sign indicates that the room contains a fire protection system with halide. In the event of an emergency, evacuation instructions will be announced. Staff should follow instructions and leave the room as quickly as possible.
- 5 This sign can be seen in radiation areas and warns staff not to enter without specific permission.
- 6 Hard hats are used in many areas throughout KEK. These signs are posted as a reminder of specific areas that require hard hats.
- 7 These signs are posted specifically for firefighters who may need to enter certain areas in KEK during an emergency. They indicate that added caution should be used when extinguishing fires in these areas, along with any associated hazards and restrictions. For example, these signs indicate the area is both radioactive (top) and high voltage (bottom), which is essential for determining the proper method to extinguish a fire.



Electrical Safety

Working around electricity can be a serious hazard. Be alert and aware when working with or around electrical equipment.

Follow some basic guidelines. All electrical work on line voltage (100 VAC or higher) equipment must be done by certified KEK electricians. Do not attempt to wire equipment on your own.

- Pull the plug, not the cord.
- Do not reset circuit breakers.
- Try not to daisy chain or overload power strips.
- Visually inspect electrical equipment and cords prior to use.

Clues that an electrical hazard may exist include:

- The odor of hot or burning insulation.
- Sizzles, buzzes, or other unusual sounds emanating from the electrical system.
- Tools, wires, cords, connections, or junction boxes that are hot to the touch.
- A mild tingling sensation stemming from contact with a panel, case, or equipment.

Report any of these conditions to the KEK Building Manager and your KEK Detector System Liaison. The Belle Secretary (ext. 5342) also can assist in determining the proper contact. For more information contact the Building Manager.

Radiological Safety

Before working in a radiological area, all KEK visitors must complete the KEK Radiation Worker Safety Training and wear a dosimeter while in a radiation area. Visitors also must adhere to any radiological safety procedures prescribed by their respective home institutions. All radiological work should be performed according to accepted work plans. The KEK Radiation Safety Office approves all radiologic work plans. Notably, there are some standard operating procedures in place for low-risk and routine radiological work, such as entering the accelerator tunnel.

Registration for KEK radiation workers should be completed before visiting KEK every Japanese fiscal year, which runs April 1 through March 31.

https://rcwww.kek.jp/user/subpages/31_jyuuji_english.html

Radiation Science Center, KEK
Oho 1-1, Tsukuba 305-0801, Japan
Tel/Fax: +81-(0)29-864-5495/1993,
Ext. 3500

<http://rcwww.kek.jp/index-e.html>

**For information regarding
KEK Radiation Worker
Safety Training and how to
obtain a dosimeter while
in a radiation area, contact
the Belle Secretary
(ext. 5342).**



Chemical Hazards

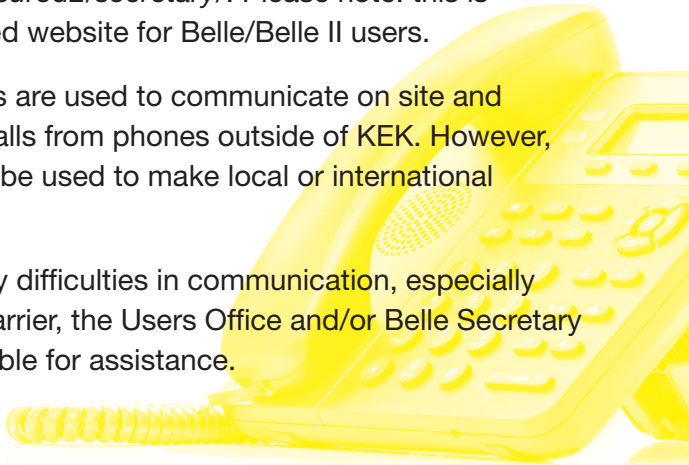
Visitors must adhere to all chemical safety practices in place at KEK. Prior to bringing any chemicals onsite, proper notification is required to KEK's Environmental Safety Office (ext. 5498). The Belle Secretary (ext. 5342) also can offer assistance.

Communications at KEK

The internal phone system at KEK operates similarly to those used in the United States. Visitors may prearrange to use a KEK Personal Handy System (PHS) cell phone through the Belle Secretary using the checkout form at <http://belle.kek.jp/secured2/secretary/>. Please note: this is a password-protected website for Belle/Belle II users.

Of note, PHS phones are used to communicate on site and are able to receive calls from phones outside of KEK. However, PHS phones cannot be used to make local or international calls outside of KEK.

If you experience any difficulties in communication, especially due to a language barrier, the Users Office and/or Belle Secretary (ext. 5342) are available for assistance.



General Emergency Preparedness

As with most areas in Japan, KEK is at risk for natural hazards such as earthquakes, tornados, and typhoons. While working in KEK, be aware of your surroundings and know the available and appropriate exits and procedures for dealing with emergency situations.

If you have an injury or other emergency while at KEK, call the KEK Information/Emergency Center (ext. 3399, mobile +81 (0)29-864-5572). For non-emergency medical assistance, contact KEK's Medical Care Section (ext. 5600).

During operating hours, KEK provides onsite treatment for minor injuries and illness at the Medical Care Section (near the Advanced Instrumentation Lab). Health care counseling also is available (by appointment).

Medical Care Section Hours:

8:30 AM - Noon and 1:00 - 5:00 PM (Monday–Friday)
For health counseling appointments, call ext. 5600

Fire Response

In the event of a fire:

- Warn colleagues around you.
- Pull the fire alarm.
- Immediately report the situation to the **Information/ Emergency Center (ext. 3399, mobile +81 (0)29-864-5572)**. You will need to provide the location, situation, your name, and your extension or PHS number.
- Do not attempt to reset the fire alarm.
- Evacuate the scene.

Earthquake Safety

When an earthquake greater than 3 on the Japan Meteorological Agency (JMA) seismic scale (roughly 4.0 magnitude) is detected, an Earthquake Early Warning (EEW; based on seismic intensity and arrival time) will be announced at the KEK campus in Japanese (note: warning timings are dependent on conditions so exact notifications will vary).



In the event of an earthquake:

- Do not panic.
- Secure your position under a strong desk or table.
- Keep your head and neck covered as much as possible.

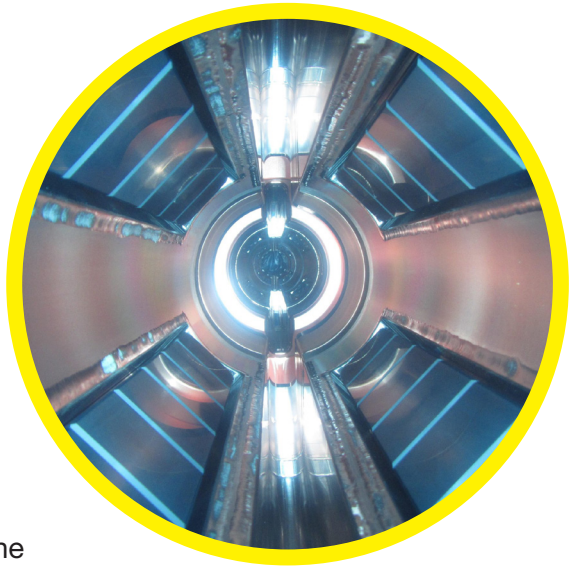
After an earthquake:

- Be aware that falling objects can create added hazards, evacuate your area carefully and only if an exit can be made safely.
- If safe to do so, open windows and doors to enable exits. Be careful of using window exits as there may be broken glass.
- Once outside, report to an assigned KEK Temporary Gathering Area.

For additional information, KEK offers **A Guide for the Safety of You and Your Family When an Earthquake Strikes** (available in the KEK Users Office or online at <https://www2.kek.jp/rso/eng/kinkyu/Earthquake.html> and <https://www2.kek.jp/usersoffice/pdf/helpful/Earthquake.pdf>).

KEK Users Office

The KEK Users Office provides a central point of contact and support for national and international users and collaborators. The office is located within the KEK International Center, near the entrance to KEK, and is open Monday through Friday from 9:00 AM to 5:00 PM (except holidays).



Users Office staff are available to assist users with efforts related to their time at KEK, spanning pre-arrival arrangements for user registration, housing, experiment setup, and visa applications, to onsite issues, such as answering questions regarding the local area, wireless accessibility, and billing or expense paperwork. Helpful information for English-speaking users is available at: <https://www2.kek.jp/usersoffice/eng/>.

Contact the KEK Users Office at:

Phone: (0)29-879-6197, 6135, or 6136

Fax: (0)29-879-6137

e-mail: usersoffice@mail.kek.jp

KEK: Important Phrases

Expressions inside the quotes reflect the Japanese pronunciation for the phrase.

Evacuate immediately “Ni-GE-RO”

Evacuate immediately to a safe place.

Fire “KA-JI”

Fire broke out at ____.

Explosion “BA-KU-HA-TSU”

An explosion occurred at ____.

Hazardous gas “GA-SU-MO-RE”

Hazardous gas leak at ____.

Injury/illness “KE-GA” / “BYO-KI”

Someone at ____ needs medical attention.

False alarm “GO-HO”

It was a false alarm.



Contacts

KEK Information/Emergency Center

Ext. 3399, mobile +81 (0)29-864-5572

KEK Users Office

Ext. 6197, 6135, or 6136

E-mail: usersoffice@mail.kek.jp

KEK Medical Care Section

Ext. 5600

KEK Environmental Safety Office

Ext. 5498

Belle Secretary, Bldg. 3/Rm 215

E-mail: belle-secretary@bpost.kek.jp

Tel: +81-(0)29-864-5342

Fax: +81-(0)29-864-5340

Belle II Organization

<https://www.belle2.org/info/organization/>

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