

東京大学理学部

Radiation Safety Course, School of Science, University of Tokyo

放射線取扱者講習会 (一般講習会)

放射線管理の概要

Overview of Radiation Management

放射線取扱者の手続き

Procedures required as a radiation worker

2024年度

School Year 2024

放射線管理の法令

Japanese Laws for radiation protection

- RI (radioisotopes) · α · β · γ · protons · neutrons · heavy ions
& Over-1 MeV electrons · X-rays
 - 放射性同位元素等の規制に関する法律（**RI 規制法**）
Act on Regulation of Radioisotopes etc. (**RI Regulation Act**)
／同施行令／同施行規則
- X-rays
 - **電離放射線障害防止規則**
Regulation on Prevention of Ionizing Radiation Hazards
☞ 労働安全衛生法／同施行令
- Nuclear fuel materials etc. 核原料物質、核燃料物質
 - 核原料物質、核燃料物質及び原子炉の規制に関する法律／同施行令
- Medicals 医療および医薬品
 - 医療法施行規則 ☞ 医療法・同施行令

Radiation Hazard Prevention Regulations

School of Science, the Univ. of Tokyo

to comply with amendments to laws and ordinances on the calibration of measuring devices

Established on May 22, 1st year of Reiwa
Revised on July 19, 1st year of Reiwa
Enforced on September 1, 1st year of Reiwa
Revised May 19, 3rd year of Reiwa
Revised September 20, 5th year of Reiwa

(Purpose)

Article 1. This regulation is based on the Act on the Regulation of Radioisotopes, etc. (Act No. 167 of 1957) (hereinafter referred to as the "**RI Regulation Act**") and related laws (hereinafter referred to as the "RI Regulation Act, etc."), and stipulate matters concerning the **handling and management of** radioisotopes or radioactive contaminants (hereinafter referred to as "**radioactive isotopes, etc.**") at the Graduate School of Science and the Faculty of Science (hereinafter referred to as "this faculty") for the purpose of **preventing the occurrence of radiation hazards,** and **ensuring public safety.**

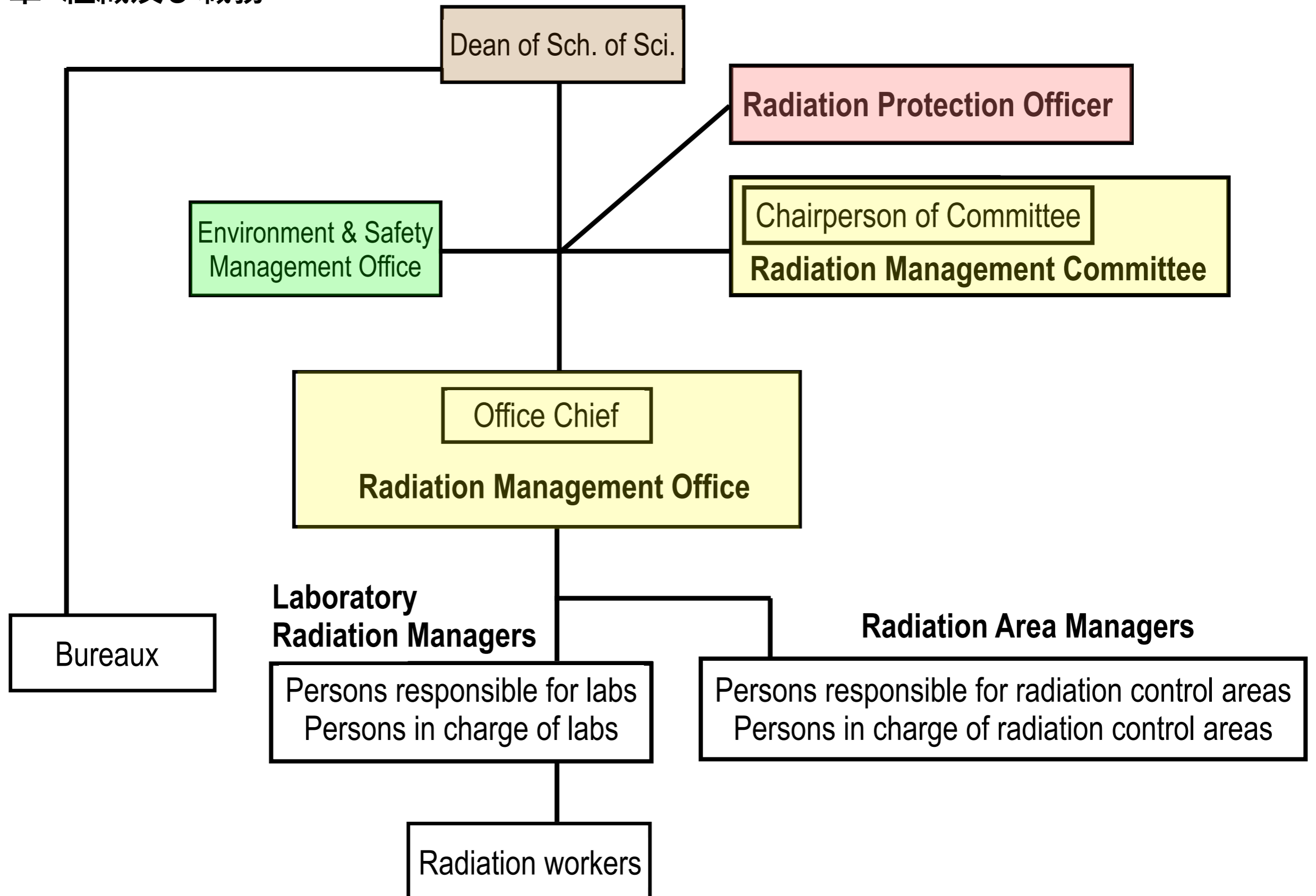
Article 2 (Obligation of the Establishment)

Article 8 & 9 (Obligations of the Dean and the Vice Deans)

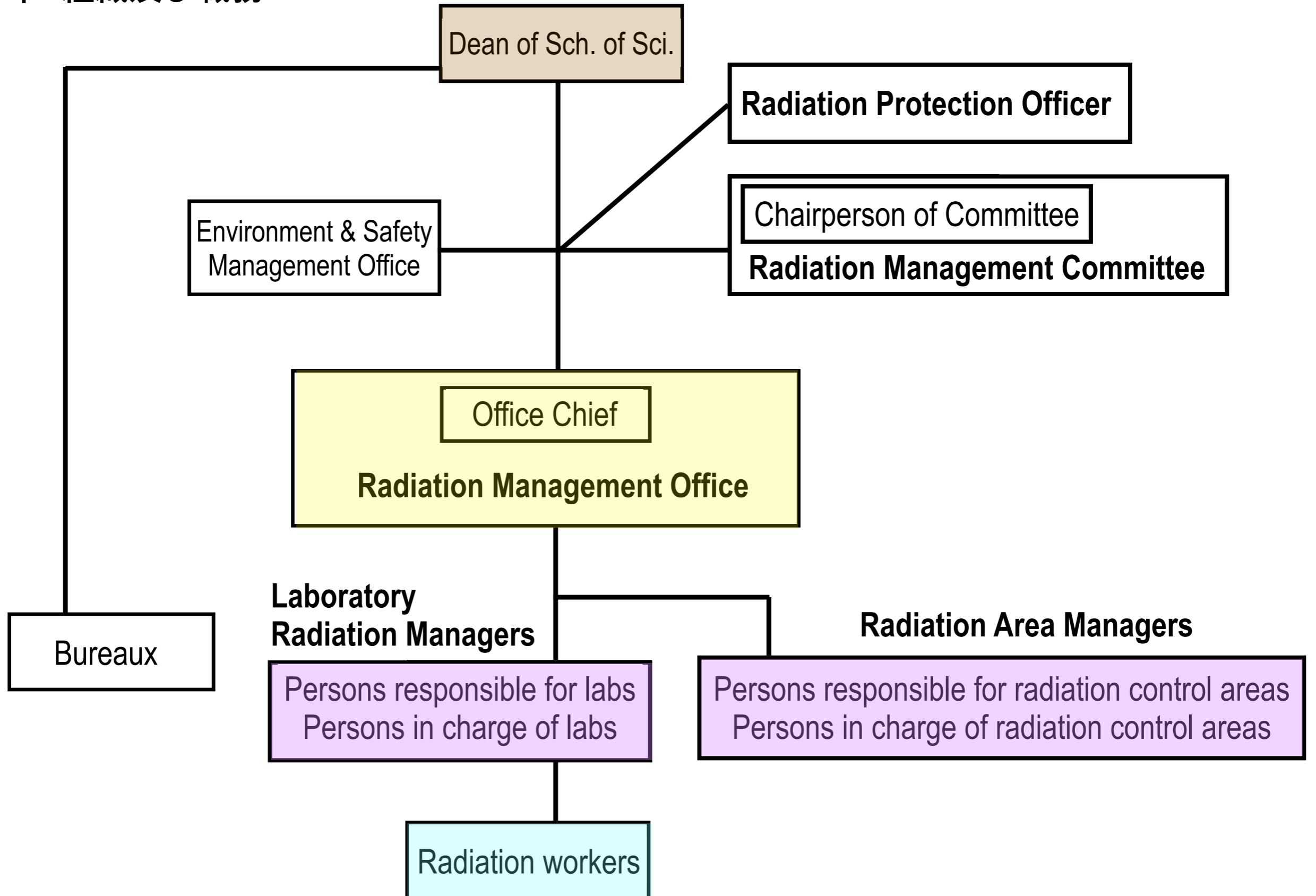
School of Science (SoS), the Univ. of Tokyo (UT) is an establishment permitted to use radioisotopes, with more than 500 radiation workers including X-ray users.

SoS, UT is responsible for radiation management to comply with the law and relevant regulations.

第3章 組織及び職務

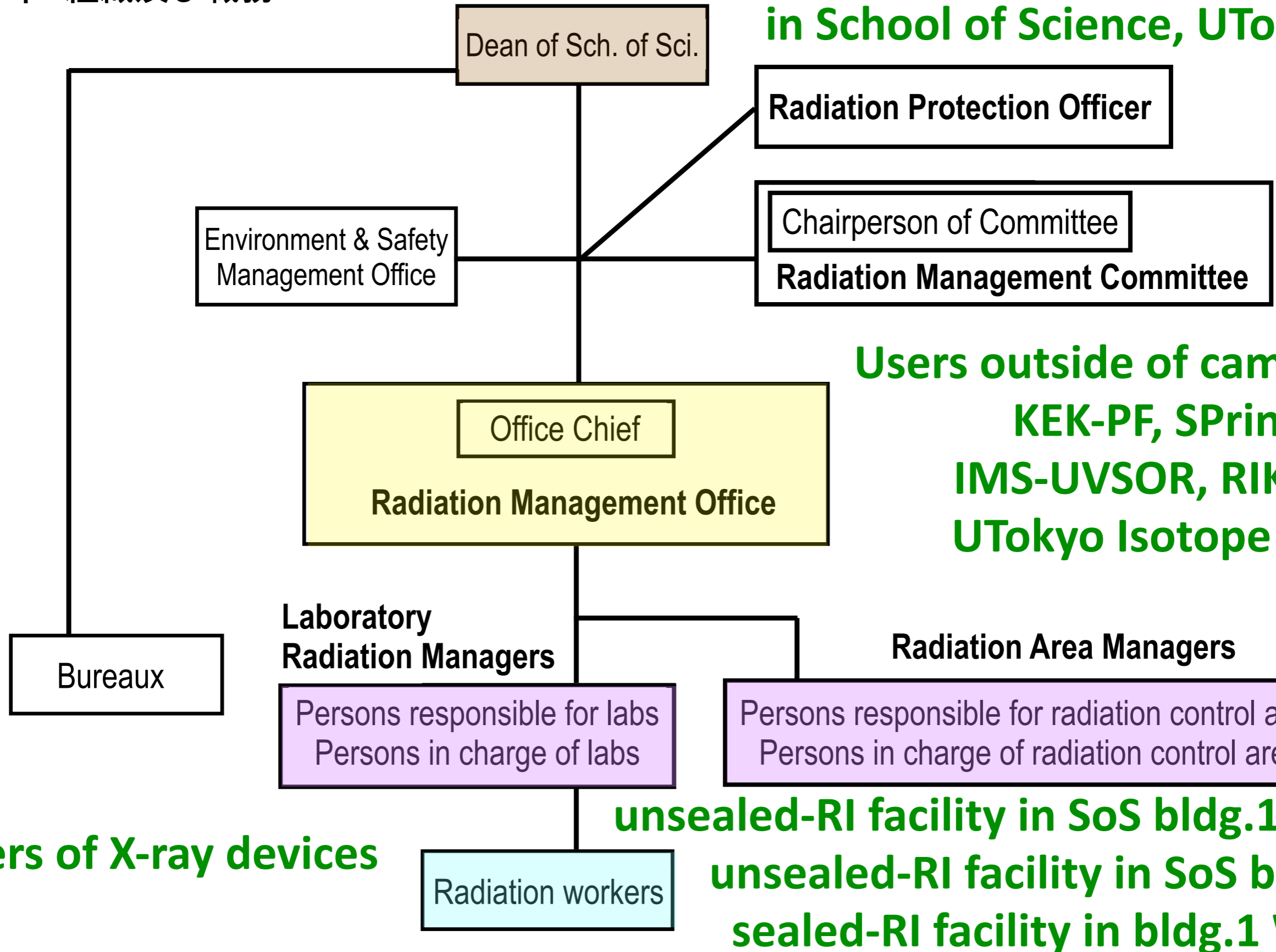


第3章 組織及び職務



第3章 組織及び職務

**Total over 500 radiation users
in School of Science, UTokyo**



**Users outside of campus
KEK-PF, SPring-8,
IMS-UVSOR, RIKEN,
UTokyo Isotope S.C.**

Users of X-ray devices

**unsealed-RI facility in SoS bldg.1 East
unsealed-RI facility in SoS bldg.3
sealed-RI facility in bldg.1 West**

Article 17 (Persons responsible for labs & persons in charge of labs)

Article 18 (Their duties) **Laboratory Radiation Managers**

Article 20 (Persons responsible for radiation control areas)

Article 23 (Periodic checkout) **Radiation Area Managers**

Article 19 (Radiation workers)

Article 23 (Rules on radiation control areas)

Chapter 9: Article 40 (Education and training)

Chapter 10: Article 41 & 42 (Health management)

Chapter 13: Article 47 (Provision of information)

Article 28 (Use of radioisotopes)

Article 29 (Handling of unsealed radioisotopes)



汚染の可能性のあるフード内や実験台をポリエチレン紙で覆う。

バット（受け皿）やトレー内で取扱う。

廃棄物の種類ごとに容器を用意。

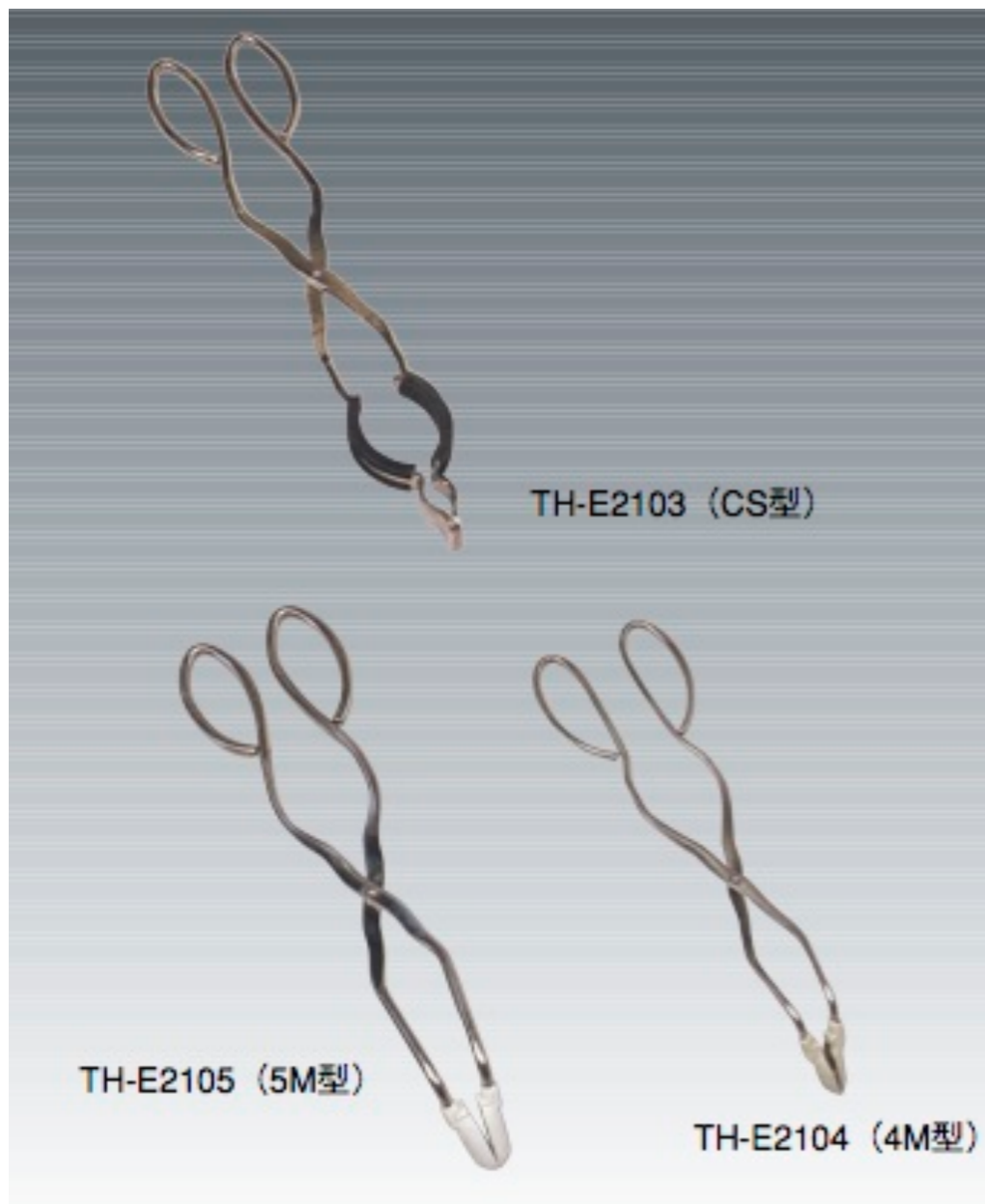
核種にあった適切な遮へい器具を使う。

Use polyethylene sheets & trays

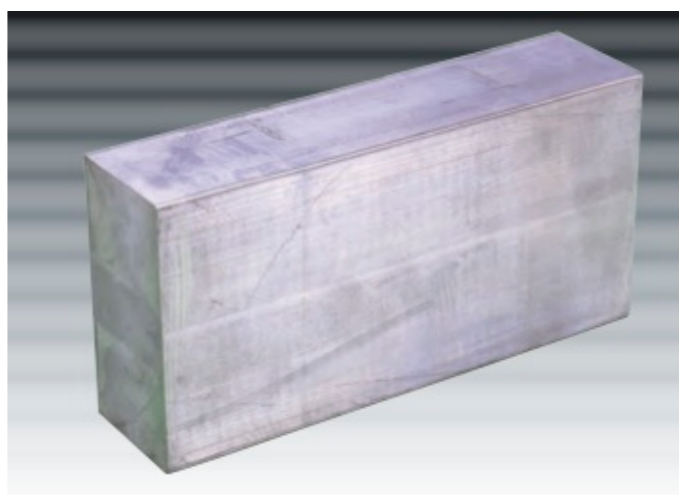
Separate waste boxes for RI & non-RI

Use shielding materials suitable for
nuclides used.

Article 30 (Handling of sealed radioactive sources)



lead brick



lead apron

ピンセット、 tong などを使い、RIからの距離を取る。
適切な遮へい材を活用し、放射線をさえぎる。

Use appropriate tools
to take distance
from RI

Shield radiation

Handling of Luminess badge Dosimeter

- Wear the badge of the appropriate type.

SG type : X, γ and β rays

KG type : X, γ and β rays, neutrons



Position to wear the badge : At the chest for males

At the abdomen for females

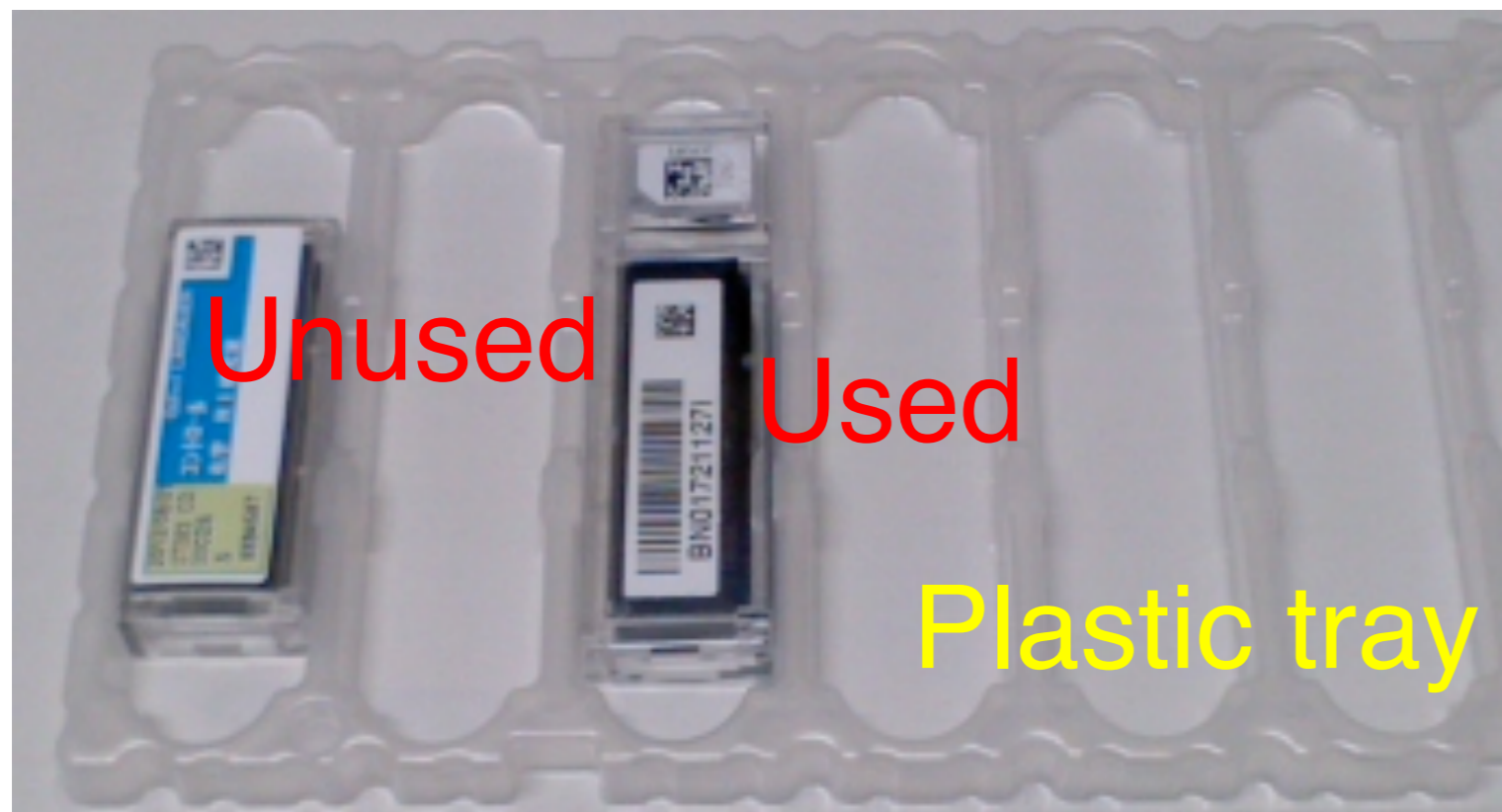
- Make sure to wear the badge to enter radiation controlled area in research institutes in Japan.

→ In order to manage the total personal exposure dose.

- When using airplane, be careful not to pass through the badge to X-ray baggage inspection at airports.

Handling of Luminess badge Dosimeter

- ◆ At the time of monthly badge exchange, return the badge of the previous month to the person in charge in your lab, and receive the new one.



Clearly distinguish between used / unused badges. Submit unused badges as well.

- ◆ You will always receive measurement result of the badge from the person in charge in your lab.

Important check list for prevention of accidents

To prevent loss or theft of radioisotopes (RIs)

- Check the number and location of RIs after use (by eye and/or measurement).
- Make records of usage and storage, and check the real items regularly.
- Make sure about appropriate management of keys for the storage boxes etc.

To minimize exposure and contamination

- Check contamination of your working area.
- Assume that whatever unlikely accident can happen. Think about all risks.
- Use survey-meters to check possible contamination of garbages to be transferred out of the radiation control area.
- Keep the hazard-prevention manual updated, inform your lab members for thorough understanding of the content.
- Frequent and steady communication with your lab staff members is essential.

Regulation on Prevention of Radiation Hazards

School of Science, University of Tokyo

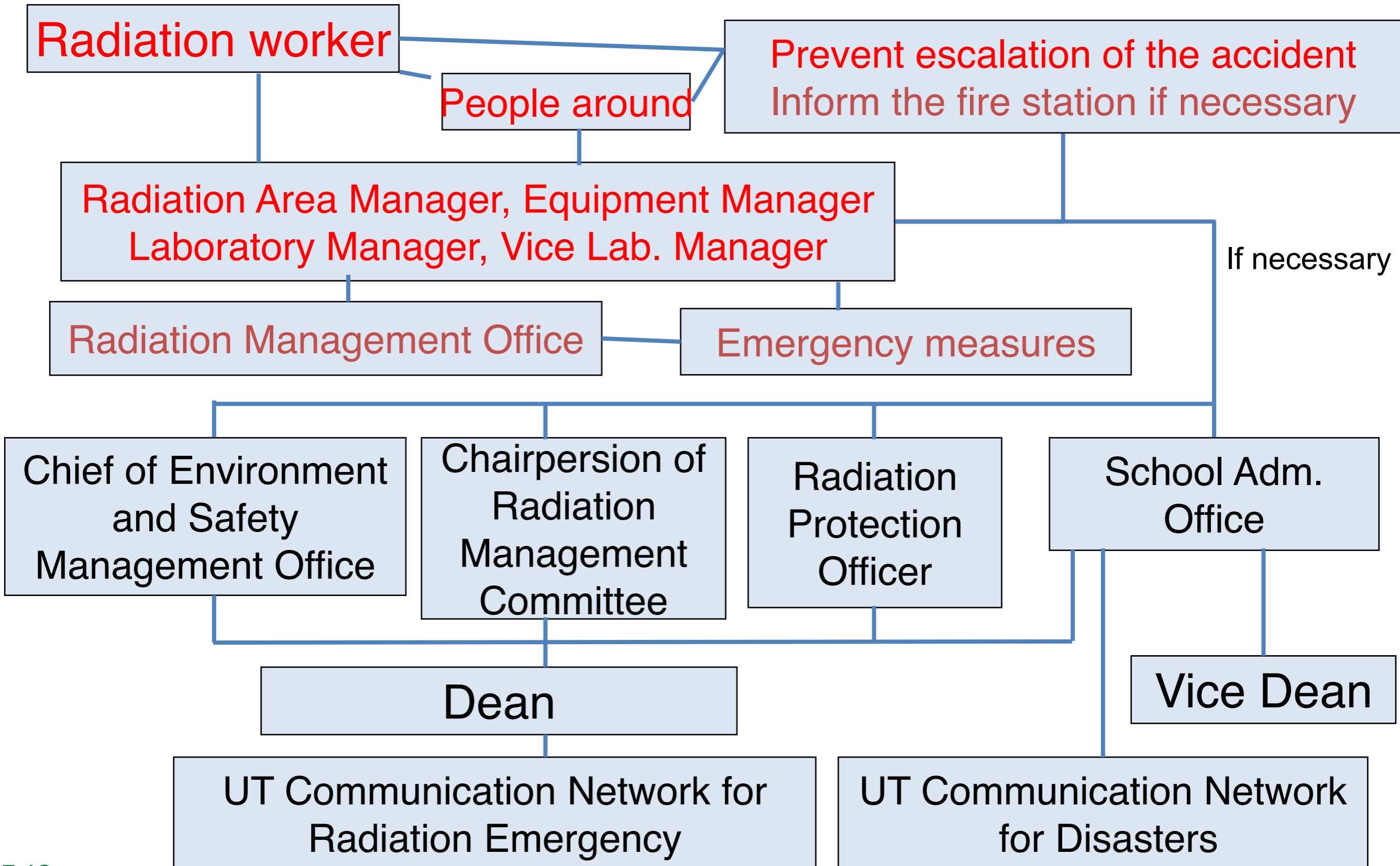
Article 45 (Measures in case of disasters)

Article 46 (Measures in case of danger)

**Instruction of measures to be taken
in case of radiation emergency**

School of Science

RI facility Emergency contact network



Check our new web site for info on radiation management.

<https://ri.adm.s.u-tokyo.ac.jp/>

F-13

The image shows a browser window displaying the website for the Radiation Management Office, School of Science, The University of Tokyo. The browser's address bar shows the URL ri.adm.s.u-tokyo.ac.jp. The website header includes the UTokyo logo, a stylized radiation symbol logo, and the text "東京大学 理学部 放射線管理室" (The University of Tokyo School of Science Radiation Management Office) and "RADIATION MANAGEMENT OFFICE, SCHOOL OF SCIENCE, THE UNIVERSITY OF TOKYO". A yellow radiation warning symbol is also present. A dark blue navigation bar contains the following menu items: "ホーム" (Home), "講習会" (Workshop), "健診問診" (Health Check/Consultation), "手続き" (Procedure), "Q&A", and "問合せ" (Inquiry). The main content area features a dark blue background with a pattern of glowing blue lines radiating from the top, and the text "東京大学 理学部 放射線管理室" and "Radiation Management Office School of Science, The University of Tokyo" in white.

Procedures for radiation management

UTRadMS

Univ. of Tokyo
Radiation

Management System

Sorry, but
only in Japanese.

**Every user must access the system
with his/her UTokyo ID.**

**Ask the Laboratory Radiation Manager
in your lab. for assistance.**

理学部放射線講習会

★ English course for general users

★ Japanese course for bldg.3 users

course for
general users

(only for Japanese-speaking RI users in the RI facility in bldg.3
and limited to those who do not use X-ray devices)

Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	
		←→ reedu.			←→ reeducation				→ reedu.			
←→ new users					←→ new users							

Reeducation once every school year (Apr.—Mar.) (except for X-AB users)
New user for this year will take next year's course as reeducation.

<!!> Users of **Accelerator or SR (SOR) facilities outside of UT** should be careful about when to take the education session because some facility requests **educational record within one year** upon user registration.

Required documents to be submitted to those facilities must be prepared well in advance.

Classification of authorization categories of radiation workers at UTokyo

RI & Accelerators

unsealed or sealed radioisotopes (RIs), accelerators, synchrotron radiation (SR), nuclear reactors

X-CDE

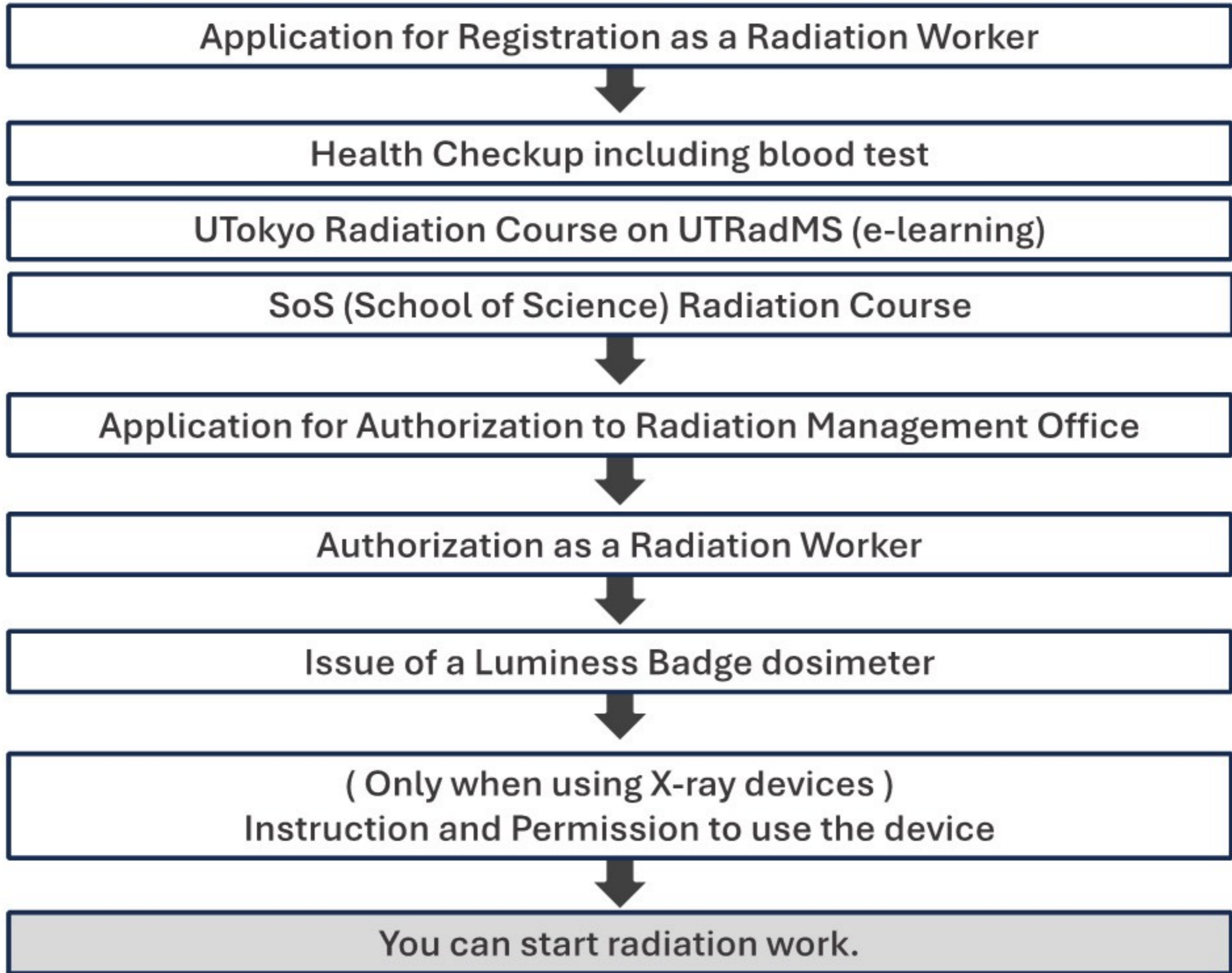
X-ray devices category C, D & E, Special-type electron microscope, X-ray device managers responsible

X-AB

X-ray category A & B (normal users)

Classification of X-ray devices at UTokyo

密閉型 closed system	A	Completely sealed
	B	Interlock used all the time
非密閉型 non-closed system	C	Interlock used appropriately
	D	Equipments installed in a room
	E	Not fixed / mobile



*Health Checkup and issuance of a Luminescence Badge dosimeter are not required for the "X-AB" users.

Procedures required before being authorized to use radioisotopes / radiation facilities

新規放射線取扱者に関する手続き

* individual application / reservation on UTRadMS system

* 登録申請

(1)

* Application for registration

Submission of health check questionnaire required before the medical check.

* 健康診断

(2)

* Health checkup for radiation workers

(X-AB を除く)

(except for X-AB users)

* Submission of health checkup questionnaire
TWICE A YEAR for continuation

* 継続：年2回問診票

* 全学一括講習会

(3)

* e-Learning UTokyo radiation course

(認定科目履修者は免除)

6 hours of e-Learning

* 理学部講習会

(4)

* School of Science radiation course

(本日の講習会)

毎年再教育
(X-AB は初年度のみ)

(today's course)

Mandatory ANNUAL attendance
(X-AB users = only the first year)

* 認可申請

(5,6)

* Application for authorization

* バッジ交付 (X-AB を除く)

(7)

* Issue of badge dosimeter (except X-AB)

* 装置使用許可 (X線装置のみ)

(8)

* Permission to use X-ray devices (only for X-rays)

使用前教育

On-site instruction from the X-ray device manager

各研究室の放射線担当教員を

Consult the staff in charge

通じて手続きすること。

for radiation-related matter in your laboratory.

Procedures required before being authorized to use radioisotopes / radiation facilities

新規放射線取扱者に関する手続き

* 放射線取扱者登録管理システム (UTRadMS) にて各自で手続きが必要

* individual application / reservation on UTRadMS system

予め問診に要回答

Submission of health check questionnaire required before the medical check.

* 健康診断

* Medical check for radiation workers

(X-AB を除く)

(except for X-AB users)

* Submission of health check questionnaire TWICE A YEAR for continuation

* 継続：年2回問診票提出

Scheduled medical checks

Mon. May 27 in Hongo campus

Mon. June 3 in Kashiwa campus

Mon. June 17 in Hongo campus

Wed. July 17 in Hongo campus

Reservation on UTRadMS system required at latest 3 days in advance.

You should have answered the questionnaire before the medical check.

■ Flow Sheet for Radioisotope and Radiation Generating Equipment Users

(Accelerators, SOR = Synchrotron Radiation Facilities, Nuclear Reactors etc.)

Accelerators, SOR (SR), Nuclear Reactors

Radiation Safety Manual
to be downloaded

Application for registration as a radiation worker
by logging in to UTRadMS and proceed with the procedure

Application for registration

Health examination including blood test
(First of all, answer the inquiry on UTRadMS. Reservation is required at latest 3 days before the examination on the website of UTokyo Health Service Center.)

UTokyo Training Course
on UTRadMS (E-learning).
Take a "RIX Training Course."
Currently only RIX Training Course is available.
Exemption rules exist.

Departmental Course
in School of Science

Health checkup radiation course UTokyo SoS radiation course

Application to Radiation Management Office for authorization
by persons in charge of labs
After the completion of the requirements, inform the person in charge of your lab.

Application for authorization
via Laboratory Radiation Manger

Authorization as a radiation worker
at Radiation Management Office

Authorization

Issue of a Luminess badge dosimeter
from School Administrative Office

badge dosimeter

You can start radiation handling.

■ Flow Sheet for X-ray Equipment (Categories C, D and E) Users

X-CDE users

Application for registration

Application for registration as a radiation worker
by logging in to UTRadMS and proceed with the procedure

Health examination including blood test
(First of all, answer the inquiry on UTRadMS. Reservation is required at latest 3 days before the examination on the website of UTokyo Health Service Center.)

UTokyo Training Course
On UTRadMS (E-learning).
Take a "RIX Training Course."
Currently only RIX Training Course is available.
Exemption rules exist.

Departmental Course
Take a general course (which include explanations for X-ray usage) in School of Science.

UTokyo radiation course

SoS radiation course

Health checkup

Application to Radiation Management Office for authorization
by persons in charge of labs
After the completion of the requirements, inform the person in charge of your lab.

Application for authorization
via Laboratory Radiation Manger

Authorization as a radiation worker
at Radiation Management Office

Authorization

Issue of a Luminess badge dosimeter
from School Administrative Office

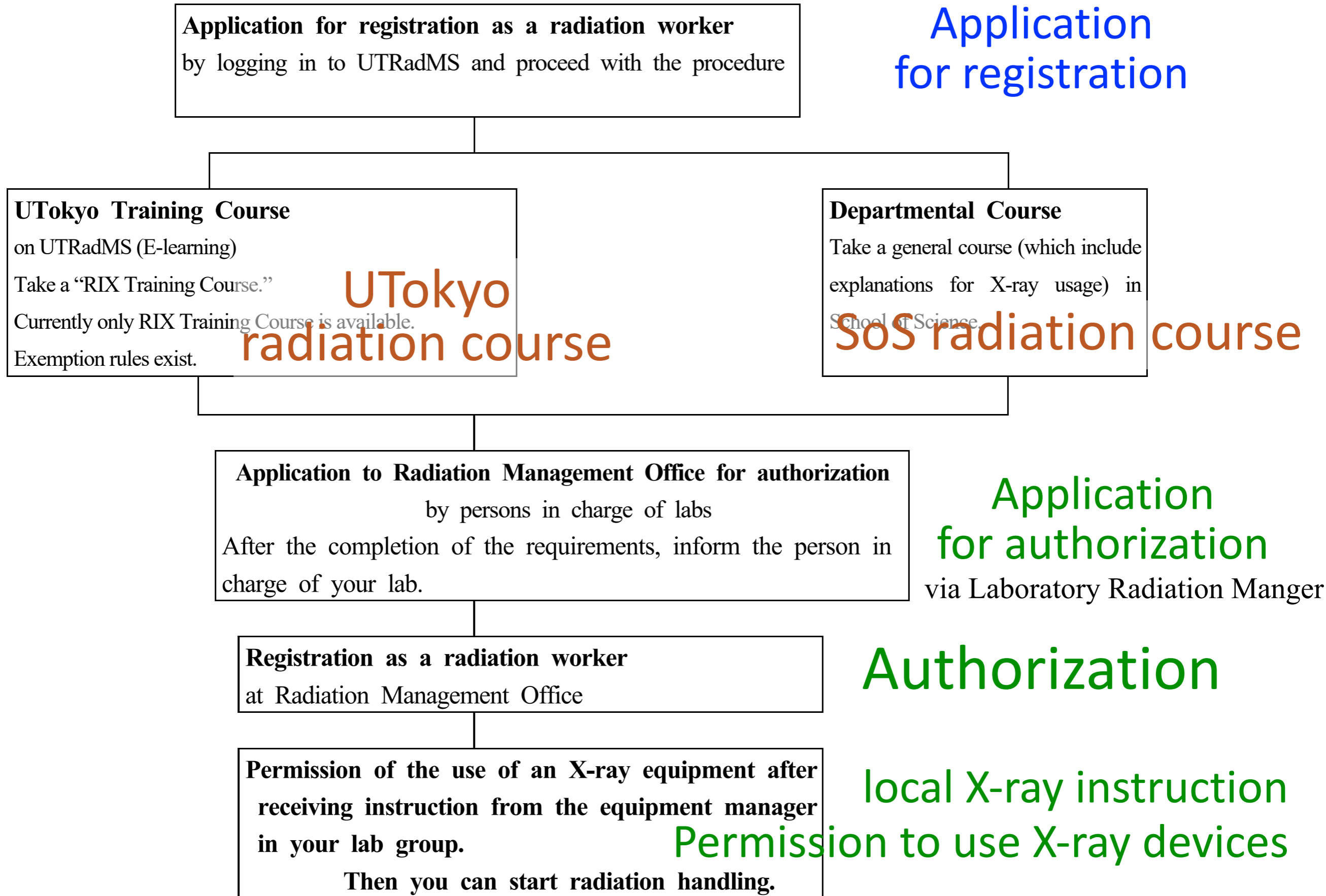
badge dosimeter

Permission of the use of an X-ray equipment
after receiving instruction from the equipment manager in your lab group.
Then you can start radiation handling.

local X-ray instruction
Permission to use X-ray devices

■ Flow Sheet for X-ray Equipment (Categories A and B) Users

X-AB users



Management of radiation workers

Check for qualifications of radiation workers

- ◆ Check for the qualifications of radiation workers every school year. (Renewal of authorization.)
- ◆ If the following conditions are not met, your qualification as a radiation worker will be discontinued. (You will no longer be authorized.) (except for users of X-AB-only.)

1. You have attended the **SoS radiation course** in the relevant school year.
2. You have undergone health check by submitting the radiation worker **health checkup questionnaire online** on the UTRadMS system **twice** in the relevant year.

Quiz #1

True or False ?

All the Radiation Workers at SoS (School of Science), the University of Tokyo must attend the SoS Radiation Course annually.