

# 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

2023年度

School Year 2023

# 放射線管理の法令

## Japanese Laws for radiation protection

- RI (radioisotopes) ·  $\alpha$  ·  $\beta$  ·  $\gamma$  · 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**.

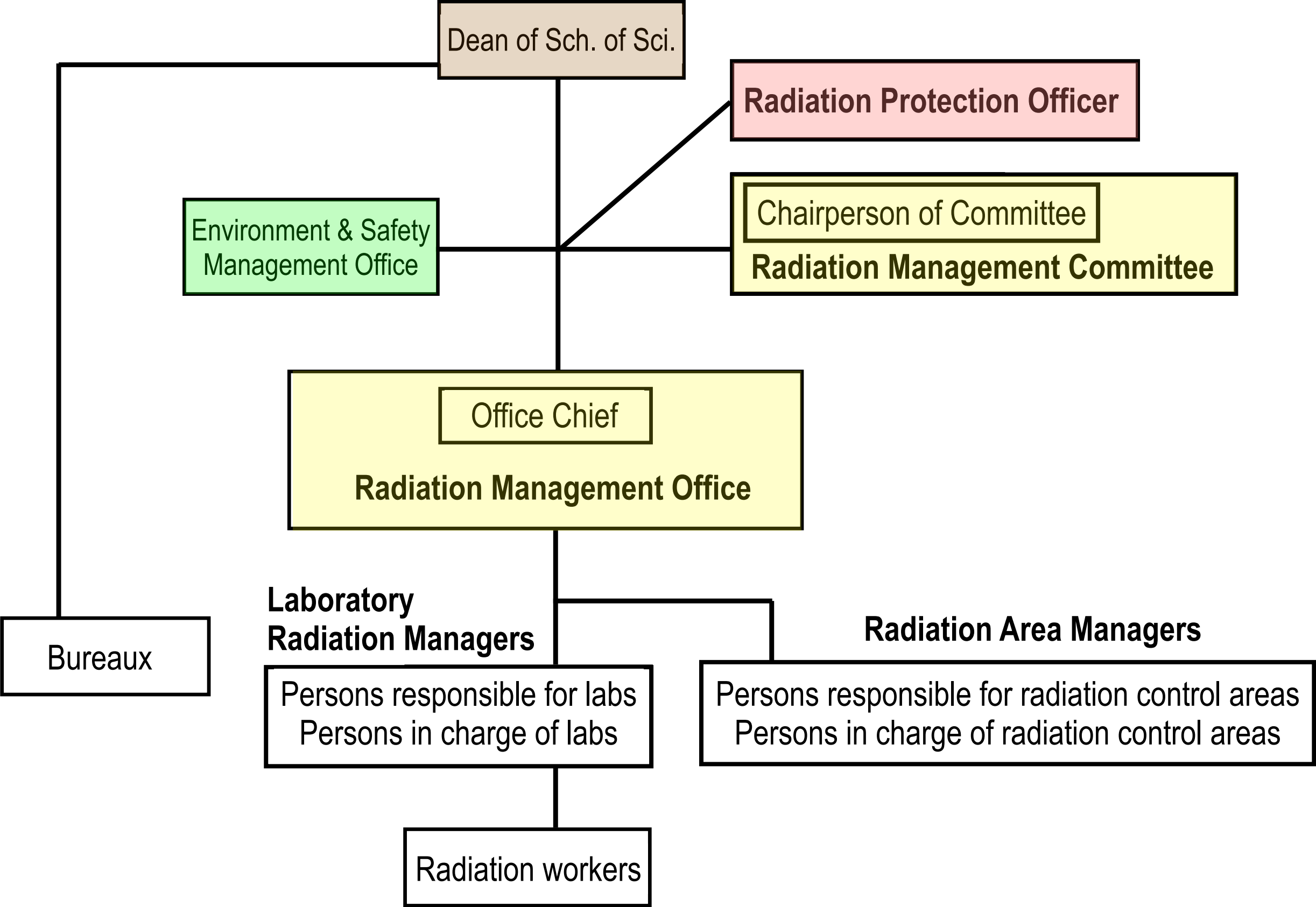
**Article 2** (Obligation of the Establishment)

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

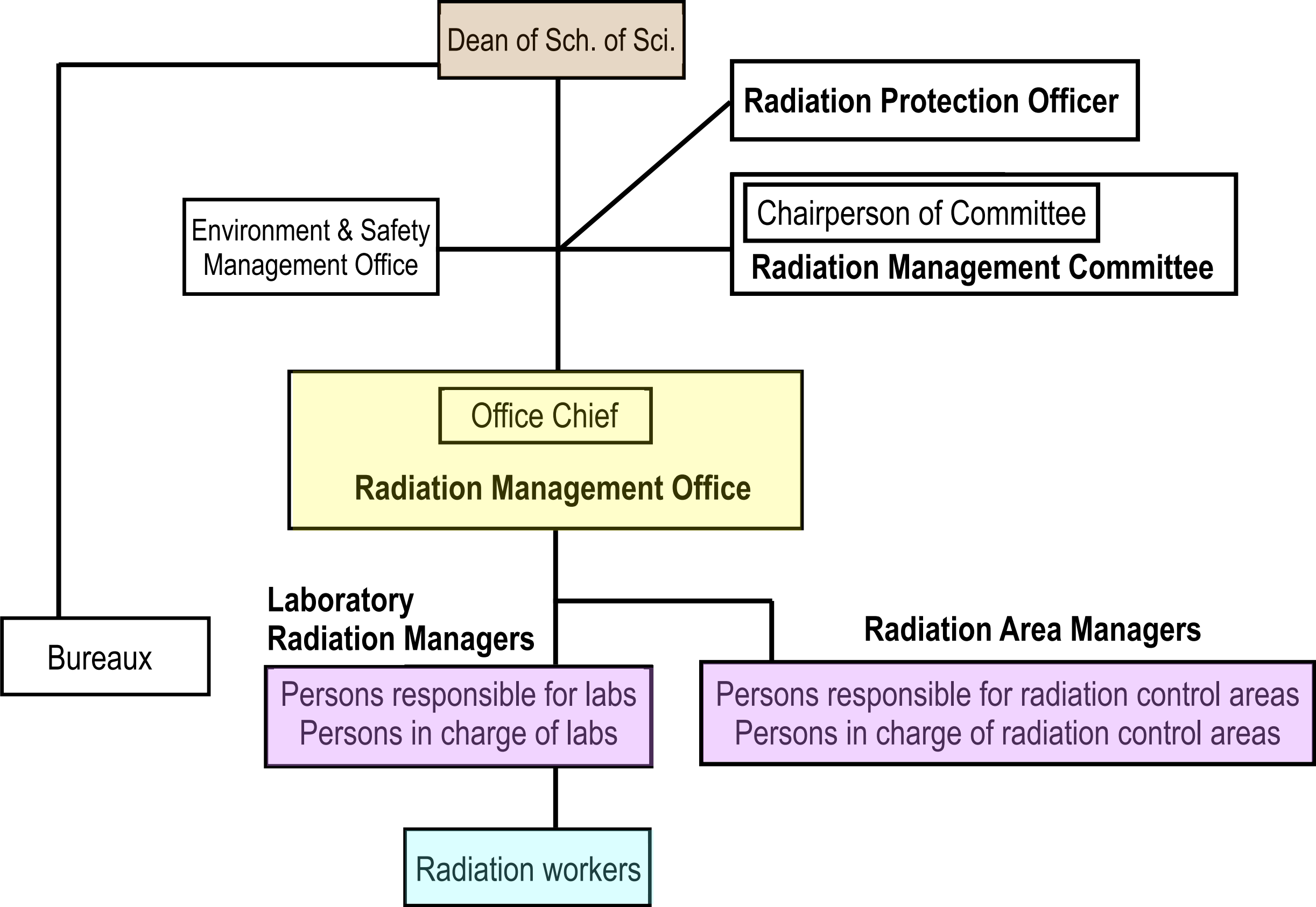
School of Science (SoS), the Univ. of Tokyo (UT) is an establishment permitted to use radioisotopes, with more than 500 radiation workers including X-ray users.

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

第 3 章 組織及び職務

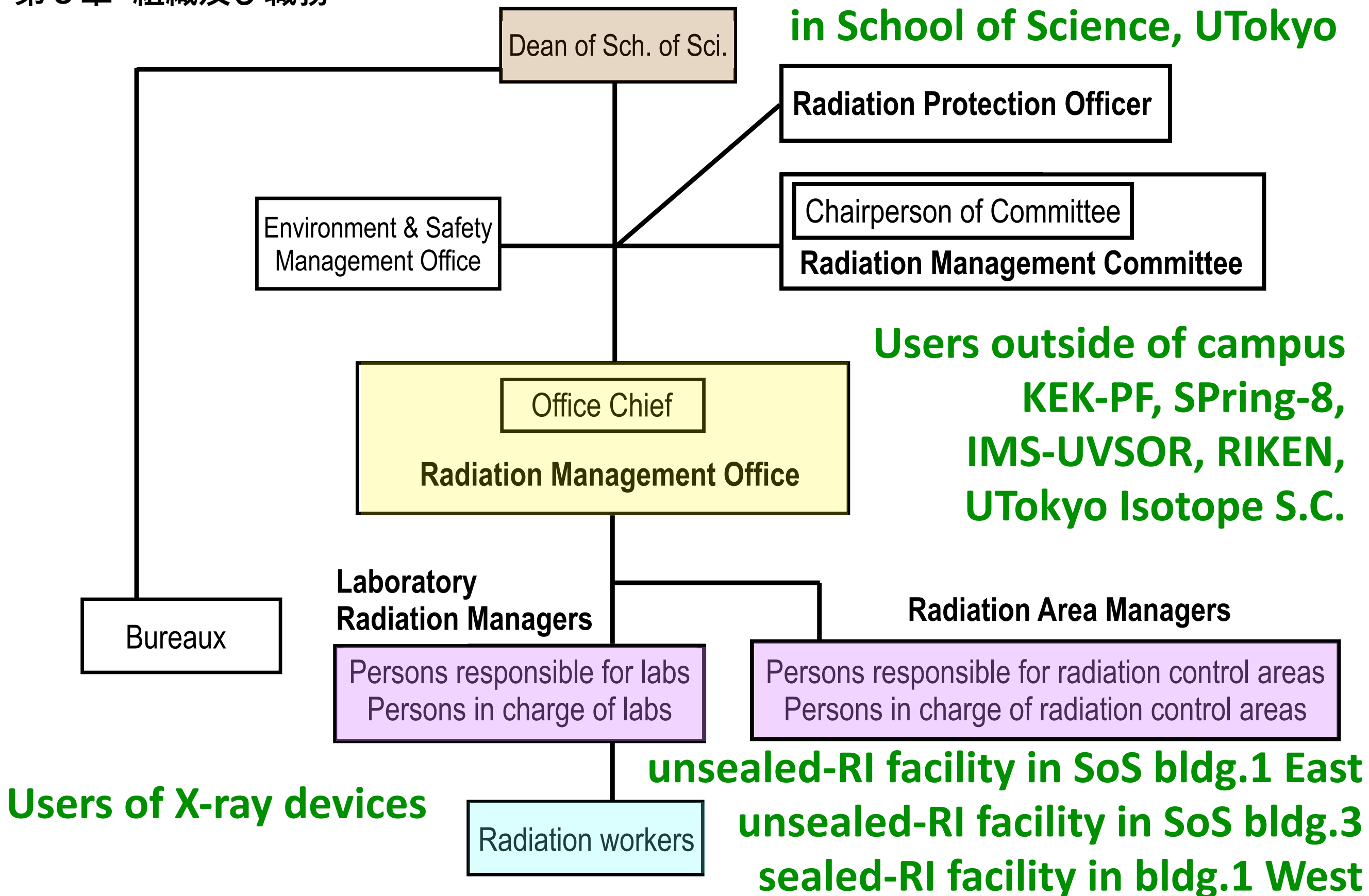


第 3 章 組織及び職務



### 第3章 組織及び職務

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



**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）やトレイ内で取扱う。

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。

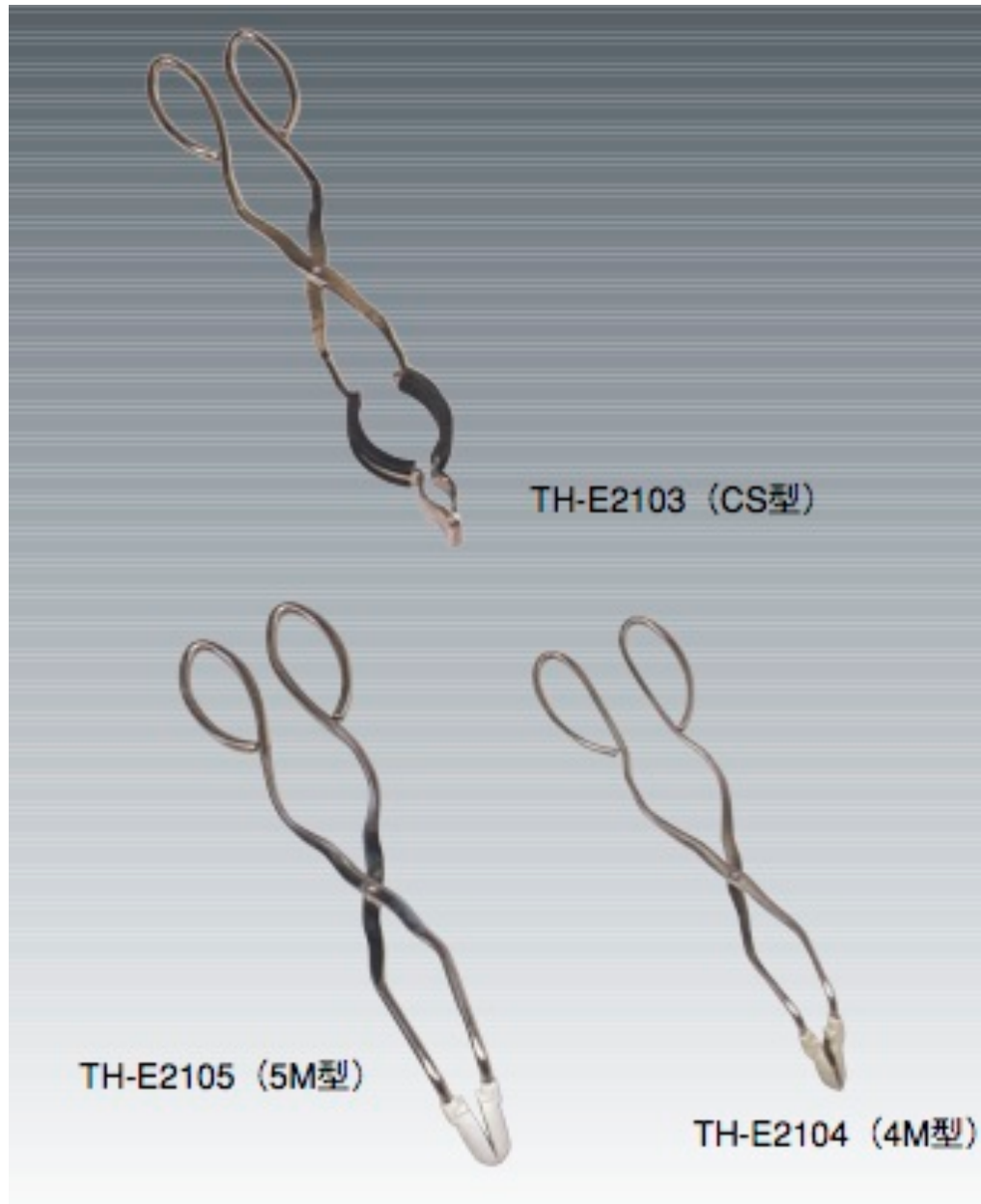
Use polyethylene sheets & trays

Separate waste boxes for RI & non-RI

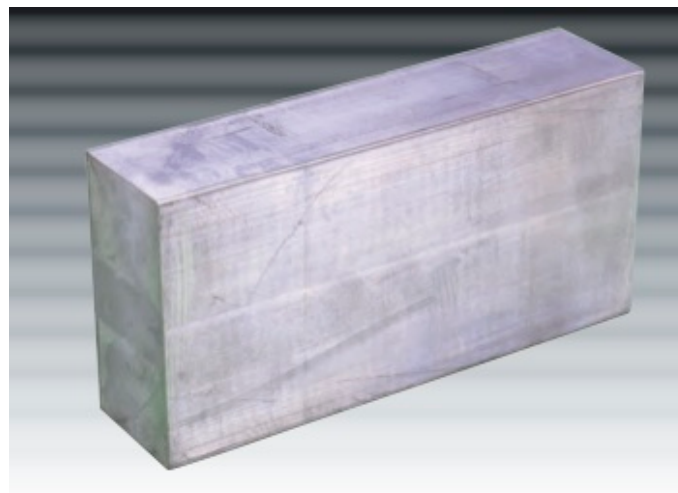
Use shielding materials suitable for nuclides used.



## 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,  $\gamma$  and  $\beta$  rays

KG type : X,  $\gamma$  and  $\beta$  rays, neutrons



**Position to wear the badge** : At the chest for males

At the abdomen for females

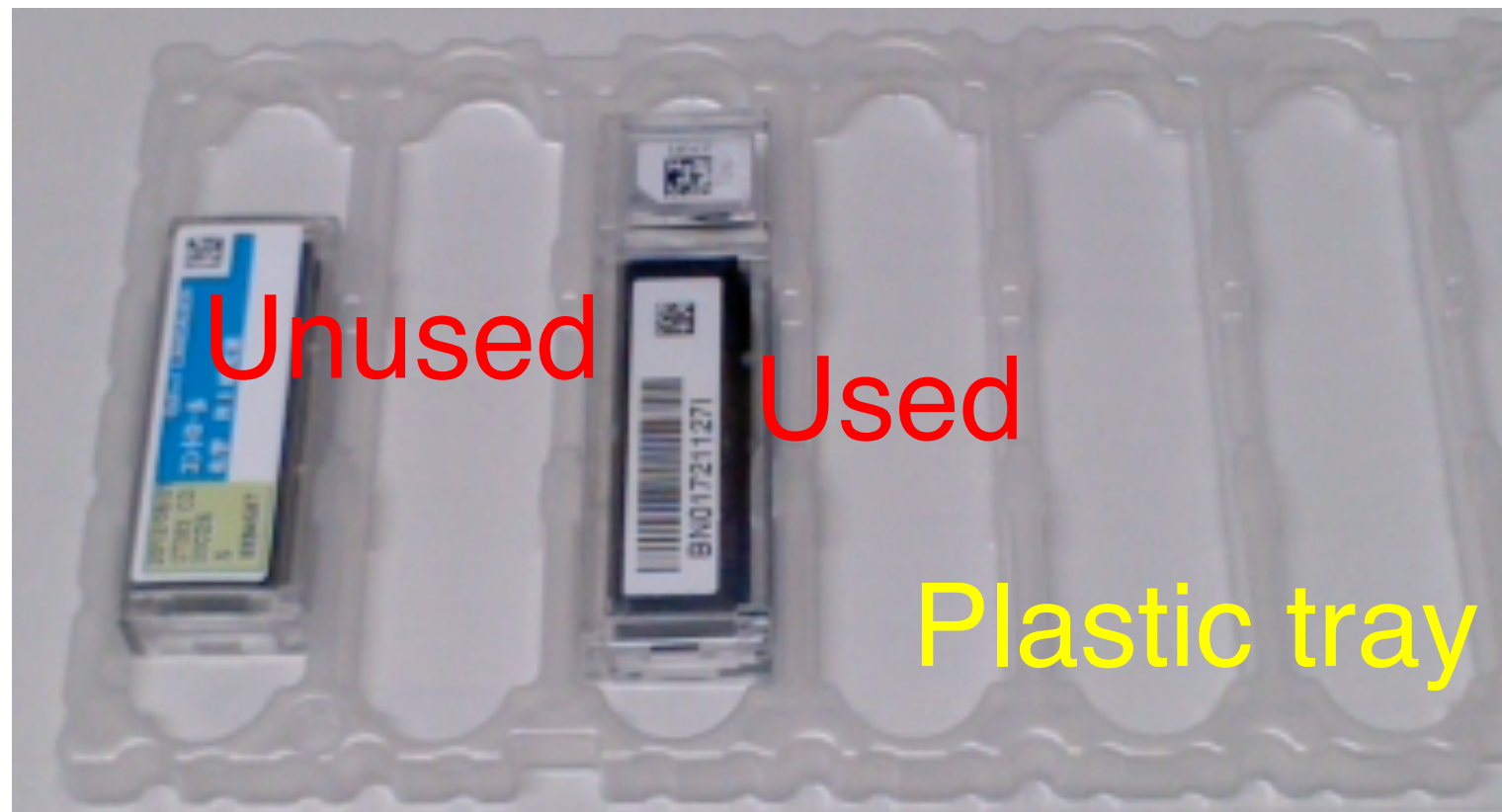
- ❑ Make sure to wear the badge to enter radiation controlled area in research institutes in Japan.

→ 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**

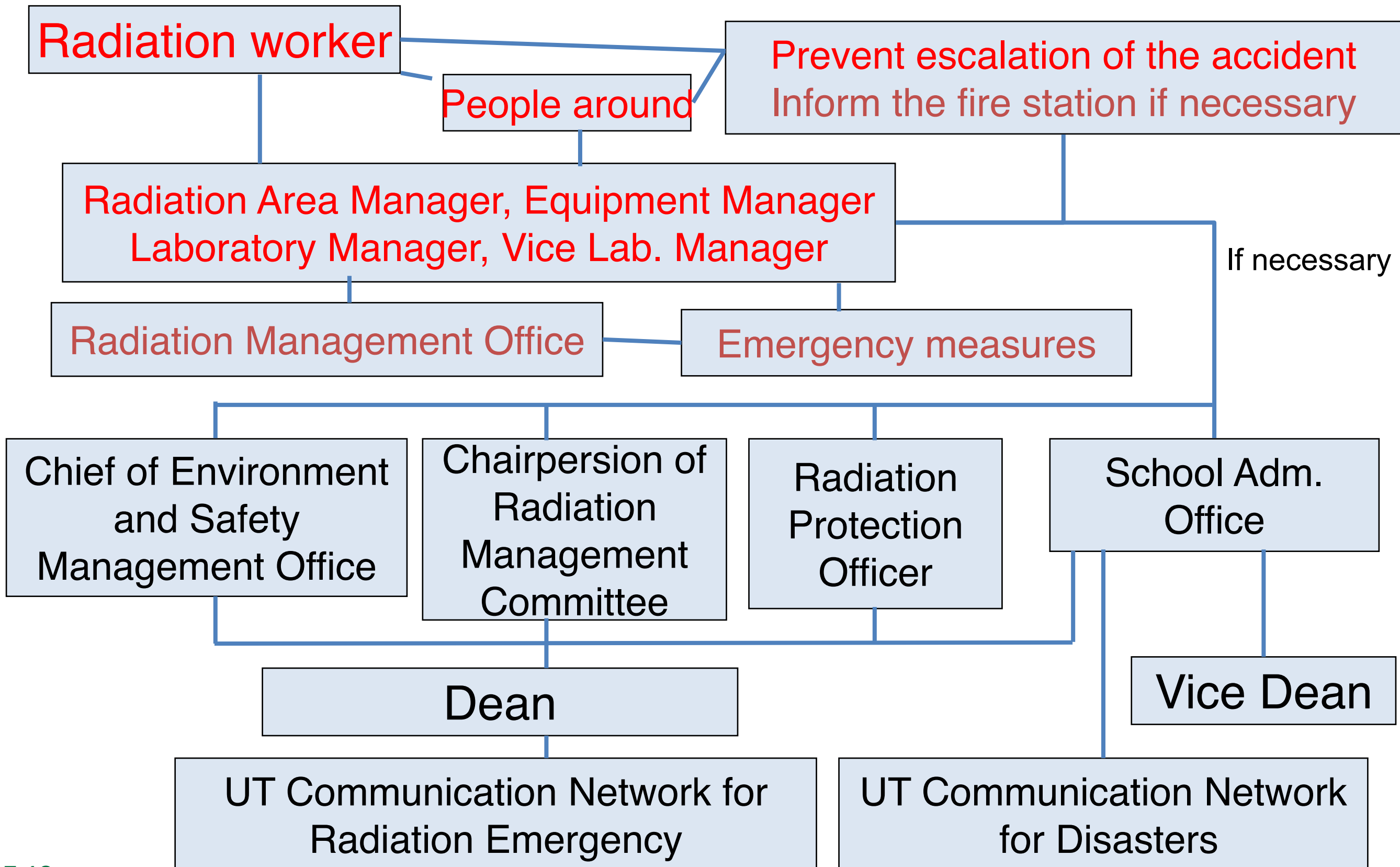
**Article 45** (Measures in case of disasters)

**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/>



## 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

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

## e-learning \* UTokyo radiation course

RIX course = 6 hours of e-learning

## School of Science radiation course

(today's course)

**Mandatory ANNUAL attendance**  
(except for X-AB users)

## Application for authorization

Distribution of badge dosimeter (except X-AB)

Permission to use X-ray devices (only for X-rays)  
On-site education from the X-ray device manager

**Consult the staff in charge**

**for radiation-related matter in your laboratory.**

\* 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

\* 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

## \* 全学一括講習会

(認定科目履修者は免除)

## 理学部講習会

(本日の講習会) **毎年再教育**  
(X-AB を除く)

## 認可申請

バッジ交付 (X-AB を除く)

装置使用許可 (X線装置のみ)  
使用前教育

**各研究室の放射線担当教員を**

**通じて手続きすること。**



# 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**

(X-AB を除く)

\* **Medical check for radiation workers**

(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 check

Tue. May 23 in Hongo campus

Mon. June 12 in Kashiwa campus

Mon. June 26 in Hongo campus

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

You should have answered the questionnaire  
before the medical check.

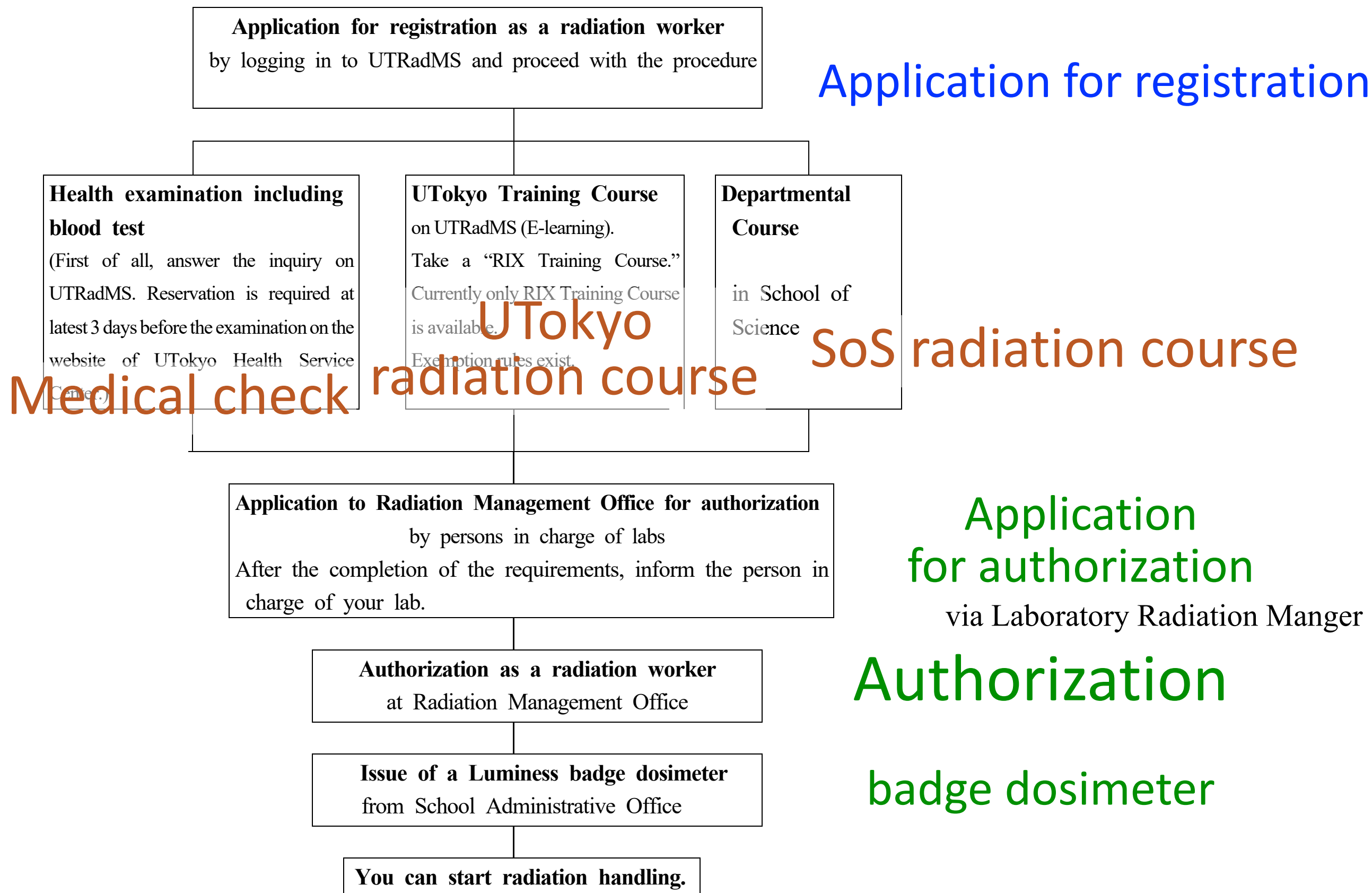


## ■ Flow Sheet for Radioisotope and Radiation Generating Equipment Users

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

# Accelerators, SOR (SR), Nuclear Reactors

Radiation Safety Manual  
to be downloaded



■ 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 Manager

**Authorization**

**Authorization as a radiation worker**

at Radiation Management Office

**badge dosimeter**

**Issue of a Luminess badge dosimeter**

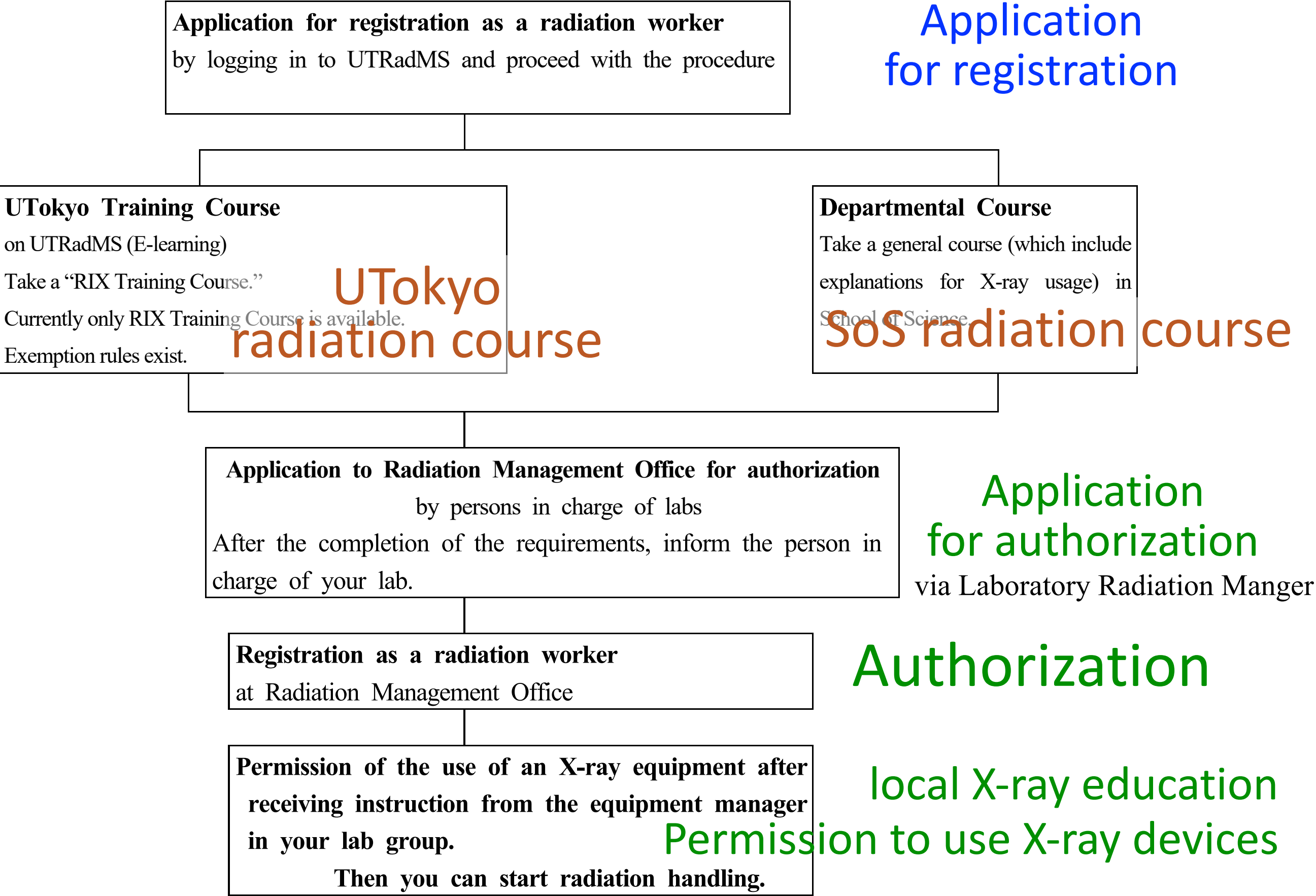
from School Administrative Office

**local X-ray education**

**Permission to use X-ray devices**

**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.



# 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)

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	UTRadMS Proceed with the procedure by yourself
Health examination for new registrants (Need to make a reservation at latest 3 days before the examination)	UTokyo Health Service Center <a href="http://www.hc.u-tokyo.ac.jp/checkups/radio-isotope-use-medical-screening/">http://www.hc.u-tokyo.ac.jp/checkups/ radio-isotope-use-medical-screening/</a>
Distribution and recovery of Luminess badge dosimeters	School Administrative Office TEL <span style="border: 1px solid black; padding: 0 5px;">ext.</span> 24030
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 *	Radiation Management Office via Laboratory Radiation Manger  * Directly contact us in case of emergency

## 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

True or False ?

After having applied for registration, all the applicants must take the UTokyo Radiation Course.