

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

2022年度

School Year 2022

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

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

(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.**

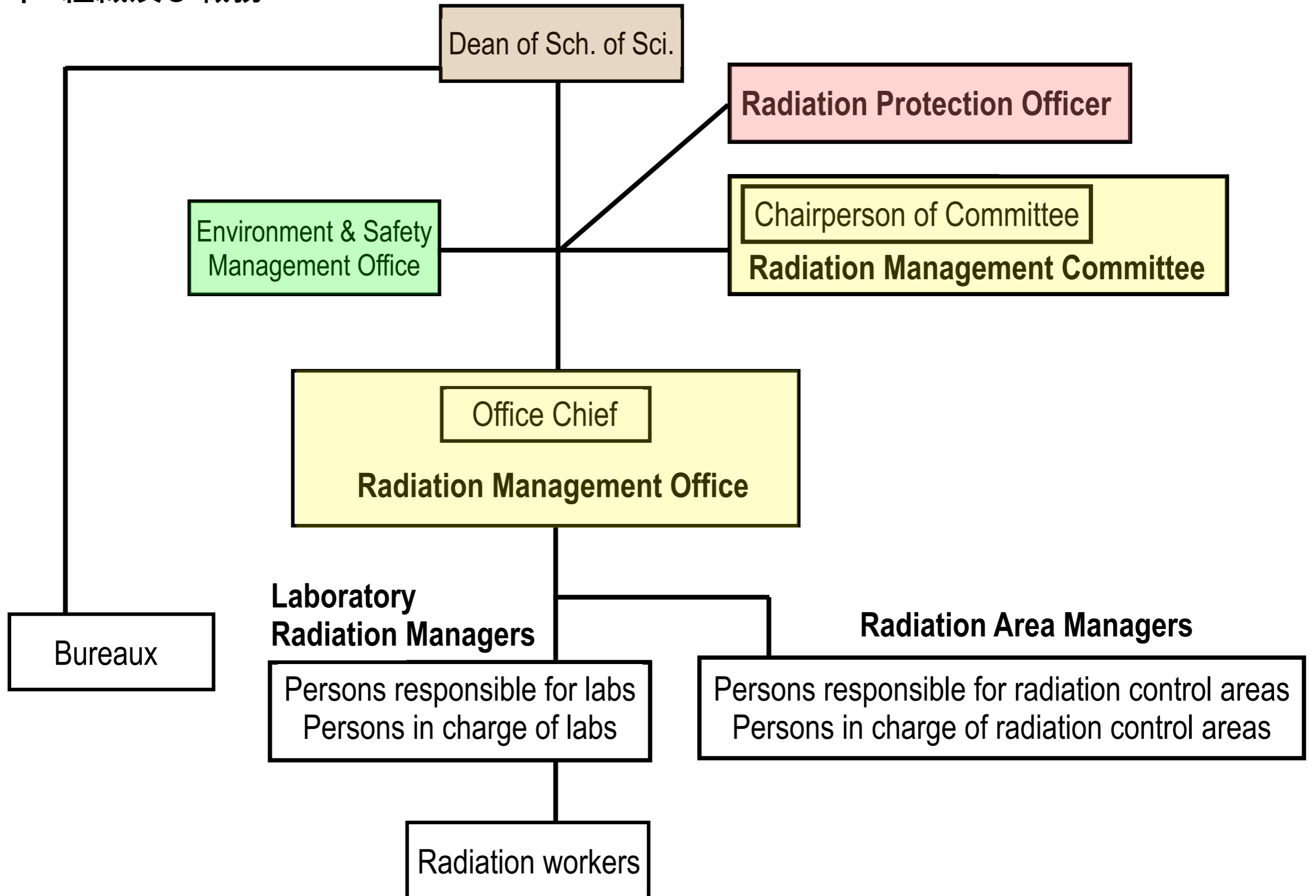
Article 2 (Obligation of the Establishment)

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

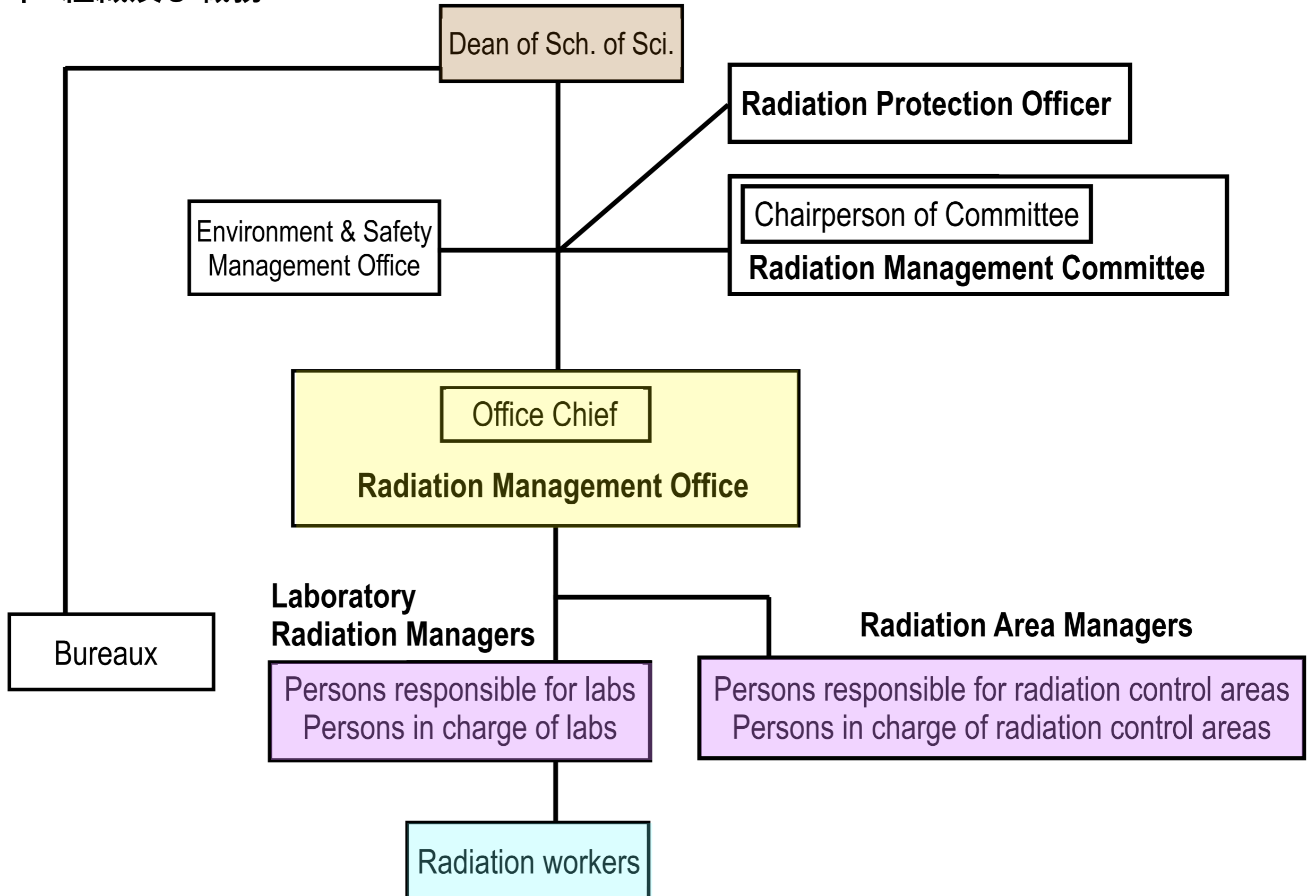
School of Science (SoS), the Univ. of Tokyo (UT) is an establishment permitted to use radioisotopes, with more than 500 radiation workers including X-ray users.

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

第3章 組織及び職務

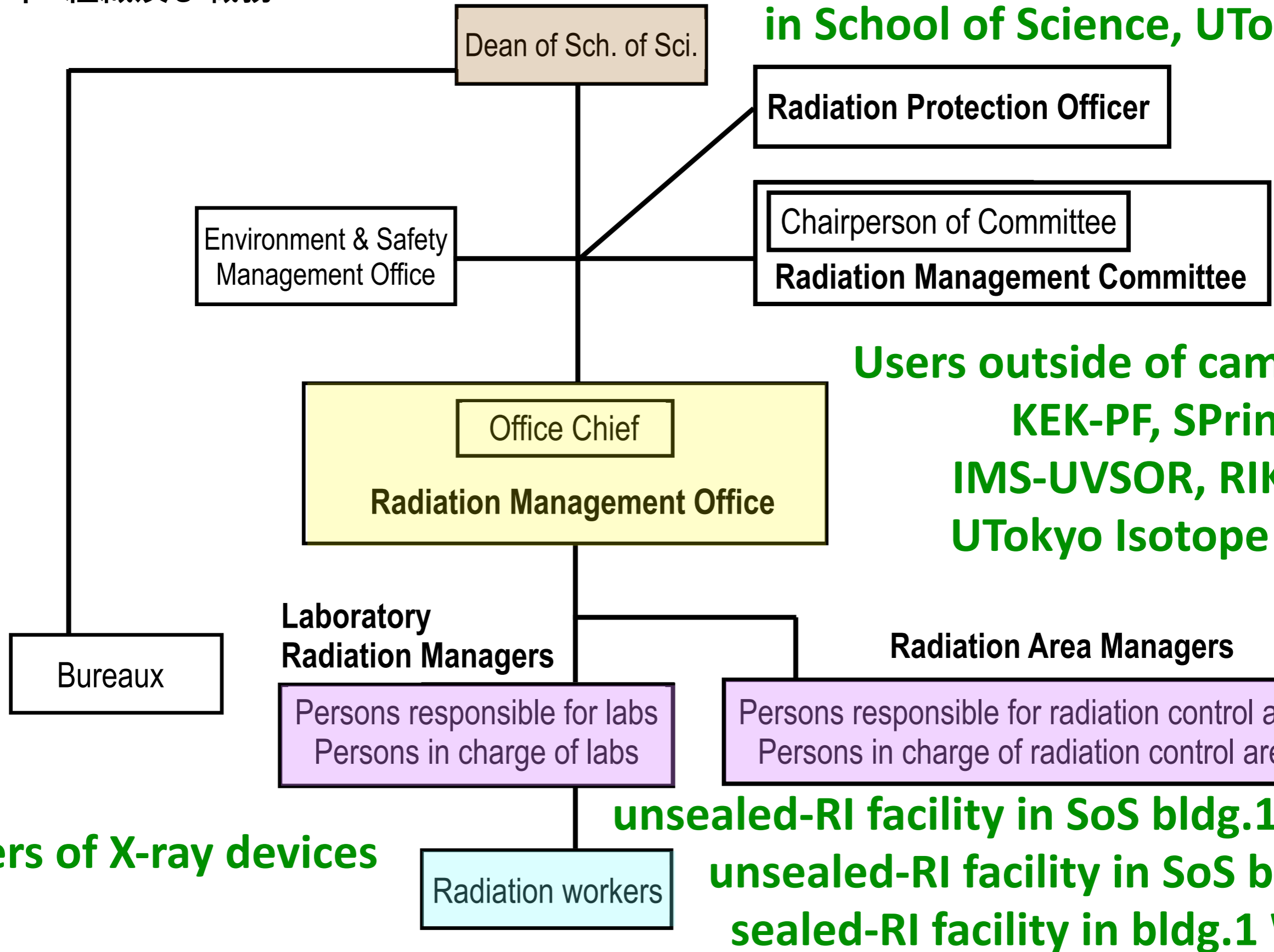


第3章 組織及び職務



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。

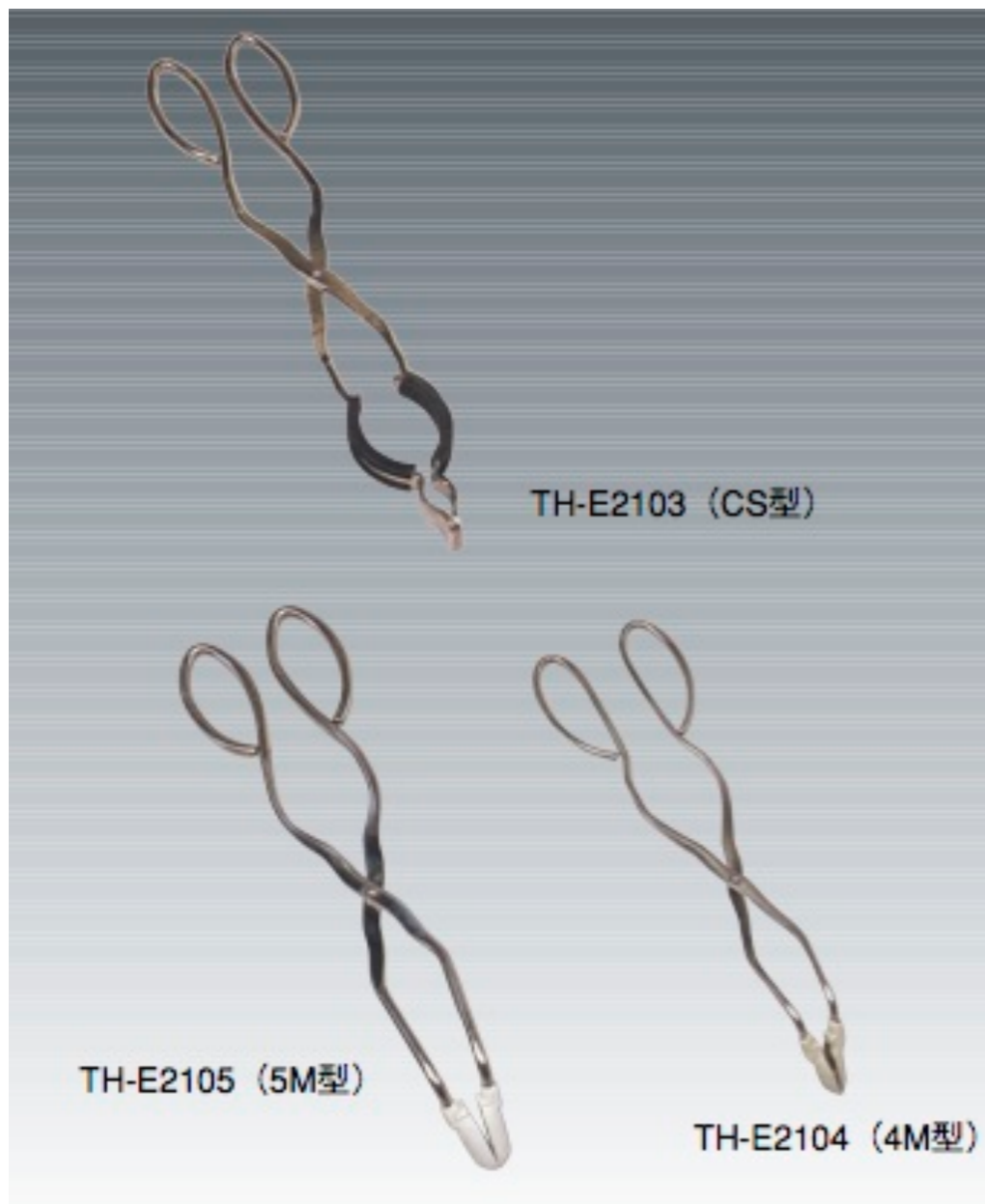
核種にあった適切な遮へい器具を使う。

Use polyethylene sheets & trays

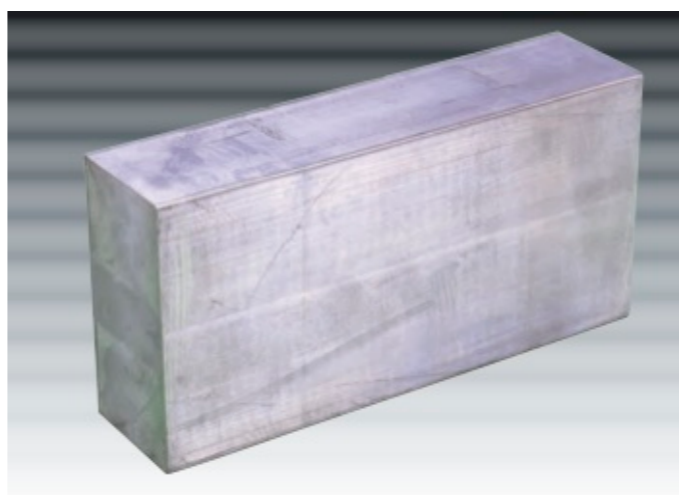
Separate waste boxes for RI & non-RI

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

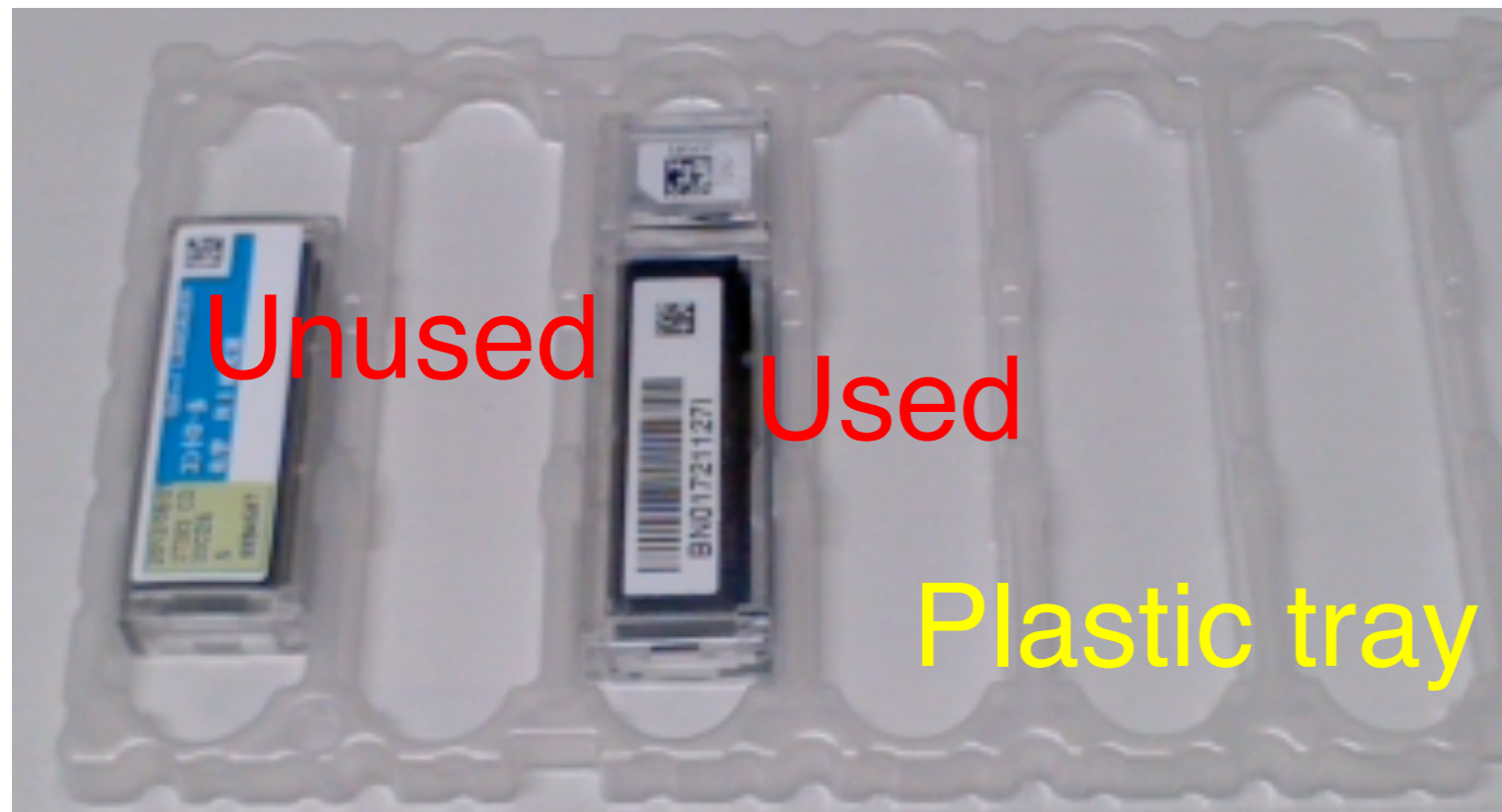
- Make sure to wear the badge to enter radiation controlled area in research institutes in Japan.

→ 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

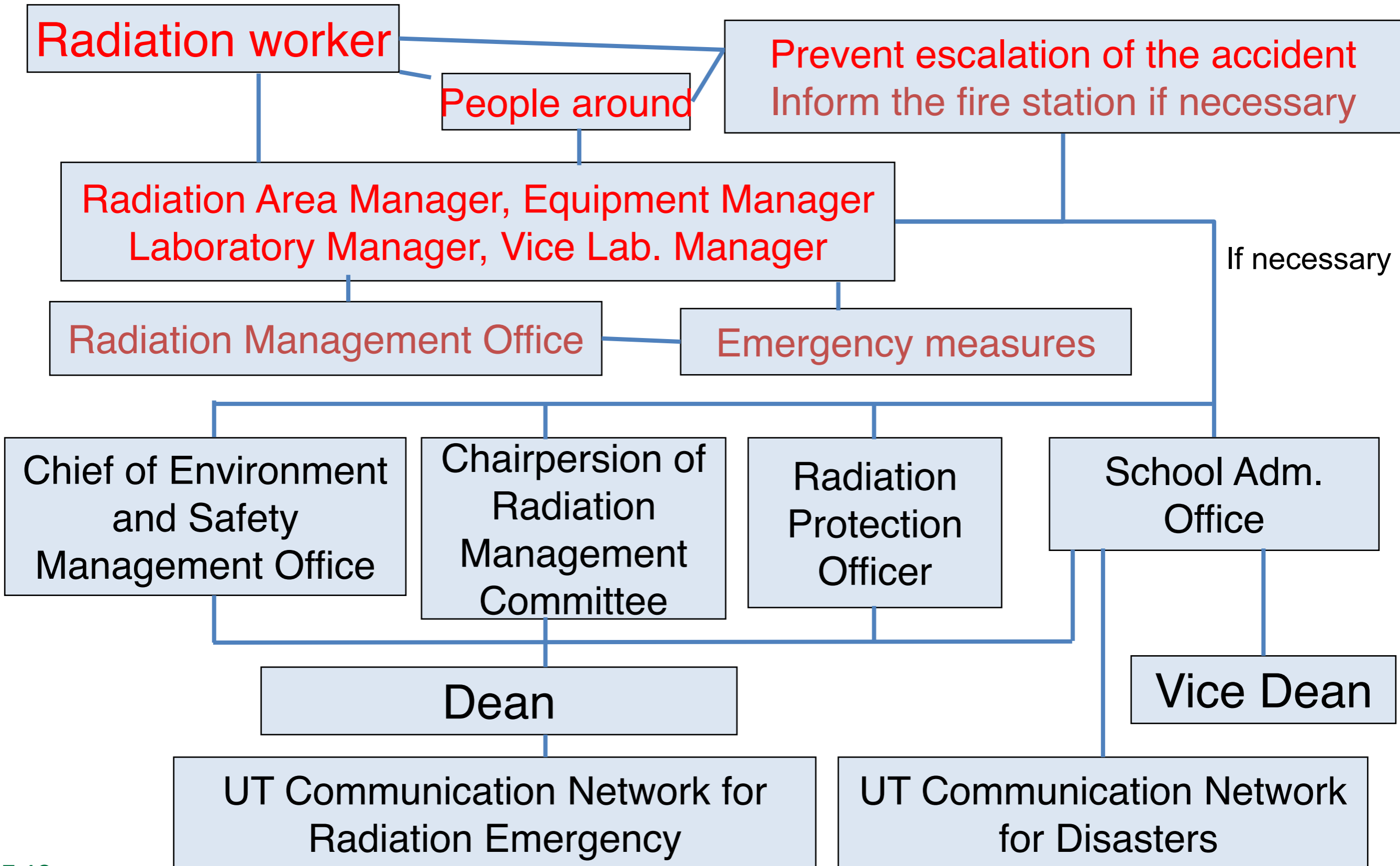
Article 45 (Measures in case of disasters)

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 courses.

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



The screenshot shows a web browser window with the address bar displaying "安全ではありません — ri.adm.s.u-tokyo.ac.jp". The page header features the logo of the Radiation Management Office on the left, the title "東京大学 理学部 放射線管理室" in large purple characters in the center, and a radiation warning symbol on the right. Below the header, the text reads "Radiation Management Office, School of Science, The University of Tokyo". The main content area contains several paragraphs of Japanese text, including a bolded introductory sentence and a link to "こちらにまとめてあります". At the bottom, there is an English instruction "See the following link for English information on the Radiation Course in School of Science:" followed by a link "RadiationCourse" and a yellow callout box with the text "Download slides & documents from here." The footer includes the URL "このページの URL: http://ri.adm.s.u-tokyo.ac.jp/" and the date "Last modified on 2021/9/15".

東京大学 理学部 放射線管理室

Radiation Management Office, School of Science, The University of Tokyo

東京大学理学部における放射線管理に関する情報の拠点サイトです。

放射線管理室では、理学部・大学院理学系研究科における放射線・放射性同位元素(RI)に関する管理を担っています。放射線管理室からの情報発信サイトとして、放射線取扱者の皆様が覚えやすい URL (ウェブアドレス) を取得しました。まだ立ち上げたばかりで、従来のページへのリンクを載せているだけですが、徐々にこのページを充実させていこうと考えています。

理学部の放射線管理に関する情報は[こちらにまとめてあります。](#)

特に、理学部講習会については以下のページをご覧ください。

[放射線管理 \(理学部講習会\)](#)

[放射線管理 \(講習会資料等\)](#)

See the following link for English information on the Radiation Course in School of Science:
[RadiationCourse](#)

Download slides & documents from here.

このページの URL: <http://ri.adm.s.u-tokyo.ac.jp/>

Last modified on 2021/9/15

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

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

* Application for registration

* 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

* 登録申請

* 健康診断

(X-AB を除く)

* 継続：年2回問診票

* 全学一括講習会

(認定科目履修者は免除)

* Medical check for radiation workers

(except for X-AB users)

* Submission of health check questionnaire twice a year for continuation

e-learning * UTokyo radiation course

RIX course = 7 hours / ~~X-ray course = half day~~

School of Science radiation course

理学部講習会

(本日の講習会) 毎年再教育 (X-AB を除く)

(today's course)

Mandatory annual attendance (except for X-AB users)

認可申請

Application for authorization

バッジ交付 (X-AB を除く)

Distribution of badge dosimeter (except X-AB)

装置使用許可 (X線装置のみ) 使用前教育

Permission to use X-ray devices (only for X-rays) On-site education 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

* 健康診断

(X-AB を除く)

継続：年 2 回問診票提出

Submission of health check questionnaire required before the medical check.

* Medical check for radiation workers

(except for X-AB users)

* Submission of health check questionnaire twice a year for continuation

Scheduled medical check

Fri. July 15 in Hongo campus

Tue. Aug. 23 in Hongo campus

Wed. Sep. 14 in Hongo campus

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

You should answer 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.)

Medical check

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

UTokyo radiation course

Departmental Course
in School of Science

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

Authorization as a radiation worker
at Radiation Management Office

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.

Medical check radiation course

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

Permission of the use of an X-ray equipment
after receiving instruction from the equipment
manager in your lab group.

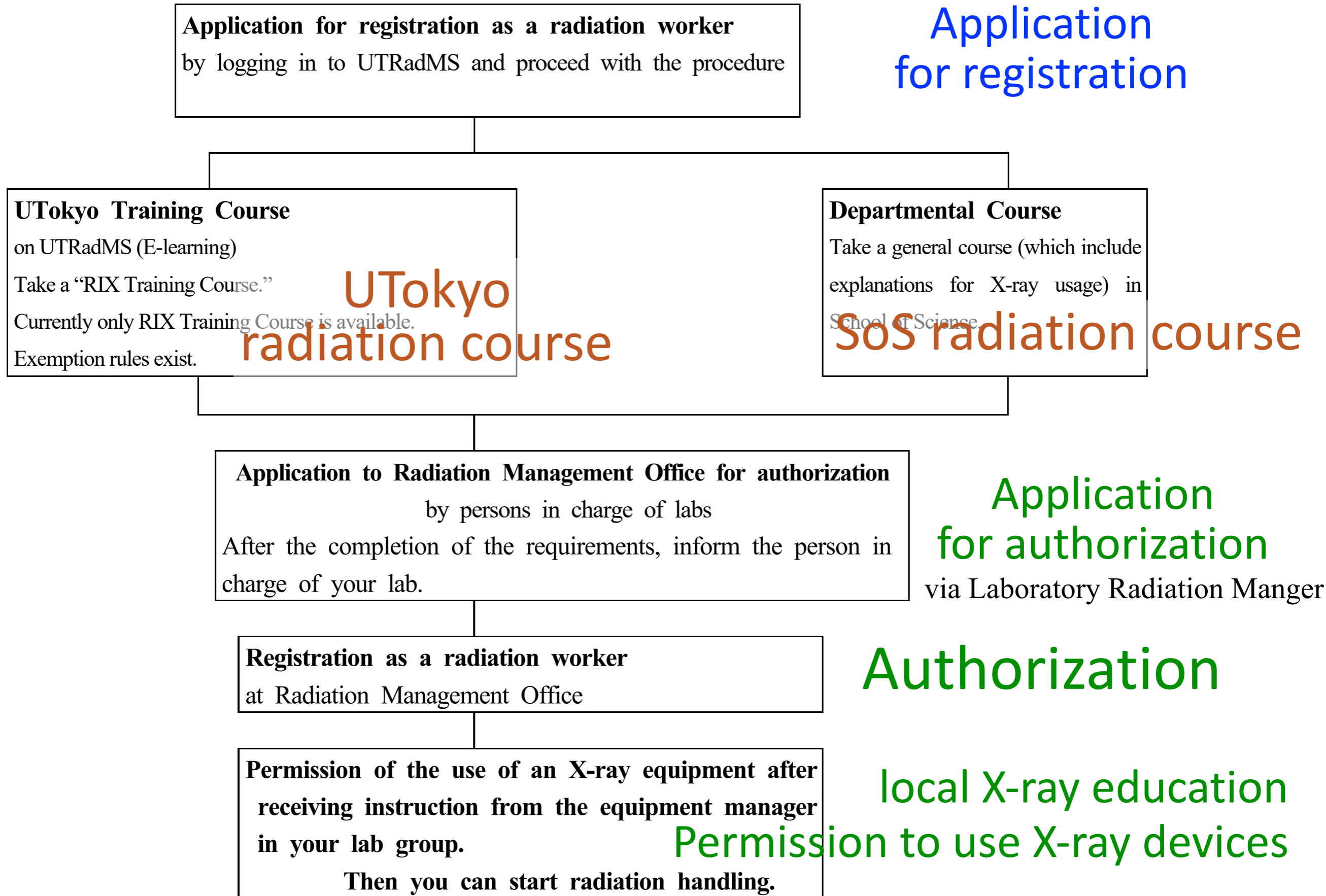
local X-ray education

Then you can start radiation handling.

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 check questionnaire online** on the UTRadMS system **twice** in the relevant year.

School of Science **Contact list** of radiation-related matters

Contacts (April 2021)

<p>Application for registration of radiation workers Change of registration of radiation workers Application for UTokyo training courses Answer to inquiries before the health examination for new registrants Answer to inquiries at periodic health examinations</p>	<p>UTRadMS Proceed with the procedure by yourself</p>
<p>Health examination for new registrants (Need to make a reservation at latest 3 days before the examination)</p>	<p>UTokyo Health Service Center http://www.hc.u-tokyo.ac.jp/checkups/radio-isotope-use-medical-screening/</p>
<p>Distribution and recovery of Luminess badge dosimeters</p>	<p>School Administrative Office TEL <input type="text" value="ext."/> 24030</p>
<p>Application for authorization as radiation workers, Issue of certificates, Documents for accelerator and SOR facilities Purchase, transfer, transportation, and disposal of radioisotopes Installation and change of radiation facilities Registration of X-ray equipment and electron microscopes Report of the result of tests of X-ray equipment and electron microscopes Unusual radiation incidents, accidents, and problems *</p>	<p>Radiation Management Office via Laboratory Radiation Manger * Directly contact us in case of emergency</p>

Radiation Management Office, School of Science, the University of Tokyo

locality in Room B283, School of Science Bldg. 1 East, B2F
staff H. A. Torii, M. Tanikawa, H. Tozawa and N. Hyogo
E-mail ri-jimu@chem.s.u-tokyo.ac.jp

For termination of your status as an authorized radiation worker, ask your Laboratory Radiation Manger to submit a necessary document to the Radiation Management Office.

Quiz #1

After you have fulfilled necessary conditions, you will ask for authorization as a radiation worker by

- (A) loggin-in to the UTRadMS system and submit your application for authorization online.
- (B) asking the Laboratory Radiation Manager in your lab. to submit an application for authorization for you to the Radiation Management Office.