

Safety Manual

North Campus Safety Management Committee
Hokkaido University

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*Hokkaido University Safety Management website

<http://www.hokudai.ac.jp/sisetu/anzenkanri2/anzen2.htm>

I. Emergency Response

1. The occurrence of fire

1) In case of fire

Shout “fire!” (*Kaji Da!*) to alert people nearby and call for their assistance. Activate a fire alarm if necessary.

Call the Central Monitoring Room (9226) to report the fire.

Attempt to extinguish the fire early before it spreads.

(As the first person at the scene sometimes panics, it is often better to leave fire extinguishing duties to those who come to help.)

Fires should be extinguished within one minute. If this is not possible, close the door and evacuate the building.

Response in the Central Monitoring Room (where three security guards are always stationed)

If the fire is detected in a room and the automatic fire alarm system installed in the room is activated, the location of the fire can be specified, enabling security guards to handle the situation as outlined below.

① Two guards rush to the site to check the situation

One guard stays in the Central Monitoring Room and makes the following announcement

Announcement

“A fire alarm has been activated in the vicinity of the __ room on the __ floor of the __ building. Security guards are currently confirming the situation at the site. Researchers in the vicinity of the __ room are requested to deal with the emergency appropriately.”

② The security guard in the monitoring room makes subsequent announcements based on information provided by the guards at the site.

《In case of an actual fire》

Announcement

“A fire has broken out in the __ room on the __ floor of the __ building. Please evacuate the building immediately. The emergency stairs near __ are at risk. Please use alternative emergency stairs.”

The security guard calls 119 and informs the related departments of the situation.

《In case of a false alarm》

“A fire alarm was activated earlier, but investigations have revealed no abnormalities.”

Automatic emergency announcement procedure in case of fire

- ① When a fire sensor detects a fire, the following announcement is made on the floor on which the sensor was activated, as well as on the floor directly above.

Announcement

“A fire sensor has just been activated on the ___ floor. As security guards are currently investigating the situation, please pay particular attention to the next announcement.”

There is then a 5-minute waiting time (during which, there is a silence).

- ② After a 5-minute period or due to activation by a transmitter, the following announcement is made on the floor on which the sensor was activated, as well as on the floor directly above.

Announcement

“Fire! Fire! A fire has broken out on the ___ floor. Please evacuate calmly.”

This message is repeated along with wailing sirens.

- ③ After the siren has continued for five minutes, the announcement is made throughout the entire building.

2) Evacuation precautions

- ① In preparation for such emergencies, people should be appointed to take responsibility for evacuation guidance and head counting.
- ② After an emergency announcement, people in charge of the evacuation guidance should proceed with instructing the concerned people (e.g., students, staff) for evacuation. In particular, people in research laboratories in floors situated above the fire must evacuate immediately.
- ③ The person responsible for the head-count must regularly check the number of people (e.g., students, staff) normally present in the building, and confirm that all of them have evacuated during the emergency.
- ④ Electricity and gas must be turned off at source, and dangerous items dealt with wherever possible, before evacuating.
- ⑤ Confirm that no-one is left in the building.
- ⑥ Elevators must not be used during evacuation.



II. Emergency Shower Facilities

The most important thing in the first-aid treatment of chemical or other burns is to continually cool them with tap water immediately after receiving the burn.

Emergency showers are used for victims with extensive burns. Particularly in the case of chemical burns, it is important to wash the affected areas with a substantial amount of tap water as soon as possible, in order to remove the chemicals. This also cools the affected parts and suppresses inflammation.

Please check the location and method of use of shower facilities in advance, in order to be best prepared in times of emergency.

1. First-aid treatment of chemical burns

A. Removal of chemicals

Shower the affected parts immediately and continue doing so for more than 15 minutes to wash away chemicals such as acids and alkalis.

- This also cools the affected parts and suppresses inflammation.
- If clothes are worn over the affected parts, while showering, remove the clothes or cut them off with scissors carefully so as not to aggravate the injuries.
- Ask other people for help in promptly providing first aid to the affected parts and making arrangements for going to the hospital, etc.

B. Neutralization

Neutralization is also necessary as chemicals may remain in skin folds and hairs even if they are washed.

Acid → weak alkaline solution

Alkali → 2 – 3% acetic acid or lemon juice

- When a situation calls for an instant response, careful washing is important as neutralization may be difficult to perform.

C. If chemicals get into your eyes

Wash your eyes immediately with a substantial amount of tap water.

- A normal saline solution is better, but tap water is sufficient.
- As chemicals may damage eye tissues, immediate medical treatment by a specialist is necessary.

2. First-aid treatment of extensive burns

A. Cooling of affected parts

It is most important to immediately wash and continue cooling the affected parts under a shower for approximately 30 minutes.

- If clothes are worn over the affected parts, while showering, remove the clothes or cut them off with scissors carefully so as not to aggravate the injuries.
- If the burns are extensive, it may not be possible to cool them under a shower. In such cases it is necessary to go to hospital immediately, without forcibly removing clothing.

B. When the affected parts are blistered

When the affected parts become blistered, do not rupture the blisters needlessly; cool them.

3. Treatment at medical institutions

A. Medical specialist

After receiving first aid, be sure to see a specialist and receive appropriate treatment.

B. Do not use home remedies

Home remedies may delay treatment or aggravate the burns. Avoid home remedies even as first aid.

III. Handling of Organic Solvents

- Never discharge organic solvents down the drains.
- The contents of water tanks used in extraction experiments should be put into a polyethylene tank for waste liquid and disposed of as “aqueous organic solvent.”
- With regard to glassware used in experiments, the following tasks must be performed when washing:
 1. Wash away dirt with organic solvents, etc.
 2. Wash with water-soluble organic solvents (methanol, acetone, etc.)
 3. Rinse away the water-soluble organic solvents with a little water.
 4. Put the solvents and water used in steps 1 to 3 into a polyethylene tank for waste liquid.

Poster (should be displayed near laboratory sinks)



Handling of organic solvents

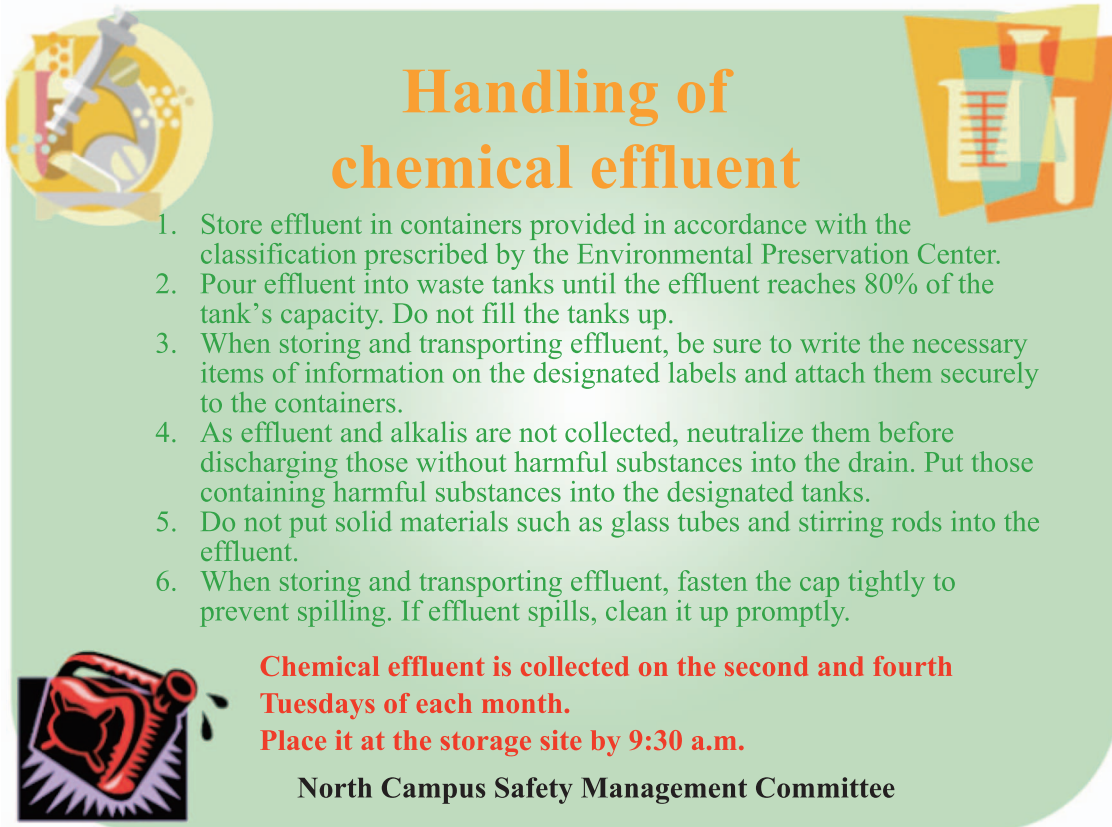
- Never discharge organic solvents down the drain.
- The contents of water tanks used in extraction experiments should be put into a polyethylene tank for waste liquid (red) and disposed of as “aqueous organic solvent.”
- With regard to glassware used in experiments, the following tasks must be performed when washing:
 1. Wash away dirt with organic solvents, etc.
 2. Wash with water-soluble organic solvents (methanol, acetone, etc.)
 3. Rinse away the water-soluble organic solvents with a little water.
 4. Put the solvents and water used in steps 1 to 3 into a polyethylene tank for waste liquid (red).

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IV. Handling of Chemical Effluent

1. Store effluent in containers provided in accordance with the classification prescribed by the Environmental Preservation Center.
2. Pour effluent into waste tanks until the effluent reaches 80% of the tank's capacity. Do not fill the tanks up.
3. When storing and transporting effluent, be sure to write the necessary items of information on the designated labels and attach them securely to the containers.
4. Discharge effluent and waste alkalis that do not contain harmful substances into drains after neutralizing them, as they are not collected.
5. Do not put solid materials such as glass tubes and stirring rods into the effluent.
6. When storing and transporting effluent, fasten the cap tightly to prevent spilling. If effluent spills, clean it up promptly.
7. Waste effluent should be placed for collection on the morning (by 9:30 a.m.) of the day of collection.

Poster (should be displayed near laboratory storage areas)



**Handling of
chemical effluent**

1. Store effluent in containers provided in accordance with the classification prescribed by the Environmental Preservation Center.
2. Pour effluent into waste tanks until the effluent reaches 80% of the tank's capacity. Do not fill the tanks up.
3. When storing and transporting effluent, be sure to write the necessary items of information on the designated labels and attach them securely to the containers.
4. As effluent and alkalis are not collected, neutralize them before discharging those without harmful substances into the drain. Put those containing harmful substances into the designated tanks.
5. Do not put solid materials such as glass tubes and stirring rods into the effluent.
6. When storing and transporting effluent, fasten the cap tightly to prevent spilling. If effluent spills, clean it up promptly.

**Chemical effluent is collected on the second and fourth Tuesdays of each month.
Place it at the storage site by 9:30 a.m.**

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☆ Collection point for effluent: 01-301-2 (CRIS Building)

☆ The key for the temporary storage area can be borrowed from the Central Monitoring Room (1-312)

V. Hazardous-Materials Depository

Some chemicals used in research laboratories contain flammable or ignitable substances, and the quantity of such chemicals that can be stored in research laboratories is regulated under the Fire Service Act. Within the North Campus, there is an indoor storage area for these chemicals (hazardous-materials depository) (at present, it is used exclusively for residents of the CRIS building). The types and quantity of chemicals that can be stored have been approved by the Fire Bureau in advance. Please comply with precautions prescribed in the attached sheet when using the depository. It is important for people responsible for the handling of chemicals in research laboratories to keep track of the quantity of chemicals stored, and to ensure that hazardous materials kept in research laboratories and the hazardous-materials depository do not exceed the limits.

1. Comply with precautions in the use of the hazardous-materials depository.
2. Place heavy objects such as 18-liter cans on the lowest shelf.
3. The kinds of chemicals that can be stored in the hazardous-materials depository are limited to those listed in Appendix 1. Do not store any other chemicals there.
4. As notice of chemicals stored in the hazardous-materials depository must be submitted to the Fire Bureau each month, be sure to enter data on the chemicals in the reagent management system. When doing so, enter the name of room as the Sousei-tou hazardous-materials depository (exclusively for residents of the CRIS building).
5. Place chemicals on the shelf designated for each research laboratory (each shelf is labeled with the name of a research laboratory).
6. Be sure to label each chemical with the name and extension number of the research laboratory to which it belongs. Chemicals without such labels are not permitted to be stored there.

Precautions in the use of the hazardous-materials depository

- (1) After signing the register in the Central Monitoring Room, borrow the key for the hazardous-materials depository and return it immediately after use.
- (2) Be sure to turn on the ventilation fan when entering the depository.
- (3) Classify and store chemicals in designated shelves responsibly. Do not store chemicals other than Category 4 hazardous materials.
- (4) Users are entrusted with the use of the assigned shelves, but be sure to prevent chemicals from falling or breaking even in the event of an earthquake occurring. Periodically check that everything is in order.
- (5) When storing or removing chemicals from the depository, enter the chemical's data in the reagent management system. When doing so, enter the name of room as the Sousei building hazardous-materials depository (exclusively for residents of the CRIS building).
- (6) Those entering the depository should do so with at least one other person.
- (7) Wear appropriate protective wear such as goggles and gloves.
- (8) Clean up spilled chemicals promptly and be mindful of ventilation.
- (9) Do not use fire in the hazardous-materials depository.
- (10) Be sure to lock the door to prevent theft.
- (11) Be sure to label each chemical with the name and extension number of research laboratory to which it belongs. Chemicals without such labels are not permitted to be stored there.

CRIS		CRC		Nano	
<input type="text"/>	<input type="text"/>	Catalytic, Interfacial	Surface, Dynamics	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	Functional Materials	Catalytic, Function	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	Molecular Assemblies	Organic synthetics	<input type="text"/>	<input type="text"/>

List of hazardous materials

Category	Name of product	Name of reagent	Planned storage quantity (unit)	Unit	Specified quantity	Multiple	Flash point
No. 4	Special flammable material	Diethyl ether	500	L	50	10	-45
No. 4	Special flammable material	Pentane	250	L	50	5	-49
No. 4	Special flammable material	Petroleum ether	125	L	50	2.5	-17.8
No. 4	Special flammable material	Isopropylamine	50	L	50	1	-37.2
No. 4	Class 1 petroleum (non-aqueous liquid)	Hexane	1,000	L	200	5	-22
No. 4	Class 1 petroleum (non-aqueous liquid)	Ethyl acetate	750	L	200	3.75	-4
No. 4	Class 1 petroleum (non-aqueous liquid)	Benzene	250	L	200	1.25	-11
No. 4	Class 1 petroleum (non-aqueous liquid)	Toluene	500	L	200	2.5	4.4
No. 4	Class 1 petroleum (non-aqueous liquid)	Cyclohexane	125	L	200	0.625	-17
No. 4	Class 1 petroleum (non-aqueous liquid)	Methyl acetate	50	L	200	0.25	-10
No. 4	Class 1 petroleum (non-aqueous liquid)	Dioxane	50	L	200	0.25	12.2
No. 4	Class 1 petroleum (aqueous liquid)	Acetonitrile	375	L	400	0.9375	5.6
No. 4	Class 1 petroleum (aqueous liquid)	Acetone	1,250	L	400	3.125	-18
No. 4	Class 1 petroleum (aqueous liquid)	Tetrahydrofuran	250	L	400	0.625	-17.2
No. 4	Alcohol	Ethanol	1,250	L	400	3.125	14
No. 4	Alcohol	Methanol	1,000	L	400	2.5	12
No. 4	Alcohol	Propanol-1-ol	50	L	400	0.125	27
No. 4	Alcohol	Isopropyl alcohol	250	L	400	0.625	11.7
No. 4	Class 2 petroleum (non-aqueous liquid)	Decalin	250	L	1,000	0.25	58
No. 4	Class 2 petroleum (non-aqueous liquid)	Xylene	50	L	1,000	0.05	23.2

* Storage quantity: less than 50 times the specified quantity

To take chemicals in or out of the depository, please borrow the key from the Central Monitoring Room (1-312) (exclusively for residents of the CRIS building).

Measures for hazardous materials in the CRIS building

1. Specified quantity under the Fire Service Act

The specified quantity is determined for each hazardous material according to its hazardous nature (refer to the list of specified quantities). If the quantity of stored hazardous material is the same as or more than its specified quantity, the material is regulated under the Fire Service Act, and a material stored in quantities less than the specified quantity is regulated under the Sapporo City Fire Prevention Ordinance. When several hazardous materials are stored and used in the same place, the formula below is used to determine whether or not they exceed the specified quantity. When the multiple obtained from the calculation using the formula is one or more, they are regulated as hazardous materials being stored in quantities that are the same as or more than their specified quantity.

$$\frac{\text{Quantity of A}}{\text{Specified quantity of A}} + \frac{\text{Quantity of B}}{\text{Specified quantity of B}} + \frac{\text{Quantity of C}}{\text{Specified quantity of C}} = \text{Multiple}$$

e.g.) When 5 liters of diethyl ether, 10 liters of ethyl acetate and 20 liters of methanol are stored in a laboratory, the multiple becomes:

$$\frac{5 \text{ L}}{50} + \frac{10 \text{ L}}{200\text{L}} + \frac{20 \text{ L}}{400 \text{ L}} = 0.2$$

2. Criteria for storage and handling quantities in each laboratory

The storage quantity of hazardous materials is calculated for each laboratory separated by walls and doors (a room separated by simple partitions is not considered an independent laboratory). When the multiple of the storage quantity of hazardous materials for a laboratory is 0.2 or more, the materials are subject to Article 36-3-2 of the Sapporo City Fire Prevention Ordinance (see below). As the value for any experimental effluent stored in the room must also be added to the figure, the multiple of hazardous materials must be kept below 0.17. If the multiple exceeds 0.17, store materials in the hazardous-materials depository.

Sapporo City Fire Prevention Ordinance

Article 36-3-2

When a hazardous material is stored indoors in a quantity less than its specified quantity but exceeding one fifth of that specified quantity, the following technical criteria shall be met:

- (1) Walls, columns, floors and ceilings shall be made of or covered with nonflammable materials.
- (2) Fire-retardant shutters shall be installed on windows and entrance/exits.
- (3) Floors on which hazardous liquids are stored or used shall be structured to prevent hazardous substances from penetrating, and shall be moderately inclined with a catchment basin.
- (4) If a rack is installed, it shall be of robust construction using nonflammable materials.
- (5) The indoor area shall be lit and ventilated sufficiently for the storage and handling of hazardous materials.
- (6) If there is a risk of retention of flammable vapor or particles, equipment shall be installed to discharge the vapor or particles to the higher place outside.

List of specified quantities

Category	Name of product	Properties	Specified quantity
No. 1		Grade 1 oxidizing solid	50 kg
		Grade 2 oxidizing solid	300 kg
		Grade 3 oxidizing solid	1,000 kg
No. 2	Phosphorus sulfide		100 kg
	Red phosphorus		100 kg
	Sulfur		100 kg
		Grade 1 flammable solid	100 kg
	Iron powder		500 kg
			500 kg
	Flammable solid	Grade 2 flammable solid	1,000 kg
No. 3	Potassium		10 kg
	Sodium		10 kg
	Alkylaluminum		10 kg
	Alkyl lithium		10 kg
		Grade 1 pyrophoric substance and water reactive substance	10 kg
	Yellow phosphor		20 kg
		Grade 2 pyrophoric substance and water reactive substance	50 kg
		Grade 3 pyrophoric substance and water reactive substance	300 kg
No. 4	Special flammable		50 L
	Class 1 petroleum	Non-aqueous liquid	200 L
		Aqueous liquid	400 L
	Alcohol		400 L
	Class 2 petroleum	Non-aqueous liquid	1,000 L
		Aqueous liquid	2,000 L
	Class 3 petroleum	Non-aqueous liquid	2,000 L
		Aqueous liquid	4,000 L
	Class 4 petroleum		6,000 L
Animal/vegetable oil		10,000 L	
No. 5		Grade 1 self-reactive substance	10 kg
		Grade 1 self-reactive substance	100 kg
No. 6		Oxidizing liquid	300 kg

VI. All-Night Operation and Continuous Operation of Unmanned Experiment Equipment

There are many electrical instruments for unmanned all-night operation in laboratories. Such operation requires special attention as it poses a greater risk of accidents due to overheating and short-circuiting.

All-night experiments and continuous unmanned operation are often conducted inside the laboratories of North Campus. To ensure prompt response to accidents or disasters, it is important to check the schedule of all-night experiments, the mechanism of unmanned equipment for continuous operation, and the layout of the laboratory where the equipment is placed, in advance. Based on this notion, researchers are requested to prepare application forms for all-night experiments and continuous operation of unmanned equipment in advance.

Be sure to prepare the forms in accordance with application guidelines for all-night experiments and continuous operation of unmanned equipment.

Application guidelines for all-night experiments and continuous operation of unmanned equipment

1. Application for all-night experiment

- ① Applications must be made on a daily basis. Post the form on the outside of the entrance door of the laboratory by 10 p.m. on the night of the experiment.
The application form will be checked by security guards on patrol.
Remove the form the following morning.
- ② Write the names of all those participating in the all-night experiment and make sure to receive approval from a person in charge.
- ③ The forms should be filed for reference in the research laboratory for at least one year after use.

2. Application for continuous operation of unmanned equipment

- ① The application period is within one year from April 1 to March 31 the following year. When applications are necessary, they should be submitted on a case-by-case basis. If it is a continuous experiment, renew the application at the beginning of the academic year.
- ② An application must be made by each laboratory. Prepare and submit an application form covering all equipment and devices that are expected to be used in continuous unmanned operation. This does not, however, apply to computers, refrigerators, freezers and fume hoods.
- ③ Sketch a plan of the laboratory based on an example, and attach a color layout plan of the equipment.
- ④ Post the application form and a copy of the plan on the inside of the entrance door.
- ⑤ Attach an “in operation” or “out of service” label to each piece of equipment or device for which an application has been made. The format and material for the labels are not specified; each research laboratory should prepare its own.
- ⑥ In case of any significant changes in the layout plan, equipment and/or devices or their methods of use, it is necessary to submit an application form again. In this case, the application period will be valid from the day it is submitted to the end of March.
- ⑦ Submit applications to the Facilities and Safety Section of the Northern Campus Area Joint Administration at least one week before the beginning of the operation.

Application for all-night experiments

Date (mm/dd/yy) _____

Name		Purpose	
Time	From	to	
Name		Purpose	
Time	From	to	
Name		Purpose	
Time	From	to	
Name		Purpose	
Time	From	to	
Name		Purpose	
Time	From	to	
Name		Purpose	
Time	From	to	
Name		Purpose	
Time	From	to	
Name		Purpose	
Time	From	to	
Name		Purpose	
Time	From	to	

Name of affiliation/field/course, etc.	
Name of person responsible for safety	seal
Name of person (teaching staff) in charge	seal
Emergency telephone number	

- * Be sure to receive the approval and seal of the person in charge.
- * Post this application form on the entrance door of the laboratory by 10 p.m. on the night of the experiment. A security guard will check it during patrol, and may call in the laboratory to confirm it.
- * Remove the form at the end of the experiment.

Application for continuous operation of unmanned experiment equipment (all night)

Name of affiliation/field/course, etc.	
Name of person responsible for safety	seal
Name of person in charge	seal
Emergency contact number	

Installation site		
Name of equipment		
Equipment number for each laboratory (enter the number in the layout plan)		
Purpose of use		
Possible danger		
Emergency response		
Operation period	From (m/d/y)	to (m/d/y)

* Application is required for all experimental equipment, devices, etc. other than computers, freezers, refrigerators and fume hoods.

Date (m/d/y) _____

The application mentioned above has been approved.

Chief
Seal
 North Campus Safety Management Committee

Sketch of laboratory plan and layout of continuously operating equipment <div style="text-align: right; font-size: small;">(building: ; room no.:)</div>

*All items measuring one cubic meter or more in volume should be drawn.

*If there are fire extinguishers in the laboratory, their locations should be specified.

VII. Laboratory Signage

In order to prevent accidents during experiments, information on safety control in laboratories must be displayed both in and outside the laboratories, and be easily identifiable by teaching staff and students alike, as required by law (Industrial Safety and Health Act, Ordinance on the Prevention of Organic Solvent Poisoning, Ordinance on the Prevention of Hazards due to Specified Chemical Substances, Ordinance on the Prevention of Ionizing Radiation Hazards, Ordinance on the Prevention of Oxygen Deficiency, etc.).

Please display the situation regarding safety control in and outside the laboratories in reference to the matters outlined below.

1. At laboratories considered as toxic working environments, “Authorized personnel only” signs should be displayed at the entrance.
2. At laboratories in which organic solvent is used, signs indicating organic solvent classification and precautions in the use of organic solvents, etc. should be displayed in appropriate locations.
3. At laboratories in which specified chemical substances are used, “Authorized personnel only. Under the Ordinance on the Prevention of Hazards due to Specified Chemical Substances” signs should be displayed at the entrance.
4. At laboratories in which equipment that emits ionizing radiation is expected to be used, applications should be made to the Research Cooperation Section and appropriate signs should be displayed in accordance with the Ordinance on the Prevention of Ionizing Radiation Hazards.
5. Refer to the “Hokkaido University Safety Control” website for more information on signage in Japanese.

*(Hokkaido University Safety Control URL: <http://www.hokudai.ac.jp/sisetu/anzenkanri2/hyoushiki.htm>)

安全標識



<p>一、有機溶剤の身体に及ぼす作用 (主注意)</p> <p>(一) 頭痛 (二) けん怠感 (三) めまい (四) 貧血 (五) 肝臓障害</p> <p>二、取扱上の注意事項</p>	<p>有機溶剤 作業主任者の職務</p> <p>1. 作業に従事する労働者が有機溶剤により汚染され、又はこれら吸入しないように、作業の方法を決定し、労働者に指導すること。</p> <p>2. 局所排気装置、フッシュブル型換気装置又は全体換気装置を一月を超えない期間ごとに点検すること。</p> <p>3. 保護具の使用状況を監視すること。</p> <p>4. タンクの内部において有機溶剤蒸気に労働者が曝露するときは、第26条各号に定める措置が講じられていることを確認すること。</p> <p>作業主任者 氏名 <input type="text"/></p>	<p>特定化学物質 作業主任者の職務</p> <p>1. 作業に従事する労働者が特定化学物質等により汚染され、又はこれらを吸入しないように、作業の方法を決定し、労働者に指導すること。</p> <p>2. 局所排気装置、除じん装置、排ガス処理装置、排液処理装置その他労働者が健康被害を受けることを予防するための措置を一月を超えない期間ごとに点検すること。</p> <p>3. 保護具の使用状況を監視すること。</p> <p>作業主任者 氏名 <input type="text"/></p>	<p>安全衛生推進者の職務</p> <p>イ、自然、設備等（安全装置、労働安全衛生法、労働安全衛生法、）の点検および使用状況の確認並びにこれら点検の結果に基づき必要な措置を講ずること。</p> <p>ロ、作業現場の巡回（作業現場巡回等）および作業現場の巡回状況についてその結果に基づき必要な措置を講ずること。</p> <p>ハ、労働安全衛生法第26条第1項第3号の規程に定めること。</p> <p>ニ、労働安全衛生法第26条第1項第4号の規程に定めること。</p> <p>ホ、労働安全衛生法第26条第1項第5号の規程に定めること。</p> <p>ヘ、労働安全衛生法第26条第1項第6号の規程に定めること。</p> <p>ト、労働安全衛生法第26条第1項第7号の規程に定めること。</p> <p>チ、労働安全衛生法第26条第1項第8号の規程に定めること。</p> <p>作業主任者 氏名 <input type="text"/></p>	<p>騒音 管理区分Ⅱ 耳栓着用</p> <p>騒音 管理区分Ⅲ 耳栓着用 イヤーマフ</p>	<p>特定化学物質取扱部屋 (特定化学物質等障害予防規則)</p> <p>関係者以外立入禁止 飲食・喫煙禁止</p>
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VIII. Fire Extinguishers and Measures against Power Failures

1. Fire extinguishers

Fire extinguishers are appropriately installed in the Research buildings of the Northern Campus Area. based on relevant laws. However, fire extinguishers should be independently installed in research laboratories where the research work conducted may cause serious consequences if a fire breaks out and there is no quick response.

Install carbon dioxide fire extinguishers or dry-chemical extinguishers according to the situation of each laboratory.

Table I-2-1 Types and properties of small fire extinguishers

Fire extinguisher	Suitable for	Discharge distance (m)	Discharge time (sec.)
Carbon dioxide	B, C	3	20
Dry-chemical	A, B, C	5	15
Foam	A, B	10	60

Fires for which extinguishers are suitable are classified as A, B and C, and extinguishers are marked with white (白), yellow (黄) and blue (青) circles, respectively.

- A: Fires involving general flammable materials such as wood and paper
- B: Fires involving flammable liquid such as petroleum
- C: Fires involving electric equipment

Indication of fires for which extinguisher is suitable



Aim at the burning object not the flame.

Keep a low posture to avoid being engulfed by the heat.



① Remove the safety pin.



② Turn the hose toward the origin of the fire.

③ Grip the lever firmly.

2. Measures against power failures

If a power failure occurs in the new CRIS Building, there are no emergency measures other than those for disaster-prevention equipment, and those in the clean room and animal experiment laboratory. If there is a possibility of a disaster occurring due to machines and devices cutting off at the time of power failure, it is up to each research laboratory to prepare its own shutdown procedures for machines and devices in the respective laboratories.

IX. Safety Activities by Those Responsible for Safety

The heads of each research division/project/field, etc. are designated as being responsible for safety in the laboratories of CRIS and other research buildings in the Northern Campus Area, providing safety education for researchers and students in their sections once a year in accordance with the university's safety control guidelines, as well as using the university's safety handbook. After the implementation of the safety education, those responsible for safety are requested to submit a note of confirmation regarding safety education to the safety supervisor (department head, etc.), and receive his/her approval that the safety education has been appropriately implemented.

For safety activities in individual fields, those responsible for safety must, in principle, hold a safety meeting once a month, and keep related records on file for at least one year.

The North Campus Safety Management Committee collects case examples presented at safety meetings held in each field and distributes them to those responsible for safety to encourage them to hold such meetings.

Case examples can be submitted four times a year (the end of June, September, December and March) to: The Facilities and Safety Section of the Northern Campus Area Joint Administration

Topics for discussion at safety meetings related to CRIS and other research buildings (North Campus)

- Holding of a study session for confirmation of AED locations and first-aid procedures
- Maintenance of mental and physical health and confirmation of sanitary conditions in research laboratories
- Edification and reconfirmation of compliance with road manners
- Reconfirmation of antitheft measures, understanding of current conditions and countermeasures
- Confirmation of safety controls and emergency contact network when faculty and students travel abroad for study
- Checking for near-miss incidents in the research laboratory
- Airing of notices from the Safety Management Committee regarding near-miss incidents
- Formulation and implementation of safety patrols in research laboratories, and examination of improvement methods
- Confirmation of situations regarding all-night experiments and the necessary application forms, and examination of their necessity
- Discussions regarding application forms for continuous operation of unmanned (all night) experiment equipment
- Confirmation of laws and regulations, and examination of measures concerning new experiments
- Creation of the research laboratory's independent measures against power failures, and emergency shutdown procedures

List of safety education videos owned by the university

1. Videos owned by the Northern Campus Area Joint Administration

1. Ohkyuteate no kihon ① (Basic first-aid treatment ①)
2. Ohkyuteate no kihon ② (Basic first-aid treatment ②)

Equipment for lending out

VCR	1
TV	1

Call the Facilities and Safety Section (extension: 9262/9277) to make a reservation

2. Videos owned by the Graduate School of Engineering

Central Library, Graduate School of Engineering (extension 6160)		Publisher, etc.	Time (min.)
1	Kasai, sonotoki anatawa (Fire, what will you do then?)	Toei Co., Ltd. Kyoiku jigyoubu	20
2	Jishinsaigai ni sonaete (Preparation for seismic disasters)	Toei Co., Ltd. Kyoiku jigyoubu	16
3	Gasu no jiko o fusegu (Prevention of gas accidents)	Toei Co., Ltd. Kyoiku jigyoubu	23
4	Shitteokitai ohkyuteate (First aid you need to know)	Toei Co., Ltd. Kyoiku jigyoubu	22
5	Yonjussai o koetara – karei to anzen (Over 40 – aging and safety)	Anzen Eisei Eizo Kenkyusho	17
6	Jikkengijutsu o migaku – yukigosei jikkensosa (Improve experimental techniques – manipulation of organic synthesis experiments)	Anzen Eisei Eizo Kenkyusho	17
7	VDT sagyo o tanoshiku – kokoro to karada o rifuresshu (Enjoyable VDT work – refresh your mind and body)	Anzen Eisei Eizo Kenkyusho	23
8	Kiken!! Yuki-yobai – bakuhatsu jikken to toriatsukaikata (Danger! Organic solvent – explosive experiments and handling)	Anzen Eisei Eizo Kenkyusho	17
9	Reza kosen niyoru shogai no yobo (Prevention of disabilities caused by laser beams)	PRC Co., Ltd.	30
10	Aku yosetsu no anzen (Safe arc welding)	PRC Co., Ltd.	22
11	Kanden no kiso-chishiki – sono kikensei to kyukyushochi (Basic knowledge of electric shocks – risks and first-aid treatment)	PRC Co., Ltd.	21
12	Tokushu zairyo gasu no kinkyu anzen taisaku (Emergency safety measures against special material gases)	Science Forum Co., Ltd.	
13	Jishin saigai taisaku to kikikanri shisutemu no jissai – Dai ikkan kinkyujitai ni do taosuruka (Measures against seismic disasters and the situation of the crisis-management system – Vol.1 How to deal with an emergency)	Nikkei	23
14	Jishin saigai taisaku to kikikanri shisutemu no jissai – Dai nikkan fukkyu katsudo o do susumeruka (Measures against seismic disasters and the situation of the crisis-management system – Vol. 2 How to proceed with restoration activities)	Nikkei	27
15	Heisei gonen Kushirooki jishin: Tokachigawa hisai repoto (The 1993 Kushiro-oki Earthquake: Tokachi River damage report)	Hokkaido River Disaster Prevention Research Center Foundation Sanshin Co., Ltd.	15

Central Library, Graduate School of Engineering (extension 6160)

The library lends videos to be returned within the same day. Call to confirm before borrowing, and return the video immediately after use.

3. Videos owned by the Facilities Conservation Division of the Facilities Department

Owned by the Personnel Division of the General Affairs Department (extension: 2396, 2397)		Publisher, etc.	Time (min.)
1	Hyuman era wa naze okoru – rironhen (Why do human errors occur? Theoretical version)	Japan Productivity Center for Socio-Economic Development	12
2	Hyuman era jiko o do fusegu – jissenhen (How can human-error accidents be prevented? Practical version)	Japan Productivity Center for Socio-Economic Development	14
3	Hyuman era o boshi surutameni (To prevent human error)	A.S.P Create Co., Ltd.	16
4	Anzen sakidori nouhau (zen yonkan) (Safety foresight know-how (4 volumes))	Anzen Eisei Eizo Kenkyusho	
	(1) Sakidori nouhau sanbon bashira – era jiko boshi no tameni (Three mainstays of foresight know-how – for preventing error accidents)		29
	(2) Tanjikan KY no nouhau – zerokasai no tameni (Know-how on short-term risk-prediction – for zero disasters)		29
	(3) Shisakosho no nouhau – kanzen sakidori no tameni (Know-how on pointing and calling – for perfect foresight)		29
	(4) Hiyari hatto kigakari no nouhau – zenin sanko no tameni (Know-how on sharing information on near-miss incidents – for full participation)		28
5	Saigai retto Nippon – Hanshin Awaji daishinsai kara (Disaster Island Japan – from the Great Hanshin-Awaji Earthquake)	Open University of Japan (special lecture)	
	(1) Hendotai toshite no Nippon (Japan as a mobile belt)		45
	(2) Hyogoken Nambu jishin o megutte (The Great Hanshin Earthquake)		45
	(3) Saigai to jukyo (Disasters and housing)		45
	(4) Saigai to shakaifukushi (Disasters and social welfare)		45
	(5) Saigai to komyuniti (Disasters and communities)		45
	(6) Daishinsai no kyokun (Lessons from the Great Earthquakes)		45
6	Kenko to sutoresu – sutoresu no jozuna taishoho (Health and stress – good handling of stress)	Japan Productivity Center for Socio-Economic Development	20
7	Kyukyu no teate shinpai soseiho (First-aid treatment cardiopulmonary resuscitation)	NHK	15
8	Eizu HIV kansensho (AIDS HIV infection)	Safety and Health Organization	20
9	Eizu to tomoni (Together with AIDS)		12
10	Dokubutsu gekibutsu no kanri (Poisonous and deleterious substance control)	A.S.P Create Co., Ltd.	15

Call the Safety Manager in the Facilities Conservation Division of the Facilities Department (extension 3904) to and inquire about availability before borrowing.

Useful websites providing safety information (mainly in Japanese)

○ Japan Advanced Information Center of Safety and Health

<http://www.jaish.gr.jp/menu.html>

○ Japan Industrial Safety & Health Association

http://www.jisha.or.jp/web_chk/index.html

○ JAF accident avoidance training

<http://www.jaf.or.jp/eco-safety/safety/danger/index.htm>

○ Driving characteristics test, measurement of risk-prediction ability

<http://www.sompo-japan.co.jp/knowledge/advice/index.html>

http://www.sompo-japan.co.jp/knowledge/advice/anzen_k/index.html

<http://www.sompo-japan.co.jp/traffic/traf045.html>

<https://www.sompo-japan.co.jp/fcommon/form/kyosoku001.asp>

○ Disaster & risk management website

<http://www.e-college.fdma.go.jp/>

Confirmation of safety education

Supervisor

Mr./Ms. _____

Category	Items implemented in safety education	
I. Common version	Safety improvement and the concept of disaster prevention	Emergency response (fire, earthquake)
	First-aid treatment for injuries and sudden illness	Fatigue and working conditions
	Safety in physical activities	Insurance/student insurance society
II. Specialized version	Safe use of electricity	Safe use of machinery and tools
	Safe work in conveyance and high places	Safe handling of gas
	Good use of chemicals	Prevention of biohazards
	Safe management and disposal of experimental waste	
III. Campus life version	Situation regarding accidents in campus life	Preventive measures against accidents in extracurricular activities
	Situation regarding traffic accidents and preventive measures	
IV. Rules relating to safety and health management	Hokkaido University safety and health management regulations	Guidelines for safety control
	Chemical substance voluntary management manual	Hokkaido University Safety and Health Committee regulations
V. Materials relating to safety management	Safety inspection checklist (for voluntary inspections)	Case examples of near-miss incidents
	List of educational videos relating to safety and health management	Safety manuals prepared by individual departments
	Ordinance on the Prevention of Organic Solvent Poisoning and the Ordinance on the Prevention of Hazards due to Specified Chemical Substances, as part of the Industrial Safety and Health Act	Description of hazardous materials under the Fire Service Act
	Handling of high-pressure gases	

Note) Mark completed “Safety Handbook” items with a circle.

Special notes

Date (mm/dd/yy)

Person in charge of safety education (person responsible for safety)

Affiliation: _____

Name: _____

Person completing the safety education

Affiliation: _____

Name: _____

Confirmation of safety education

Supervisor

Mr./Ms. _____

I. Common version						II. Specialized version							III. Campus life			IV. Regulations relating to safety/health management				V. Materials relating to safety control							Person(s) completing safety education	
																											This is to certify that the said person(s) has/have completed the safety education	
(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(1)	(2)	(3)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	Affiliation	Name

* Refer to an attached sheet for each item.
 This is to confirm that the above person(s) has(have) completed the safety education.

Date (mm/dd/yy)

Person responsible for safety
 Affiliation _____ Name _____ seal _____

Appendix

Items of safety education

Category	Items of safety education
I. Common version	(1) Safety improvement and the concept of disaster prevention
	(2) Emergency response (fire, earthquake)
	(3) First-aid treatment for injuries and sudden illness
	(4) Fatigue and working conditions
	(5) Safety in physical activities
	(6) Insurance/student insurance society
II. Specialized version	(1) Safe use of electricity
	(2) Safe use of machinery and tools
	(3) Safe work in conveyance and high places
	(4) Safe handling of gas
	(5) Good use of chemicals
	(6) Prevention of biohazards
	(7) Safe management and disposal of experimental waste
III. Campus life version	(1) Situation regarding accidents in campus life
	(2) Preventive measures against accidents in extracurricular activities
	(3) Situation of traffic accidents and preventive measures
IV. Rules relating to safety and health management	(1) Hokkaido University safety and health management regulations
	(2) Guidelines for safety control
	(3) Chemical substance voluntary management manual
	(4) Hokkaido University Safety and Health Committee regulation
V. Materials relating to safety control	(1) Safety inspection checklist (for voluntary inspections)
	(2) Case examples of near-miss incidents
	(3) List of educational videos relating to safety and health management
	(4) Safety manuals prepared by individual departments
	(5) Ordinance on the Prevention of Organic Solvent Poisoning and the Ordinance on the Prevention of the Hazards due to Specified Chemical Substances, as part of the Industrial Safety and Health Act
	(6) Description of hazardous materials under the Fire Service Act
	(7) Handling of high-pressure gases

X. Reports on Accidents and Near-Miss Incidents

One of the most important things after an accident is to prevent recurrence. To this end, it is necessary to understand the situation surrounding the accident objectively, analyze the physical and psychological causes, develop preventive measures, and share such information.

In order to prevent serious accidents, it is also necessary to analyze near-miss incidents that may have caused accidents, and take appropriate preventive measures.

If an accident (an accident causing injury or death, fire, explosion, water leakage, electric shock, etc.) occurs in the CRIS and associated buildings, please call the Facilities and Safety Section of the Northern Campus Area Joint Administration (9262/9277) regardless of the scale of the damage. Also, please submit the accident report form shown on the following page, directly or via e-mail, to the Facilities and Safety Section of the Northern Campus Area Joint Administration.

With regard to near-miss incidents, please fill out the near-miss report form shown on page 23, and submit it promptly, with a view to preventing recurrences of such incidents throughout the entire institute.

Submitted accident and near-miss incident reports shall be studied by the North Campus Safety Management Committee whenever necessary, and used in the improvement of safety at the institute. Once privacy of those involved in the incidents has been ensured, case examples covering the situations throughout the days of the incidents shall then be distributed each day to those responsible for safety, for use in safety meetings.

To the Facilities and Safety Section of the Northern Campus Area Joint Administration

Date (mm/dd/yy)

Name of person issuing report

Affiliation Tel. (Extn.)

Accident report

1. If an accident occurs, please call the Facilities and Safety Section of the Northern Campus Area Joint Administration (extension 9262/9277) immediately regardless of the scale of the damage, and then submit this report.
2. Please report near-miss incidents (those that have not resulted in actual accidents) using the separate near-miss incident report form.
3. In case of necessity of additional space, please attach a separate sheet.
4. If you have any questions, please contact the Facilities and Safety Section of the Northern Campus Area Joint Administration.

Date (m/d/y) and time of accident _____	
Location of occurrence (building/room) _____	
Name of victim _____	Age _____ Gender _____
Affiliation _____ Contact number _____	
Description of accident	
Damage caused	Image of accident (hand-drawn or photographic, to enable better understanding)
Response taken	

Near-miss incident report

Name of Department/division/section/laboratory

Overview

When	Date (m/d/y) & day of week	Time	a.m./p.m.
Where		What you were doing at that time	
Description of near-miss incident			

Causes

Problems related to the workplace/environment	Problems regarding facilities/equipment	Problems regarding work method	Problems that may have been your own

Lessons learned, measures

*Please circle the items that apply to you

- | |
|--|
| 1. Was not able to see (hear) |
| 2. Was not aware |
| 3. Had forgotten |
| 4. Did not know |
| 5. Did not think properly |
| 6. Thought it would be okay |
| 7. Was upset |
| 8. Had a bad experience |
| 9. Was tired |
| 10. Moved hands unconsciously |
| 11. Was inconvenient (difficult) to do |
| 12. Lost balance |

XI. Separation and Placing of Waste for Collection

At the waste collection sites of the CRIS and other research buildings, partitions are used to separate waste. Each research laboratory is requested to reconfirm and make known the following procedures for thorough waste separation.

Method of separation and placing of waste for collection

General waste: Kitchen garbage, cigarette butts, dirty tissues, etc.

Recyclable waste: Washed empty lunch boxes, disposable chopsticks, paper waste, packaging film, etc.

Non-burnable waste: Non-burnable waste other than industrial waste

Small-scale waste wood: Small wooden items, etc. (please contact the person responsible for supplies before disposing of wooden desks, chairs, etc.)

Polystyrene: Polystyrene and other extruded foam products

Recyclable cans, PET bottles: Cans and PET bottles may be disposed of together putting into the same bag.

Glass, bottles used for reagents, ceramic containers: Place such items in waste cardboard boxes or empty 18-liter cans for disposal, to prevent injuries.

Plastic: Plastic waste

Small-scale waste metal: Small metal items, etc. (please contact the person responsible for supplies before disposing of large equipment, refrigerators, microwave ovens, washing machines, TVs, etc.)

Used paper: Copy paper, newspaper, cardboard, magazines

Classification for waste separation (on campus)

Despite much of the general waste generated by the university being made up of recyclable resources such as waste paper, it is all incinerated.

Such waste copy paper and the like should be separated. General waste, recyclable waste and bottles/cans/PET bottles should also be separated to reduce the total amount of waste.

As of April 1, 2005

(1) General waste	(2) Recyclable waste	(3) Bottles/cans/PET bottles	(4) Non-burnable waste	(5) Used paper
<ul style="list-style-type: none"> Wet garbage (leftovers, used coffee grounds, used tea leaves, tea bags, etc.) Cigarette butts Lunch boxes, cup noodle containers, etc. (dirty ones containing leftovers) Cloth (towels, cotton work gloves, gauze, etc.) <p>4,095 yen/m²</p>	<ul style="list-style-type: none"> Paper waste, paper cups, paper plates Tissue paper (not wet or soiled) Disposable chopsticks Empty lunch boxes, cup noodle containers, etc. (rinsed) Plastic bags, etc. (including snack packets) <p>3,465 yen/m²</p>	<ul style="list-style-type: none"> Bottles (no need to remove caps) Cans (no need to remove ring-pulls) PET bottles (no need to remove caps) Food cans (18-liter cans, snack cans, etc.) Tinned food containers (rinsed) <p>493.50 yen/m²</p>	<ul style="list-style-type: none"> Scrap metal (including caps for plastic bottles) 1,522.50 yen/m² Glass waste 4,620 yen/m² Polystyrene 1,470 yen/m² Waste plastic 7,612.50 yen/m² A large number of PET bottle caps are classified as waste plastic 	<ul style="list-style-type: none"> Newspaper Magazines Cardboard Shredded paper (may be classified as recyclable waste) May not be accepted by some paper collectors Copy paper Wrapping paper Envelops
*Incinerated	*Waste-derived fuel (reused)	* Recycled		

 Leftovers (raw garbage)	 Waste paper	 Drink and food bottles (ok with caps)	 Scrap metal	 Newspaper	 Copy paper
 Cigarette butts	 Disposable chopsticks	 Drink cans (ok with caps or ring-pulls)	 Waste glass	 Magazines	 Wrapping paper
 Lunch boxes, etc. (dirty ones containing leftovers)	 Lunch boxes, etc. (rinsed)	 PET bottles (ok with caps)	 Styrene foam	 Cardboard	 Envelops
 Cloth such as rags, cotton work gloves, etc.	 Plastic bags, polythene bags	 Food tins (ok with lids)	 Waste plastic	 Shredded paper	*If these cannot be disposed as used paper, they are classified as recyclable waste

Waste separation model



Separation



古紙
Used paper
Copy paper, newspaper, wrapping paper, envelopes, shredded paper, etc.
(Complete separation raises the value of waste)



資源化ごみ
Recyclable waste
Rinsed empty lunch boxes, disposable chopsticks, waste paper, wrapping film, etc., a small amount of waste vinyl
3,465 yen/m³



**びん・缶
ペットボトル**
Bottles, cans, PET bottles
No need to remove caps or ring-pulls
493.5 yen/m³



一般ごみ
General waste
Kitchen garbage, small sachets soiled with sauce, etc., cigarette butts, soiled tissues, etc.
4,095 yen/m³

Appendix

Detailed description of waste (as applies under contract)

Type	Content	Major items
Scrap metal	General metal products	<ul style="list-style-type: none"> • Cabinets (other than fire-resistant safes) • Steel lockers • Steel racks and similar products • Steel desks • Bicycles, etc. • 18-liter cans (empty cans other than food cans)
	Other scrap metal	<ul style="list-style-type: none"> • Steel, etc. • Metal fragments • Swarf, etc.
Waste plastic	Synthetic resin scraps	<ul style="list-style-type: none"> • Plastic utensils • Infusion sets (other than infectious ones) • Bed mats • Plastic containers • Other plastic products
	Polystyrene	<ul style="list-style-type: none"> • Polystyrene and other extruded foam products
Waste glass and ceramic	Waste glass	<ul style="list-style-type: none"> • Plate glass • Fluorescent tubes (without cardboard case) • Electric bulbs and similar products • Experiment apparatus (flasks, test tubes, etc.) • Other glass products
	Waste ceramic	<ul style="list-style-type: none"> • Ceramic containers, etc • Bricks, etc. • Scrap plaster (from casts, etc.)
Combined waste		<ul style="list-style-type: none"> • Items consisting of a combination of the above contents • Electronic products other than items (note 1) that are subject to the Act for Recycling of Specified Home Appliances • Office automation equipment other than items (note 2) that are subject to the Act on the Promotion of Effective Utilization of Resources

(Note 1) Items subject to the Act for Recycling of Specified Home Appliances

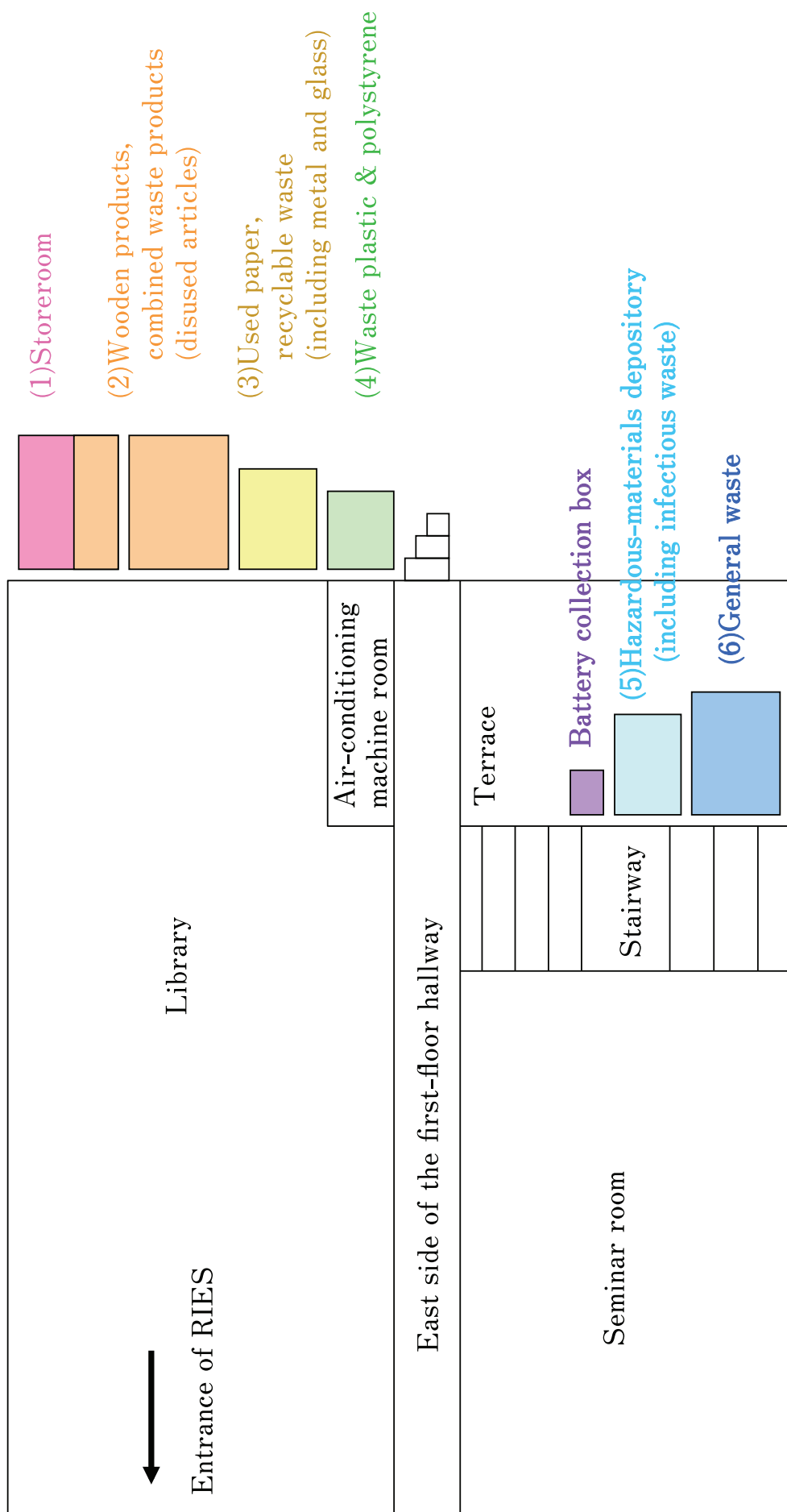
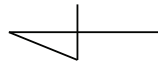
- (1) Unit-type air conditioners
- (2) TV receivers (CRT)
- (3) Electric refrigerators
- (4) Electric washing machines

(Note 2) Items subject to the Act on the Promotion of Effective Utilization of Resources

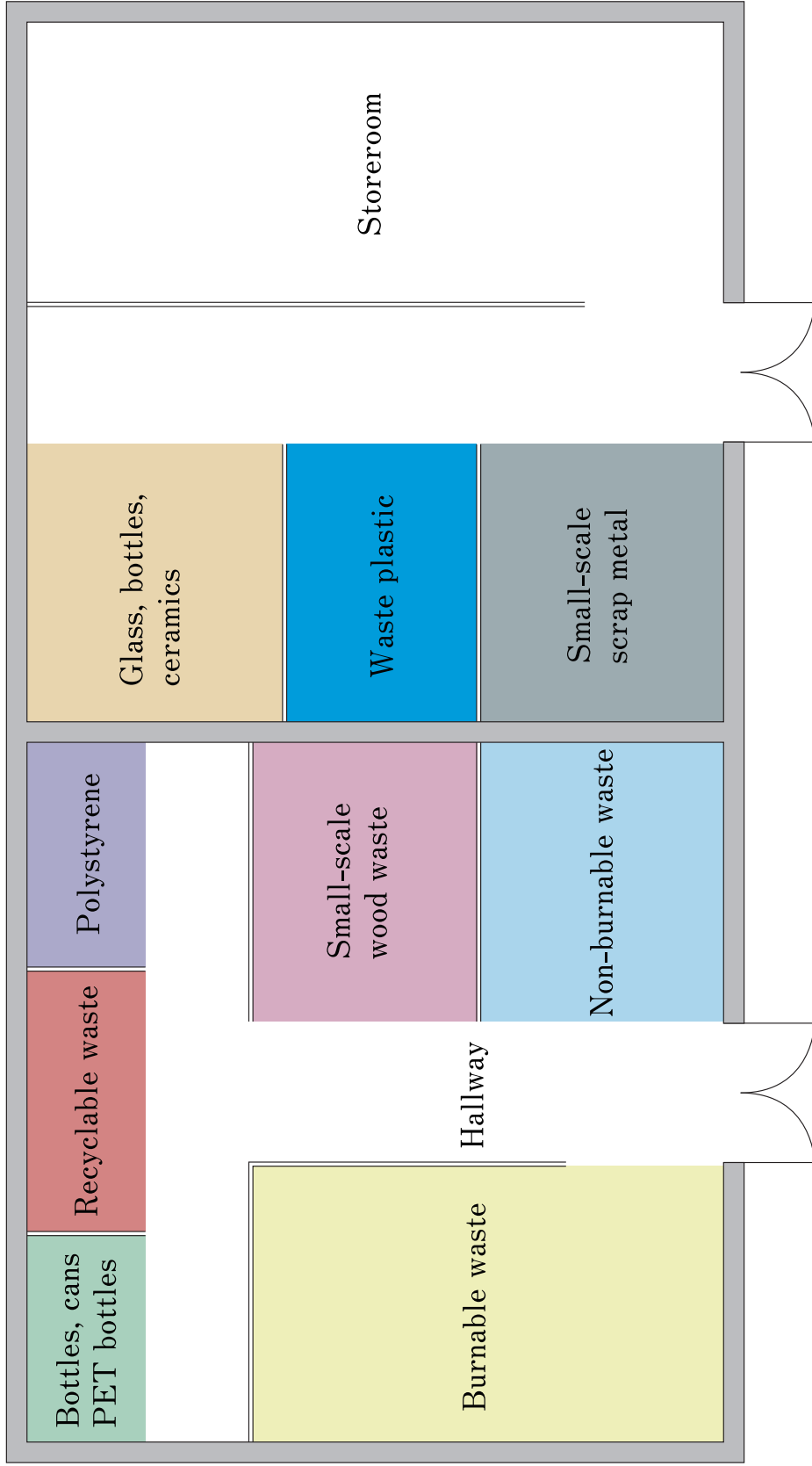
- (1) Personal computers
- (2) Small secondary cells, equipment using small secondary cells

☆ **For disposal of fixtures, domestic appliances and office automation equipment, please contact the Facilities and Safety Section (extension 9267) to confirm disposal methods.**

New RIES building (Northern Campus)



CRIS building waste collection site



XII. Implementation of Safety Patrols

After meetings have ended, the Safety Management Committee conducts safety patrols based on check items established, in order to ensure the safety of laboratories in the CRIS and relevant buildings.

Check items

Width of evacuation routes and ease of exit, measures to prevent shelves and the like from falling over, etc., safety of prefabricated temperature-controlled rooms, etc., emergency medical supplies, protective equipment, electrical cords running in passageways, earthing wires/terminals, measures to prevent chemicals from falling, measures to prevent gas cylinders and chemical racks from falling over, amount of dangerous chemicals stored, security of storage of poisonous and harmful substances, handling of infectious substances

Safety patrol checklist

Date of patrol (m/d/y):

Room name

Check items	Yes	No	Not applicable
Is an emergency contact list displayed near the entrance/exit?			
Is laboratory signage displayed appropriately?			
For prompt evacuation in times of emergency, are evacuation routes kept tidy and uncluttered? Are exits clear?			
Have appropriate measures been taken to prevent lockers, racks and other items from falling over?			
Is safety ensured in closed-environment laboratories such as low-temperature rooms and darkrooms?			
Are emergency medical supplies always on hand?			
Is protective equipment (gloves, eyewear, masks, clothing, shoes, gas masks, etc.) appropriate for the work carried out?			
Is protective equipment readily available?			
Are protective shields (pressurized vessel, hazardous chemical, saw, laser, radiation, ultraviolet, etc.) set appropriately?			
Are there any cords running in the passageways?			
Is electrical equipment earthed appropriately?			
Are gas cylinders secured to the walls, desks, etc. to prevent them from falling?			
Have appropriate measures been taken to prevent of chemical racks and containers from falling over at times of earthquakes, etc.?			
Are dangerous chemicals and poisonous or harmful substances stored so as not to exceed approved amounts?			
Are poisonous and harmful substances stored in a locked depository and managed appropriately?			
Is infection-preventing equipment installed appropriately?			
Is infectious waste handled appropriately?			
Is an application for continuous operation of unmanned (all night) experiment equipment displayed?			
Are emergency showers ready for immediate use?			

XIII. Security of the Central Monitoring Room

In order to ensure the safety control in the CRIS and relevant buildings, as well as dealing with emergencies, the Central Monitoring Room is also responsible for the activities outlined below. Your understanding and cooperation are appreciated.

If you have any questions, please contact the Facilities and Safety Section (extension: 9262/9267).

1. Security hours

5 a.m. – 11 p.m.

*Security guards are stationed at the entrance halls of the CRIS Building between 8 a.m. and 6 p.m.

2. Security guards' nap period

11 p.m. – 5 a.m.

3. Lock & key control

Other than emergencies 5 a.m. – 11 p.m.

At times of emergency Anytime

*Please state your new room number when borrowing keys.

4. Details of security guards' duties

- (1) Remain in the Central Monitoring Room and monitor the people entering and leaving the buildings. However, between 8 a.m. and 6 p.m., guards are stationed in the entrance hall to ensure that those other than staff and students of the university sign the visitors' register.
- (2) Conduct patrols three times a day (8 p.m., 10:30 p.m. and 6:30 a.m.) as shown in the "patrol route map" on a separate sheet. However, these times may be changed when necessary.
- (3) Security guards are, in principle, forbidden from entering any of the laboratories except in an emergency.
- (4) Store keys, hand them out to and collect them back from teaching staff and the like, and record any such transactions in a register.
- (5) Respond accordingly to inquiries and provide visitors with the directions or support they require.
- (6) Ensure the safety of electricity, gas, water and other facilities during routine patrols, keep a lookout for fire, inspect the situation of buildings and related structures, check the locks on windows and watch out for suspicious behavior.
- (7) Monitor and respond to situations using the alarm system in the Central Monitoring Room, and in the event of an emergency, deal with the situation based on the procedures stated in the manual.
- (8) In case of fire, attempt to extinguish them in their initial stages, and inform the related authorities immediately in the case of such fires or other emergencies.
- (9) Carry out daily checks for abnormalities regarding machinery and equipment (helium-recovery units, etc.).
- (10) Remove snow around the entrances, accordingly.
- (11) Bring lost and found items to the Northern Campus Area Joint Administration.

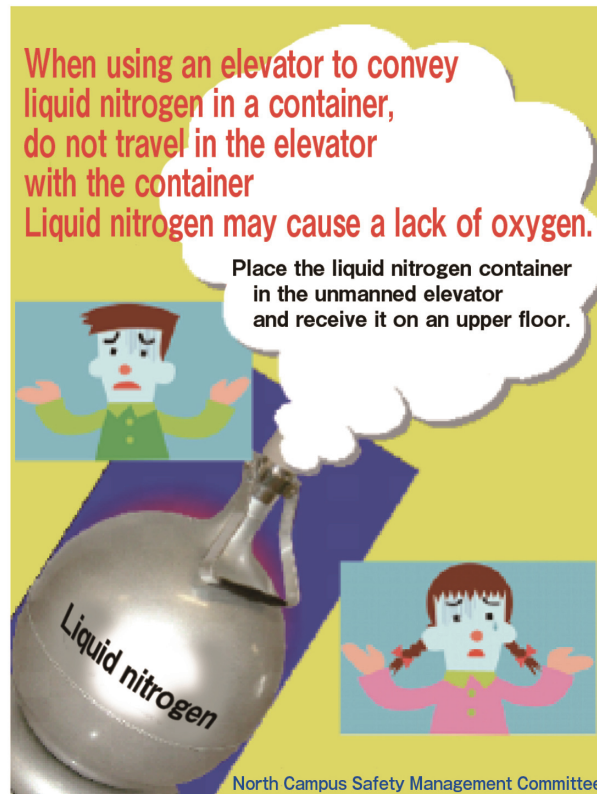
XIV. Conveyance of Liquid Nitrogen

When using an elevator to convey liquid nitrogen refills for use in laboratories, etc., the following items should be strictly obeyed to prevent accidents related to lack of oxygen in the elevator.

1. When using an elevator to convey liquid nitrogen in a container, do not travel in the elevator with the container; send the container on its own. When doing so, secure the container so that it will not fall over, and operate the elevator carefully.
2. When using an elevator to convey liquid nitrogen, always do so in groups of two or more people.
3. Attach a “LIQUID NITROGEN IN TRANSIT. DO NOT ENTER” sign to the container to warn people who may try to enter the elevator on other floors.



Poster displayed in the elevator



- ☆ **When refilling a container with liquid nitrogen, be sure to do so with the door open.**

XV. Periodic Voluntary Inspections of Local Ventilation Devices (Draft Chambers / Fume Hoods)

Article 45 of the Industrial Safety and Health Act stipulates the implementation of an annual voluntary inspection for local ventilation devices.

In the CRIS building, users are requested to conduct a voluntary inspection once a year and keep the checklist on file for at least three years.

☆ **An anemometer for use in the inspection can be borrowed from the Facilities and Safety Section.**

☆ **Use of local ventilation devices (fume hoods, etc.)**

(1) Use of local ventilation devices (Article 5 of the Ordinance on the Prevention of Organic Solvent Poisoning)

When Grade 1 or Grade 2 organic solvents are used, operations shall be performed using a local ventilation device, etc.

(2) Periodic voluntary inspection of local ventilation devices, etc. (Articles 20 and 21 of the Ordinance on the Prevention of Organic Solvent Poisoning)

Local ventilation devices shall be inspected at least once a year, and the results of such inspections filed for at least three years. The inspection shall be conducted based on the checklists.

Checklist for local ventilation devices (fume hoods)

Name of department		Name of building, floor		Name of laboratory		Inspection date	
Manufacturer		Model number		Scrubber	With / without	Dry / wet	Inspector
Target substances		Contents of inspection		Criteria		Results	
Fume hood	Hood (inside/outside the draft)	State of face velocity	Smoke tester	Inspection method		Remedies, etc	
		1. State of face velocity <ul style="list-style-type: none"> · Position the sash at the lower limit of the stopper. · Perform a smoke test at three or more points including both ends and the center. · Generate smoke directly below the sash. · Calculate the velocity by dividing the flow distance of smoke generated by time. 	Visual	Visual	<ul style="list-style-type: none"> · Face velocity: V (m/sec) · Flow distance of smoke: L (m) · Time: t (sec) · Formula: $V (m/sec) = L (m)/t (sec)$ · Organic solvents: 0.4 m/sec, specific substances: 0.5 m/sec., minimum 		
		2. State of appearance	Visual	Visual	<ul style="list-style-type: none"> · No abrasion, corrosion, dents and/or other damage that could impair the air-suction function · No damage to paint, etc. that may cause corrosion 		
		3. State of work surface	Visual	Visual	<ul style="list-style-type: none"> · No unnecessary chemicals, equipment, etc. 		
		4. Obstructions round the opening	Visual	Visual	<ul style="list-style-type: none"> · No obstructions 		
		5. State of sash movement	Operation	Operation	<ul style="list-style-type: none"> · Movement requires minimal strength 		
		6. State of sash stopper	Visual	Visual	<ul style="list-style-type: none"> · No failures, etc. 		
		7. State of outlet, etc	Visual	Visual	<ul style="list-style-type: none"> · No corrosion, damage, etc. 		
		8. State of operation display	Visual	Visual	<ul style="list-style-type: none"> · Proper lighting of display lamps 		
	Built-in scrubber	9. State of wet scrubber <ul style="list-style-type: none"> Recycle tank Cleaning tank Shower spray Plumbing 	Visual	Visual	<ul style="list-style-type: none"> · Normal water levels and clean washing liquid · Normal spray conditions · No damage that may cause water leakage 		
		10. State of dry scrubber	Visual	Visual	<ul style="list-style-type: none"> · No clogging, etc. · Normal differential pressure (if there is a differential pressure gauge) 		
	Duct	11. (When visual inspection is possible), state of abrasion, corrosion, dents, tightness of connections, etc	Visual	Visual	<ul style="list-style-type: none"> · No abrasion, corrosion, dents or loose connection 		
	Fan	12. State of fan belt operation	Visual, noise inspections	Visual, noise inspections	<ul style="list-style-type: none"> · No extreme abrasion and/or cuts · No abnormal noises during operation 		
	Separate scrubber	13. State of wet scrubber <ul style="list-style-type: none"> Recycle tank Cleaning tank Shower spray Plumbing 	Visual	Visual	<ul style="list-style-type: none"> · Normal water levels and clean washing liquid · Normal spray conditions · No damage that may cause water leakage 		
		14. State of dry scrubber	Visual	Visual	<ul style="list-style-type: none"> · No clogging, etc. · Normal differential pressure (if there is a differential pressure gauge) 		

Entry method in the "results" column: ○ good; △ improved on site; x improvement needed; - not applicable

Checklist for local ventilation devices (fume hoods) (example)

Name of department	Graduate School of Engineering, Faculty of Engineering		Name of building, floor	Mechanical Engineering 2F		Name of laboratory	T-209 Optical Measurement		Inspection date	(m/d/y) January 17, 2005	
Manufacturer	Oshima Kogyo Co., Ltd.		Model number	JP - 180 SZ		Scrubber	Wet		Inspector	*****	
Target substances	Organic solvents: Acetone, chloroform, ethyl acetate, etc.		Inspection method		Specific chemical substances: Benzene, acrylamide		Criteria		Remedies, etc		
Fume hood (inside/outside the draft)	Contents of inspection		Smoke tester		Face velocity: V (m/sec) Flow distance of smoke: L (m) Time: t (sec) Formula: $V (m/sec) = L (m)/t (sec)$ Organic solvents: 0.4 m/sec, specific substances: 0.5 m/sec, minimum		Results		0.66 m ÷ 1.1 sec = 0.60 m/s 0.66 m ÷ 1.2 sec = 0.55 m/s 0.66 m ÷ 1.0 sec = 0.66 m/s (0.60 + 0.55 ÷ 0.66) ÷ 3 = 0.6 m/s		
	1.	State of face velocity	Position the sash at the lower limit of the stopper.								
			Perform a smoke test at three or more points including both ends and the center.								
			Generate smoke directly below the sash.								
			Calculate the velocity by dividing the flow distance of smoke generated by time.								
	2.	State of appearance		Visual	No abrasion, corrosion, dents and/or other damage that could impair the air-suction function						
	3.	State of work surface		Visual	No damages in paint, etc. that may cause corrosion						
	4.	Obstructions around the opening		Visual	No unnecessary chemicals, equipment, etc.					Cardboard boxes temporarily placed in front were cleared away.	
	5.	State of sash movement		Operation	Movement requires minimal strength						
	6.	State of sash stopper		Visual	No failures, etc.						
7.	State of outlet, etc		Visual	No corrosion, damage, etc.							
8.	State of operation display		Visual	Proper lighting of display lamps							
Built-in scrubber	9.	State of wet scrubber	Recycle tank Cleaning tank Shower spray Plumbing	Visual	Normal water levels and clean washing liquid Normal spray conditions No damage that may cause water leakage						
	10.	State of dry scrubber	Filter	Visual	No clogging, etc. Normal differential pressure (if there is a differential pressure gauge)						
Duct	11.	(When visual inspection is possible), state of abrasion, corrosion, dents, tightness of connections, etc.		Visual	No abrasion, corrosion, dents or loose connections						
Fan	12.	State of fan belt operation		Visual, noise inspections	No extreme abrasion and/or cuts No abnormal noises during operation						
Separate scrubber	13.	State of wet scrubber	Recycle tank Cleaning tank Shower spray Plumbing	Visual	Normal water levels and clean washing liquid Normal spray conditions No damage that may cause water leakage						
	14.	State of dry scrubber	Filter	Visual	No clogging, etc. Normal differential pressure (if there is a differential pressure gauge)						

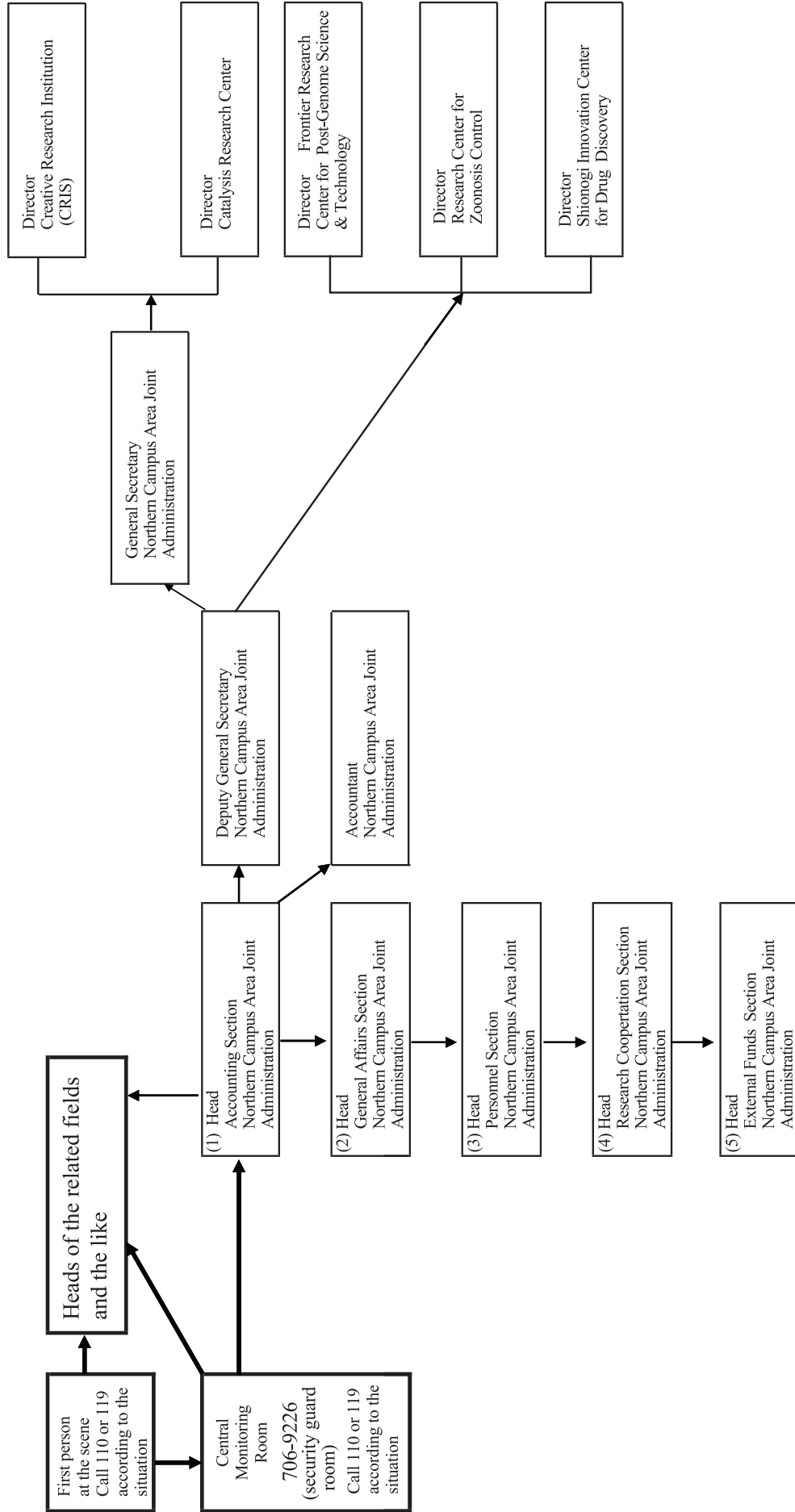
Entry method in the "results" column: ○ good; △ improved on site; x improvement needed; - not applicable

Checklist for local ventilation devices (fume hoods) – entry tips

Category	Contents of inspection	Inspection tips	Criteria			
Fume hood	1. State of face velocity	(1) Position the sash opening at the height of the lower limit stopper (the desirable position is between 30 and 35 cm above the work surface).	Good <input type="radio"/> if the velocity obtained from the calculation is at least 0.4 m/s when organic solvents are used, and at least 0.5 m/s when specific chemical substances are used			
		(2) Measure the depth of the hood (the length from the opening directly below the sash to the back face of the hood).				
		(3) Check how smoke flows using a smoke tester (confirm that smoke is certainly sucked into the back of the hood).				
		(4) Measure the time it takes for smoke to reach the back of the hood from the opening (measure the time at three or more points including both ends and the center of the opening).				
		(5) Calculate face velocity from the depth and time measured, using the formula (calculate the average value from velocities measured at three points and write the figure in the results column).				
		2. State of in appearance		(1) Visually check the exterior and interior surfaces of the fume hood (check for abrasion flaws, corrosion, dents and other damage as well as condition of paintwork).	Good <input type="radio"/> if there are no scratches, corrosion and/or dents	
				(1) Visually check the condition of the work surface (check for unnecessary chemicals, containers and equipment that may hinder suction during experiments).	Good <input type="radio"/> if there are no scratches, corrosion and/or dents	
				(1) Visually check the condition of the opening and its surroundings (check for obstructions that may hinder suction).	Good <input type="radio"/> if there are no obstructions	
				(1) Visually check the condition of the sash functions (check up and down movement and for damage).	Good <input type="radio"/> if movement requires minimal strength and there are no failures	
				(1) Visually check the conditions of the outlet and operation display (check for corrosion, damage and normal lighting of the display lamps).	Good <input type="radio"/> if there is no corrosion and/or damage, and the lamps light normally	
				3. State of wet scrubber	(1) Visually check the condition of the recycle and cleaning tanks (check the water levels and drain the washing liquid into a container to check for contamination).	Good <input type="radio"/> if washing liquid is clean and levels and amounts are normal, and if there are no corroded pipes and/or leakages
					(2) Visually check the spray conditions of the cleaning tank shower (check the water levels and condition of shower spray)	
					(3) Visually check the condition of the plumbing for recycling washing liquid (check for leakages and causes such as damage and corrosion).	
				4. State of dry scrubber	(1) Visually check the condition of the filter (check for clogging, and confirm the accuracy of differential pressure values if there is a differential pressure gauge).	Good <input type="radio"/> if there is no clogging
X. Visually check the condition of the exterior surface of the duct (check for abrasion, corrosion and/or loose connections that may hinder air flow).	Good <input type="radio"/> if there is no abrasion, corrosion, dents or loose connections					
5. State of fan belt operation	Carry out visual and noise checks on the condition of the fan belt (within the possible range of visual inspections) (check for abrasion and cuts as well as abnormal sounds during operation)		Good <input type="radio"/> if there is no abrasion, and no cuts and/or abnormal sounds			
	The same as those for "9. State of wet scrubber"					
6. State of dry scrubber	The same as those for "10. State of dry scrubber"					

Entry method in the "results" column: good; improved on site; x improvement needed; - not applicable

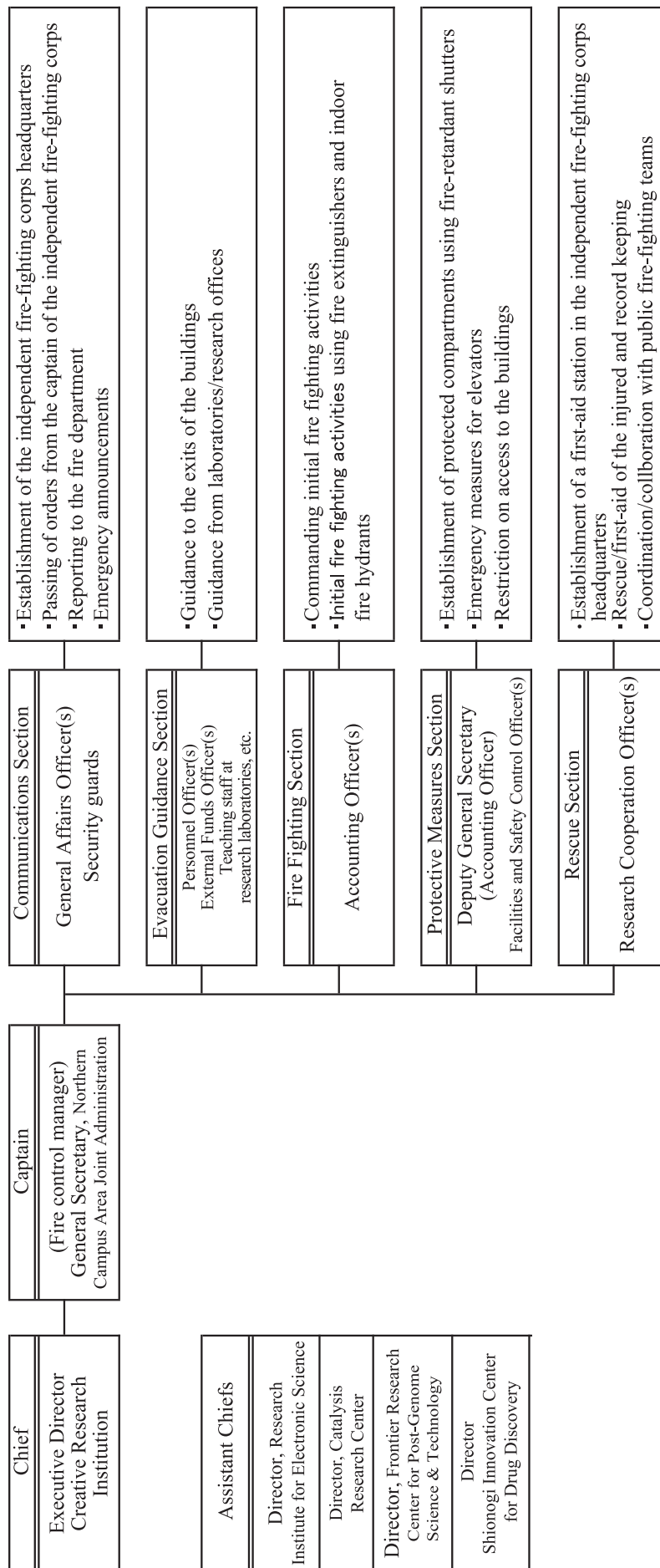
Emergency call network at night or on Sundays/national holidays (as of February 1, 2011)
 (CRIS Building and Post-Genome Research Building)



The central monitoring room should call (1) first, but if (1) is unavailable, calls should be made in order of (2) to (5), each of which are then responsible for contacting the following person on the list.

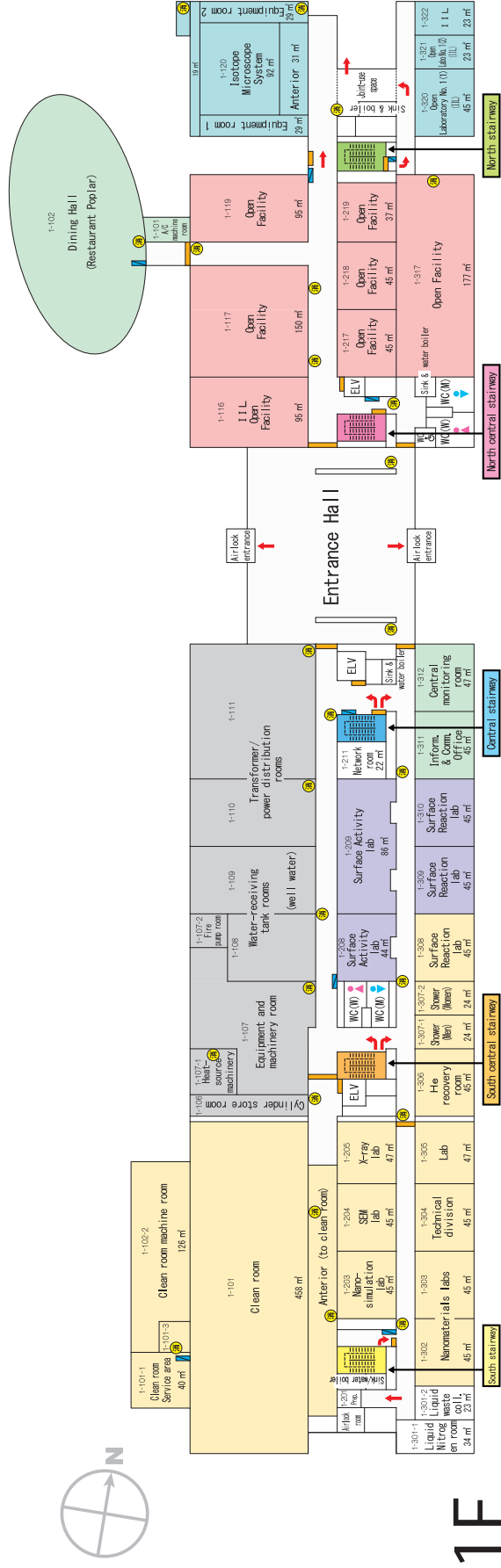
Independent fire-fighting corps in the Northern Campus Area

(CRIS Building, Post-Genome Research Building and others)



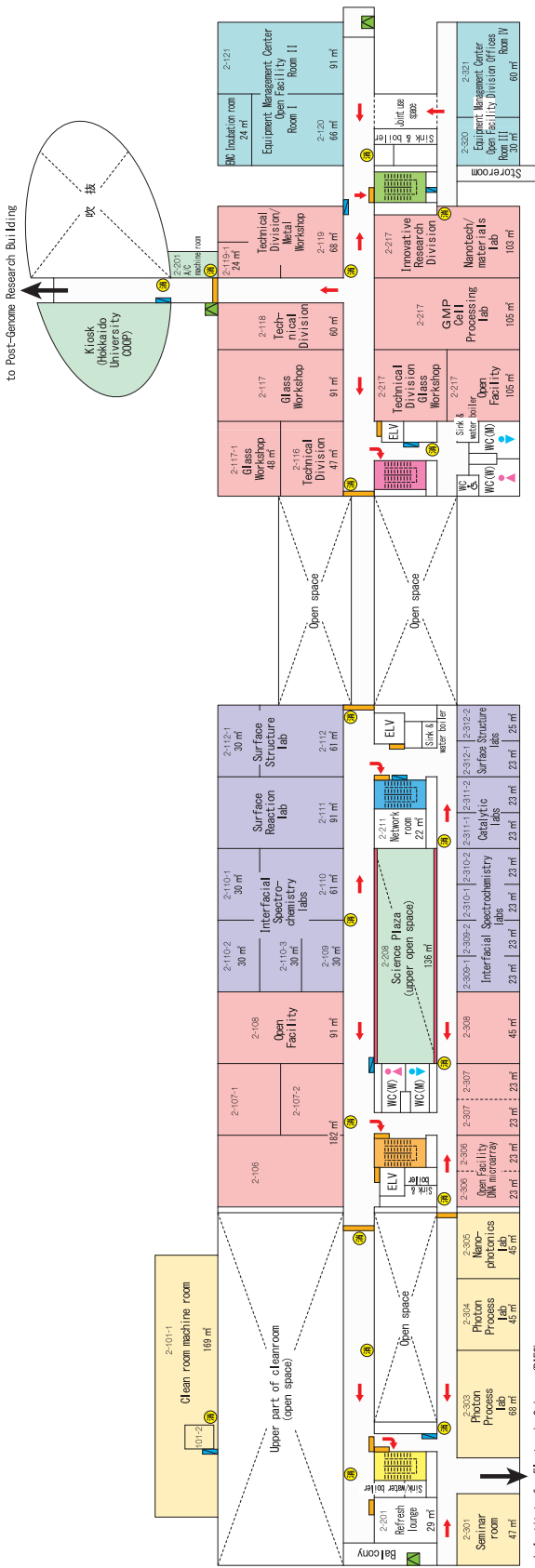
Updated: 2011/1

創成科学研究棟 CRIS Building (Floor plans and evacuation routes)



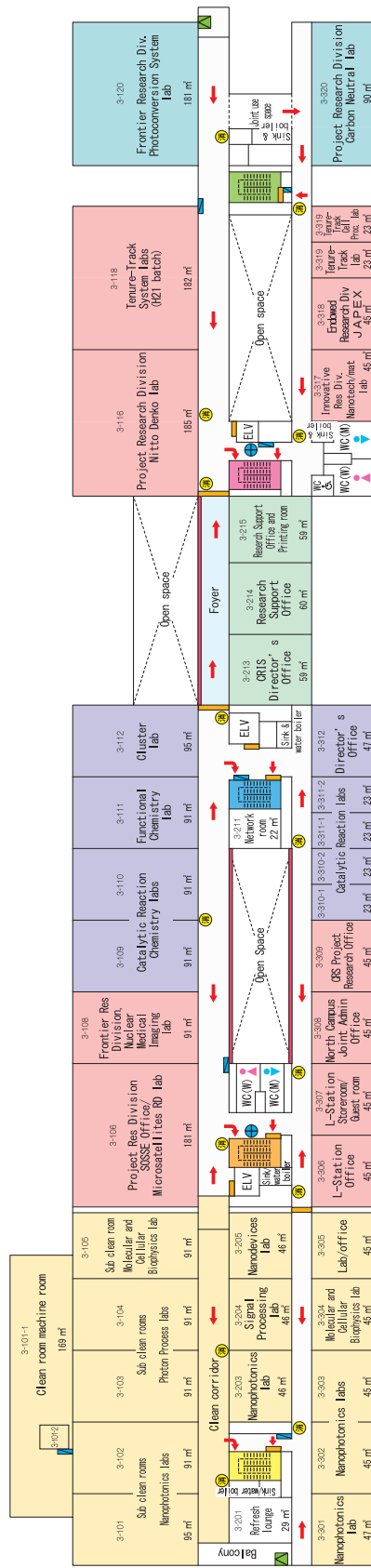
1F

<ul style="list-style-type: none"> Emergency ladder Fire hydrant Dry-chemical extinguisher 	<ul style="list-style-type: none"> Water intake (by firefighters) 	<ul style="list-style-type: none"> Fire-proof door Fire retardant shutter Evacuation route 	<ul style="list-style-type: none"> Creative Research Institution (CRIS) CRIS Extension Building Nanotechnology Research Center (affiliated to Research Institute for Electronic Science) 	<ul style="list-style-type: none"> Catalysis Research Center (CRC) Joint Use Space Facilities/Machinery rooms
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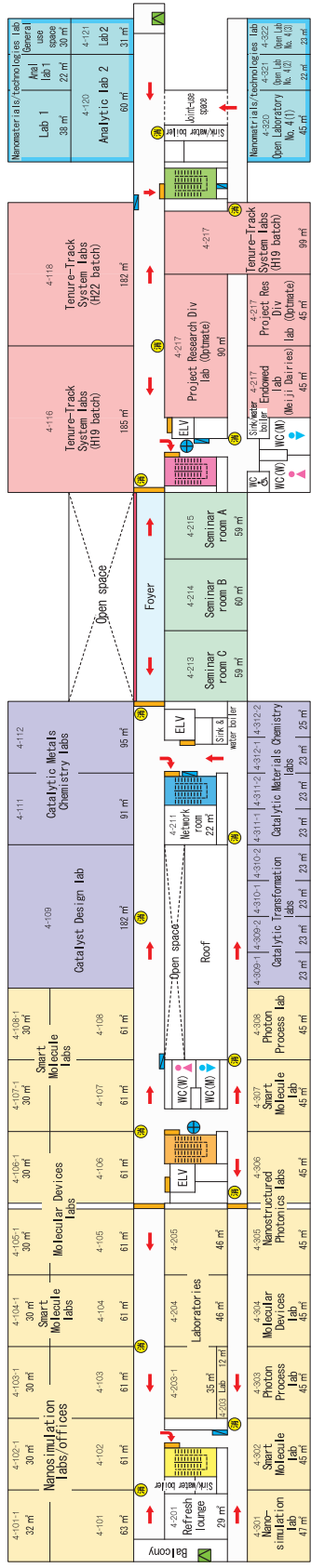
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to Research Institute for Electronic Science (RIES)

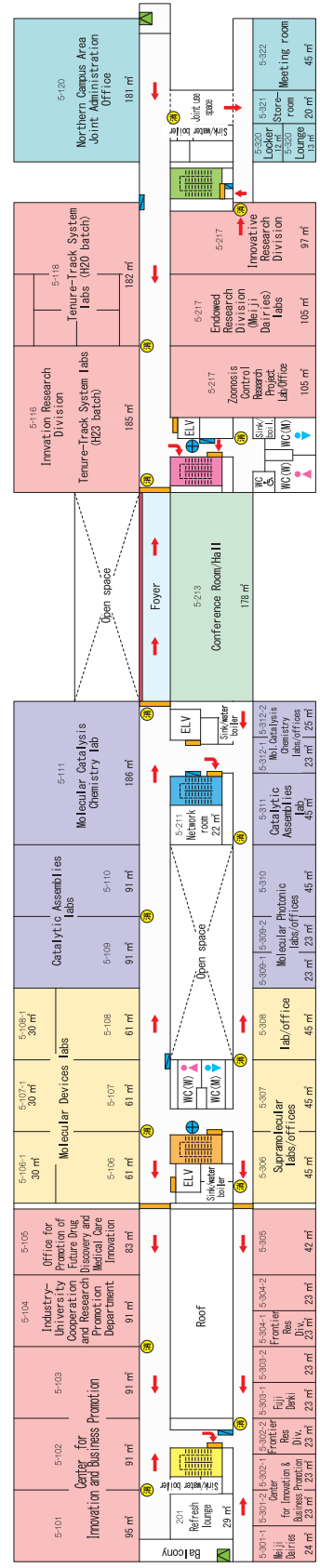


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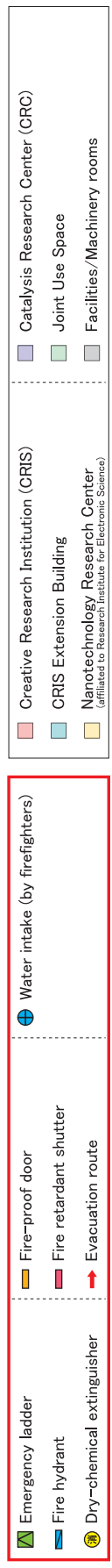
- Emergency ladder
- Fire hydrant
- Dry-chemical extinguisher
- Fire-proof door
- Fire retardant shutter
- Evacuation route
- Creative Research Institute (CRIS)
- CRIS Extension Building
- Nanotechnology Research Center (affiliated to Research Institute for Electronic Science)
- Catalysis Research Center (CRC)
- Joint Use Space
- Facilities/Machinery rooms
- Water intake (by firefighters)



4F

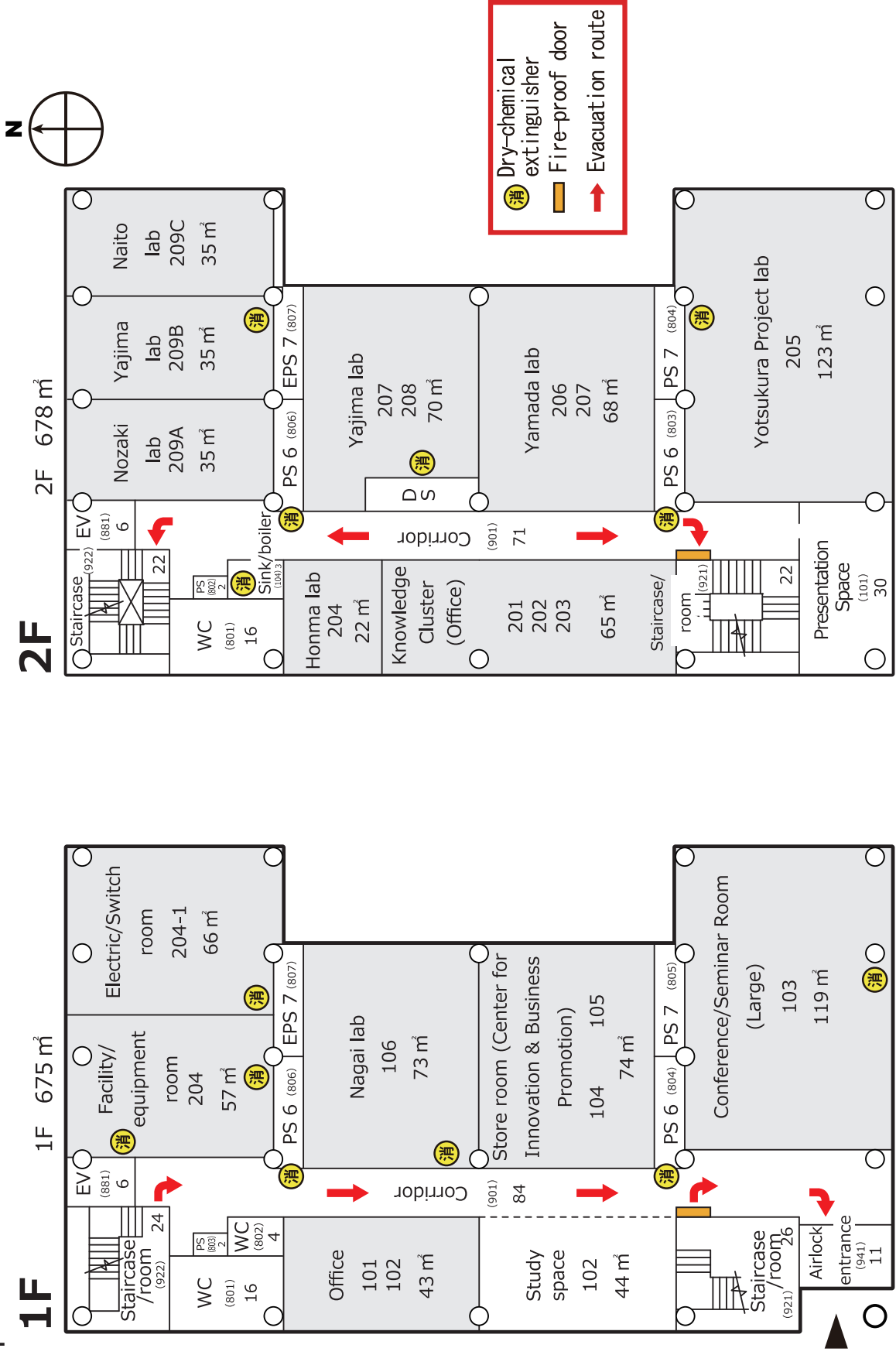


5F



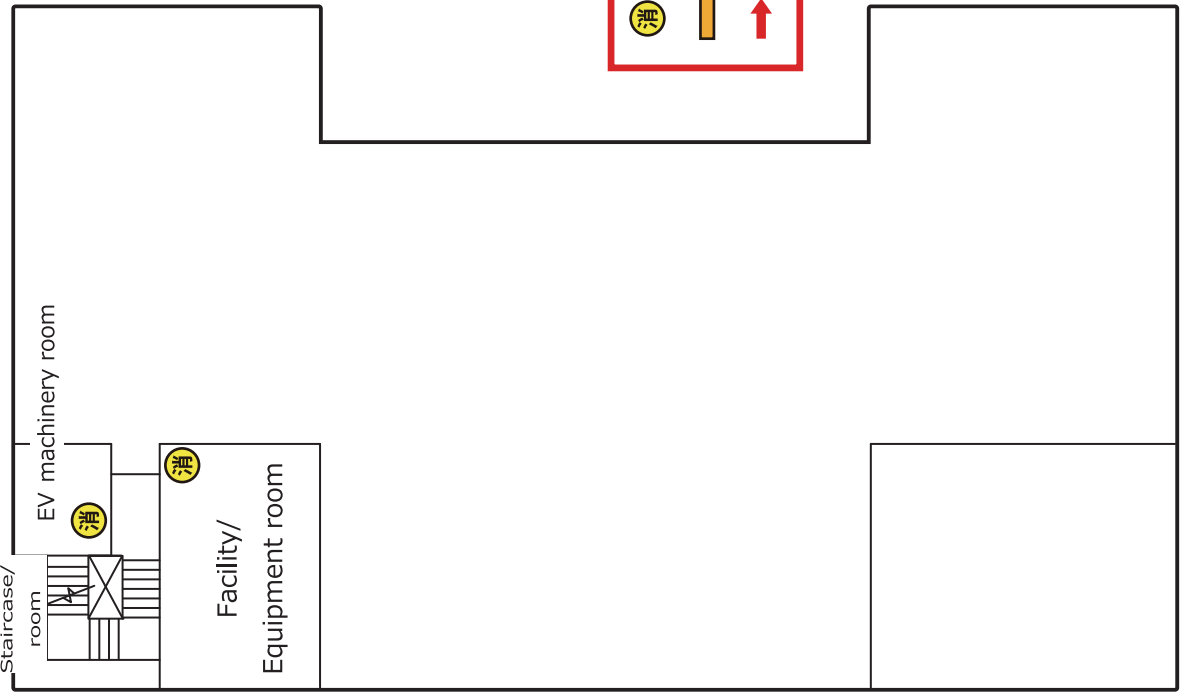
Floor plans and evacuation routes

Updated: 2011/2

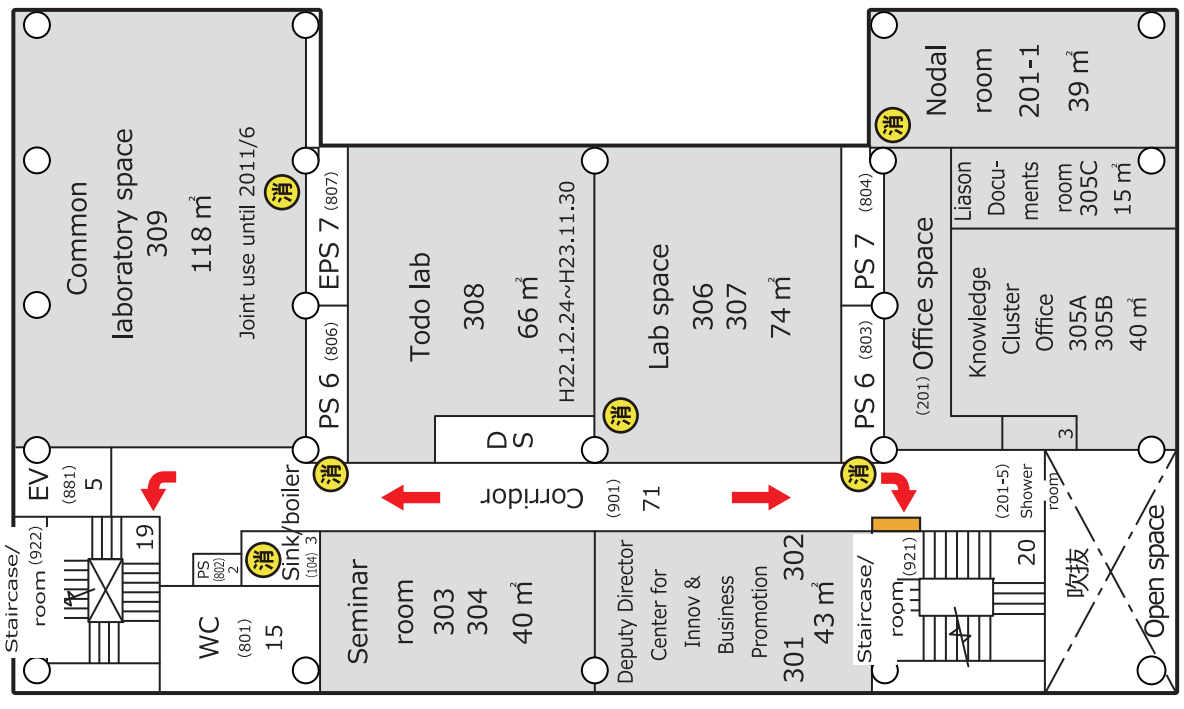




Roof F



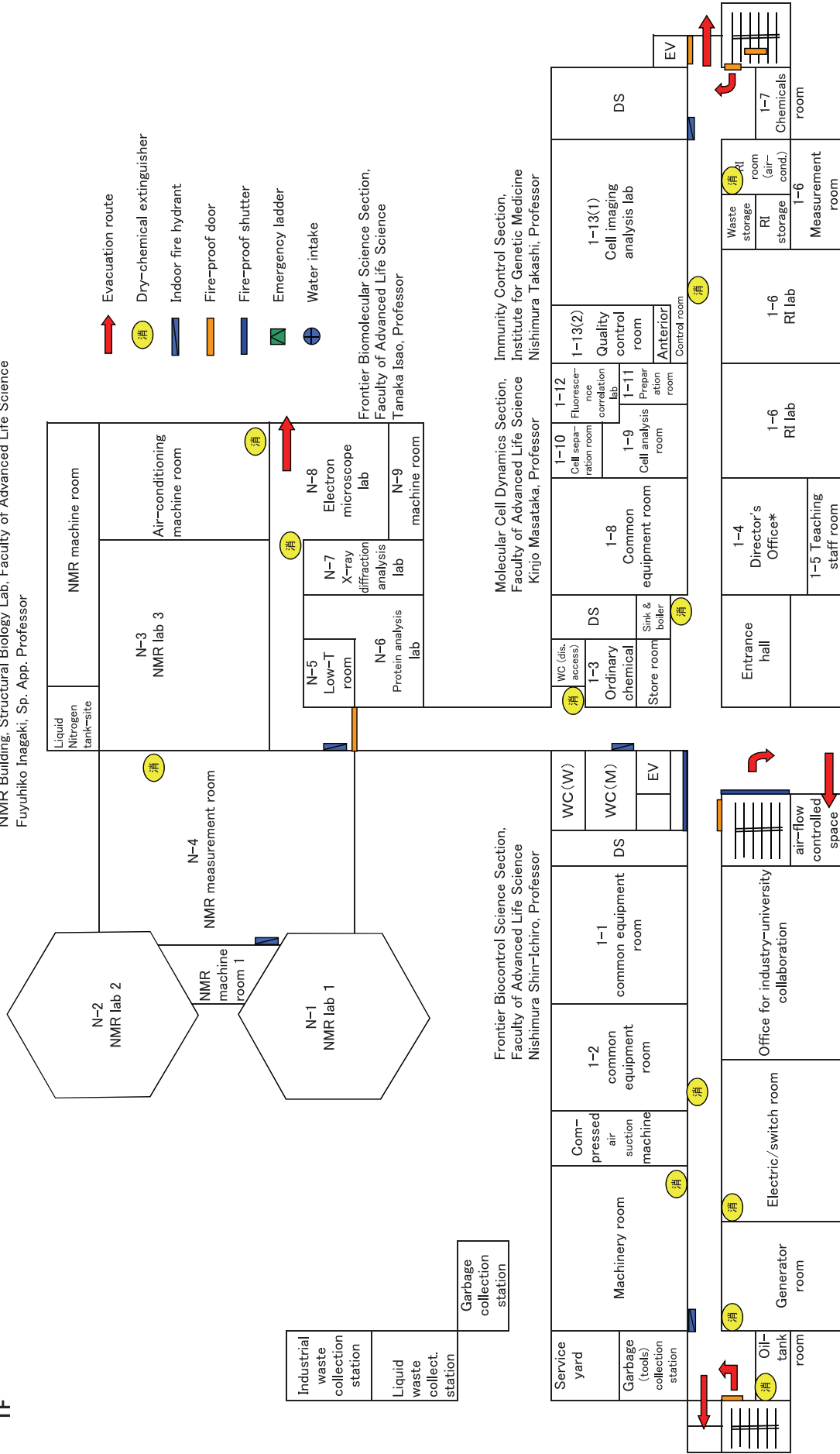
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Post-Genome Research Building (Floor plans and evacuation routes)

1F

NMR Building, Structural Biology Lab, Faculty of Advanced Life Science
Fuyuhiko Inagaki, Sp. App. Professor



Frontier Biomolecular Science Section,
Faculty of Advanced Life Science
Tanaka Isao, Professor

Molecular Cell Dynamics Section,
Faculty of Advanced Life Science
Kinjo Masataka, Professor

Frontier Biocontrol Science Section,
Faculty of Advanced Life Science
Nishimura Shin-ichiro, Professor

Immunity Control Section,
Institute for Genetic Medicine
Nishimura Takashi, Professor

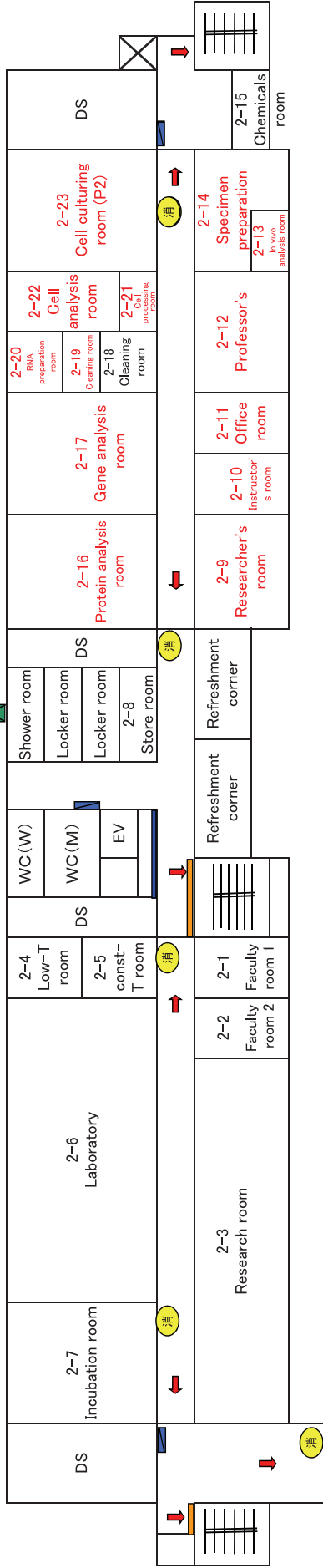
Director of the Frontier Research Center
for Post-Genome Science & Technology
Igarashi Yasuyuki, Professor

RI Facility, Faculty of Advanced Life Science
Koda Toshiaki, Professor

2F

Structural Biology Lab, Faculty of Advanced Life Science
Fuyuhiko Inagaki, Sp. App. Professor

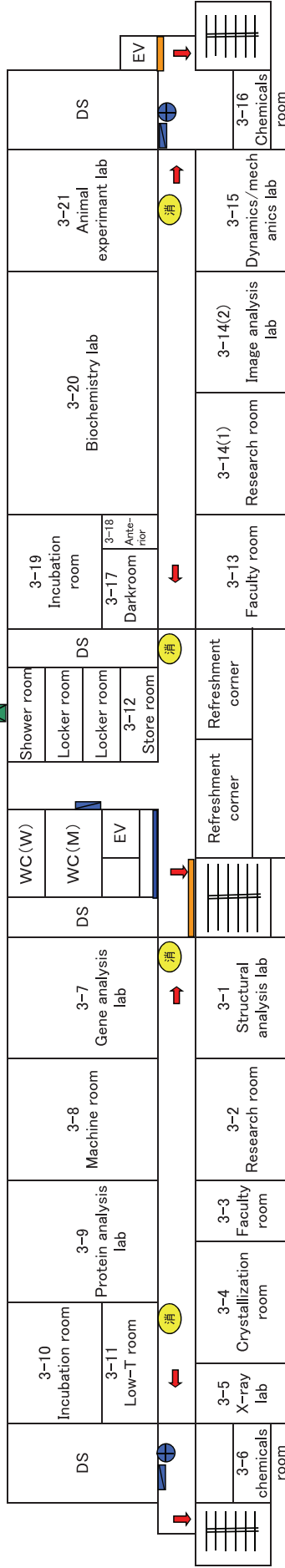
Division of Immunoregulation, Institute for Genetic Medicine
Nishimura Takashi, Professor



3F

Advanced Biomolecular Science Section, 先端生命分子科学
Faculty of Advanced Life Science
Tanaka Isao, Professor

Reconstructive Medicine Section, 機能再生医学講座
Graduate School of Medicine
Minami Akio, Professor

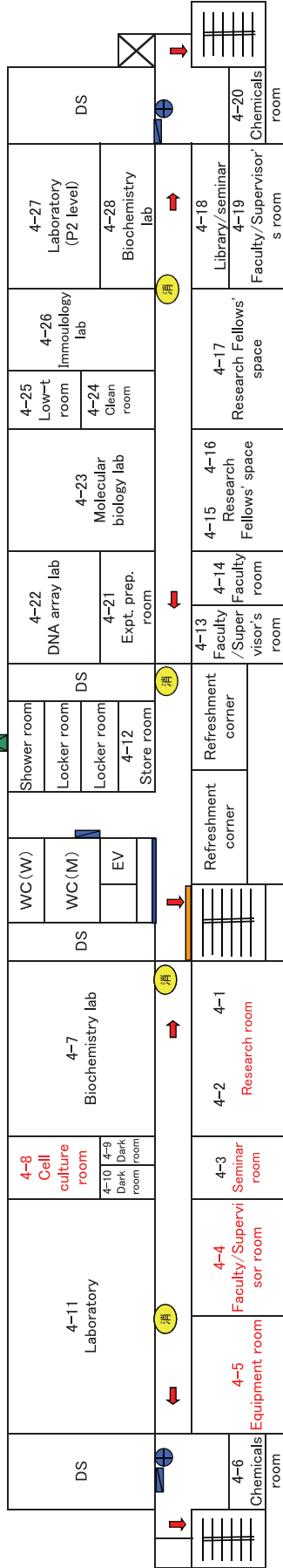


4F

Molecular Cell Dynamics Section,
Faculty of Advanced Life Science
Masataka Kinjo, Professor

Chemical Biology Section
Faculty of Advanced Life Science
Monde Kenji, Professor

Cell Biological Science Section
Faculty of Advanced Life Science
AYABE Tokiyoshi, Professor

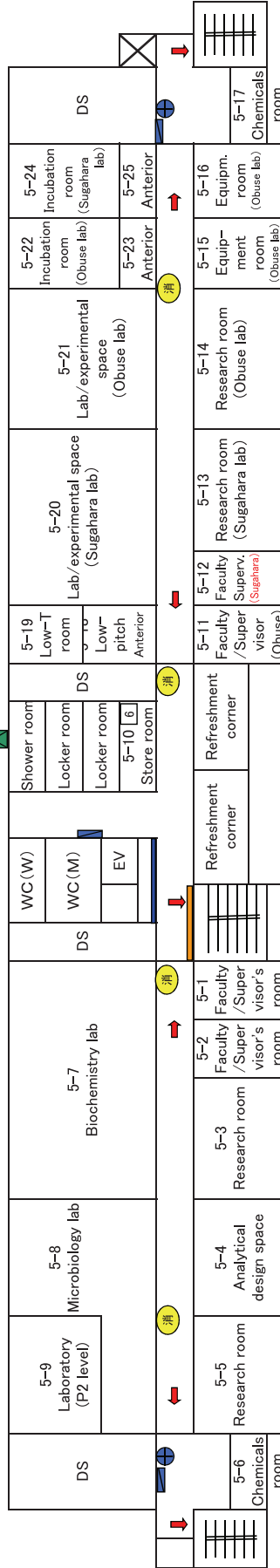


5F

Frontier Biocontrol Science Section,
Faculty of Advanced Life Science
Nishimura Shin-Ichiro, Professor

Cytomembrane molecular science section
Faculty of Advanced Life Science
Sugahara Kazuyuki, Professor

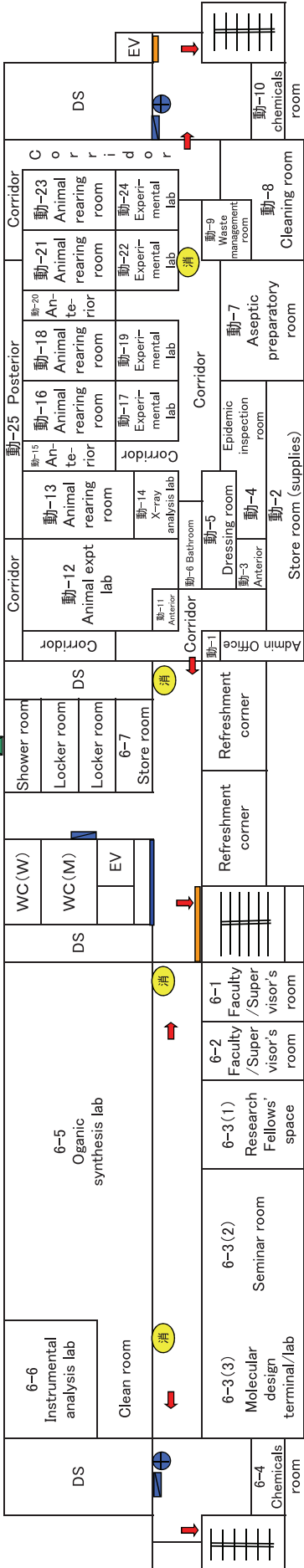
Advanced Biomolecular Science Section
Faculty of Advanced Life Science
Obuse Chikasi, Professor



Frontier Biocontrol Science Section
Faculty of Advanced Life Science
Nishimura Shin-ichiro, Professor

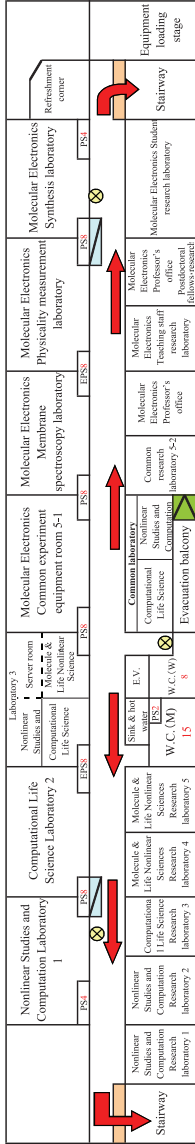
Frontier Biocontrol Science Section
Faculty of Advanced Life Science
Koda Toshiaki, Professor

動 (=Dou) preceding room no.
points to animal rearing & expt.



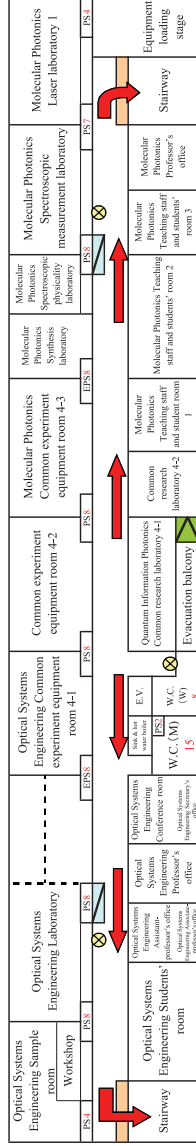
New RIES building Floor plan (for evacuation)

5F

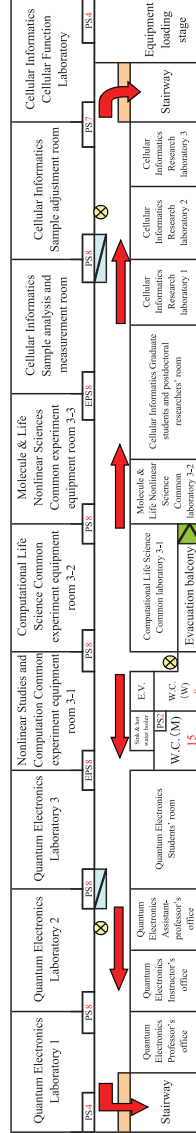


- Emergency ladder
- Fire hydrant
- Fireproof door
- Dry-chemical extinguisher
- Evacuation route

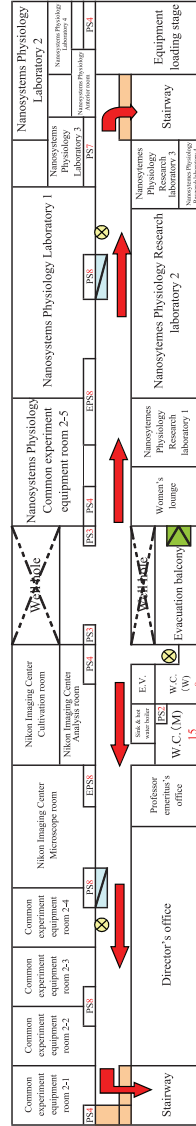
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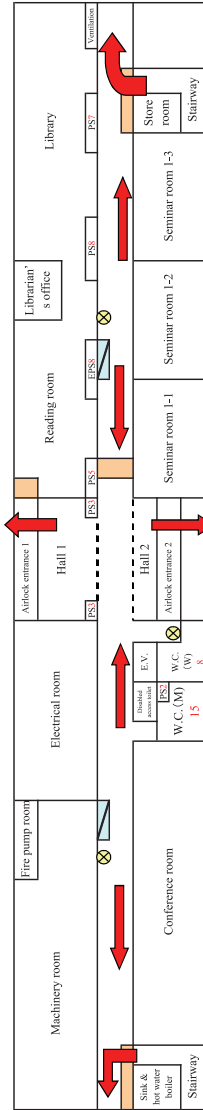
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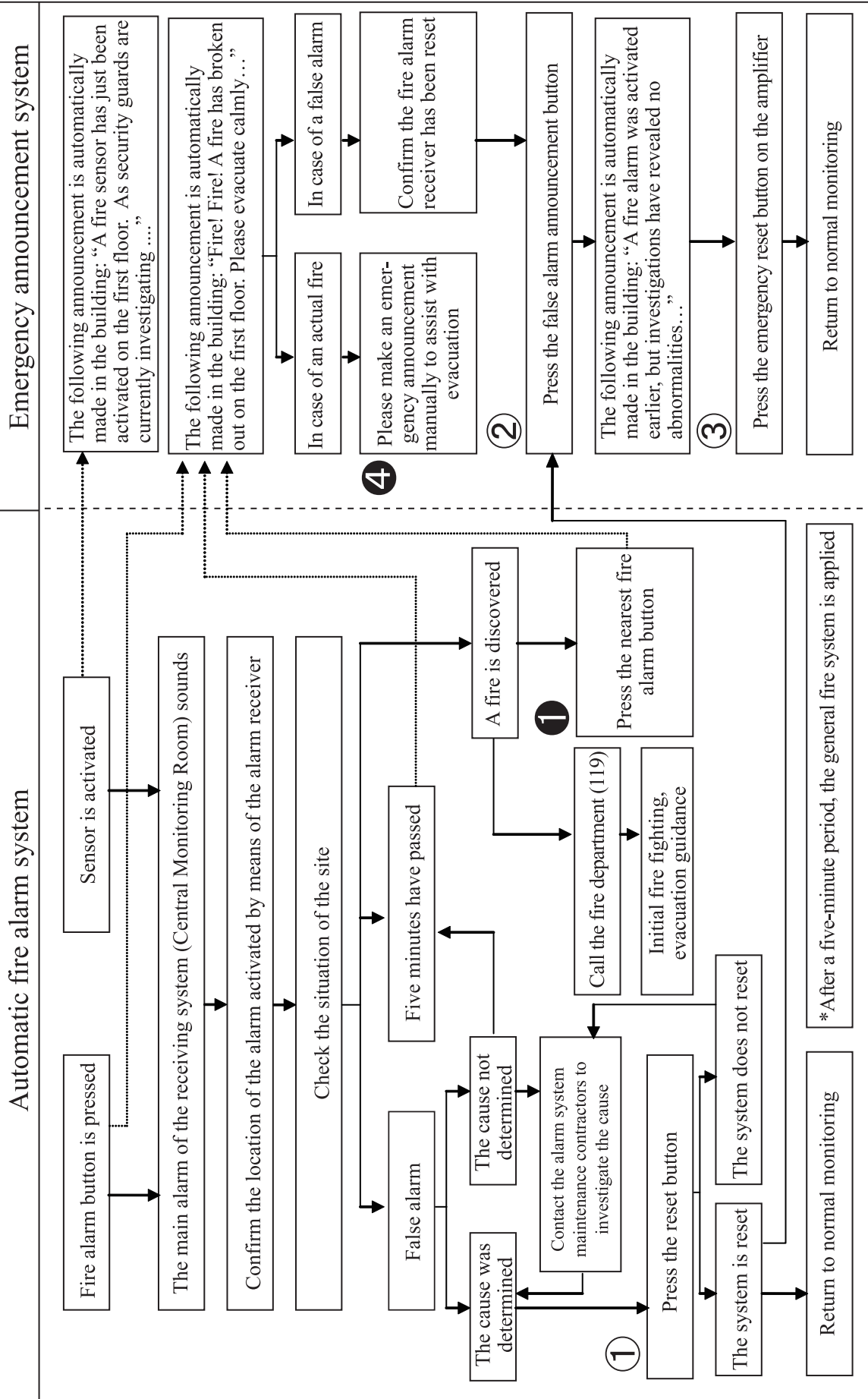
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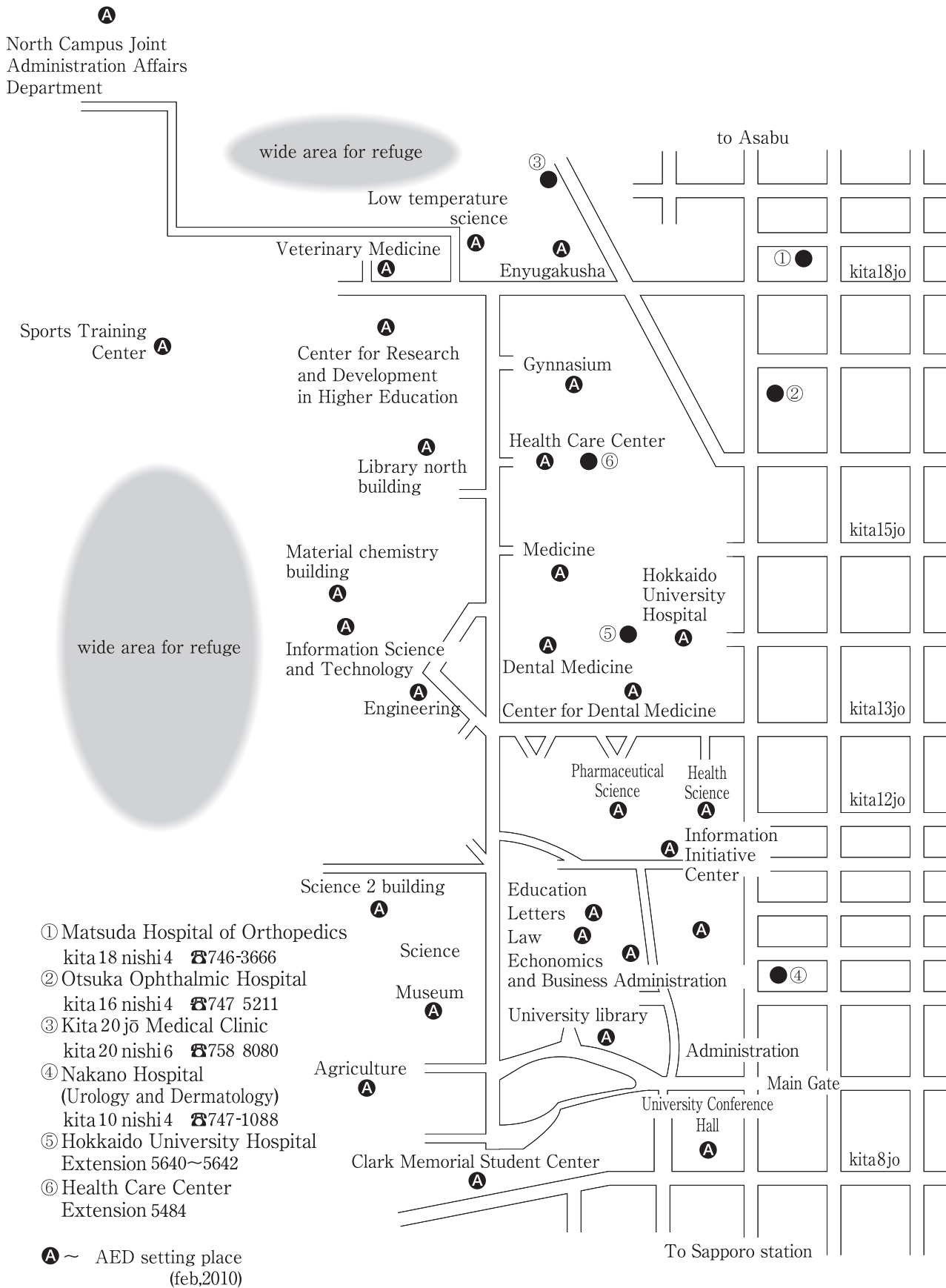
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Procedure for disaster-prevention equipment interlocking operation



AED Installation Sites and Medical Institutions in and around Hokkaido University





Safety Manual

Issued by

North Campus Safety
Management Committee

Hokkaido University,
Sapporo, Japan

March, 2011