

Radiation Use Authorization Application Procedure

1. Purpose

The purpose of this procedure is to detail the Radiation Use Authorization (RUA) application process to Radiation Safety Officers (RSO), Research Compliance, Institutional Radiation Safety Committee (IRSC) members and applicants.

2. Scope

This procedure applies to all KAUST research spaces (i.e., this does not apply to the Innovation Cluster and the KAUST Research and Technology Park) where sources of ionizing radiation are used.

3. Definitions

IRSC	Institutional Radiation Safety Committee. The committee is responsible for ensuring the safe and appropriate use in research of all sources of ionizing radiation.
LSR	Laboratory Safety Representative is a laboratory user/worker that has been designated to communicate and promote exchange of information on safety hazards, concerns, and lessons learned as well as to report any problems to Health, Safety & Environment (HSE). The LSR provides an important link between the campus community and HSE.
NRRC	Nuclear and Radiological Regulatory Commission, the Competent Authority for Radiation Protection in Saudi Arabia.
PI	Principal Investigator is the person that oversees the research project involving the use of sources of ionizing radiation and that applies for the Radiation Use Authorization.
RCO	Research Compliance Office oversees all compliance requirements at the university related to research under one coordinated unit
RLCL	Radiation Labeling Core Lab. Laboratory where all work with unsealed radioactive substances takes place.
RSO	Radiation Safety Officer. The RSO is a radiation safety specialist who is licensed by the NRRC and appointed by KAUST to oversee the university's compliance with the ionizing radiation regulations in Saudi Arabia.

- RUA** Radiation Use Authorization. It is a permit granted by the IRSC and required before the use of any sources of ionizing radiation.
- SEALED SOURCES** solid materials, usually metal or plastic, that encapsulate a core of radioactive material. While sealed sources emit radiation, they are designed so that the radioactive material stays within, minimizing the chance of contamination.
- UNSEALED SOURCES** consist of powders, liquids or sometimes gases that contain radioactive elements and that could easily be released from their containers through leaks and spillages and dispersed into the environment.

4. RUA Application – Radiation Producing Equipment

Once the equipment purchase has been approved and/or the equipment has been ordered (see [Equipment Purchase Review Procedure](#)) the PI/responsible person must apply for a Radiation Use Authorization (RUA). This will allow the PI/responsible person to use the equipment after it has been commissioned. The IRSC is responsible to grant RUA for all equipment containing sources of ionizing radiation, but it delegates its responsibility to the RSO for some types of equipment that are considered safe (see Table 1). The RUA is valid as long as the equipment is in use and in compliance with IRSC requirements and radiation regulatory safety regulations.

Table 1. Person/body responsible for the RUA approval of equipment containing sources of ionizing radiation at KAUST.

Type of ionizing radiation	Body/person granting the RUA
Radiation-producing equipment emitting X-rays with energy below or equal to 50 kVp	RSO (Under delegation from IRSC)
Radiation-producing equipment emitting X-rays with energy higher than 50 kVp	IRSC
Radiation-producing equipment with open X-ray beam (Portable X-ray diffraction analysis system)	IRSC
Equipment containing sealed sources (Gas chromatograph, liquid scintillation counter, etc.)	RSO (Under delegation from IRSC)
Radioactive sealed sources for calibration	RSO (Under delegation from IRSC)
Radioactive substances – unsealed sources	IRSC
Others	IRSC

Procedure

The process to apply for a RUA for equipment containing sources of ionizing radiation is described below and in Figure 1:

Step 1:	<p>The PI/responsible person completes the RUA application <u>form</u> available on the Research Compliance webpage and sends it to IRSC@kaust.edu.sa along with the following documents:</p> <ul style="list-style-type: none">– Local Rules – this document provides all the safety information related to the equipment such as RSO contact details, dosimetry requirement, safety measures in place (e.g., personal protective equipment, equipment is shielded, equipment has interlocks, etc.) and emergency procedures. A <u>template</u> of the Local Rules is available on the Research Compliance webpage.– Standard Operating Procedure - this document must provide detailed explanations on how to use the equipment. For example, how to load a sample, how to select the correct program, how to analyze samples, how to unload the sample, how to put the equipment on standby or how to switch-off the equipment, etc. A <u>template</u> and an <u>example</u> of SOP are available on the Research Compliance webpage;– Acceptance and Commissioning Documents – documents that are provided by the company that commissions and installs the equipment (this is only required for new equipment).– Maintenance Plan – the PI/responsible person must describe how the equipment will be maintained.– Authorized User List – A list containing the names of users and operators of the device including their documented specific radiation safety training. Users of radiation-producing equipment which emits open x-ray beams must fill the dosimetry form available on the Research Compliance webpage and send it to the RSO (radsafety@kaust.edu.sa). For new equipment, this can be provided once the equipment has been commissioned and installed.
Step 2:	RCO forwards the application to the RSO.
Step 3:	RSO decides within 2 days whether the RUA application needs to be reviewed and approved by the IRSC or if it only needs to be reviewed and approved by the RSO on behalf of the IRSC.

A - RUA application requires IRSC review and approval

Step 4: RCO forwards the RUA application and associated documents to all IRSC members for consultation and review.

Step 5: IRSC members have 10 days or until the next IRSC meeting to review the RUA application and associated documents and ask any questions.

Step 6: IRSC members vote (by day 10 or at the next IRSC meeting) whether they approve, reject or request amendments to the application. The vote can either occur during an IRSC meeting or via email consultation.

Step 7: Application rejected/requires amendments:
RCO sends a letter to the PI/responsible person stating the reasons for rejection or for requesting amendments.

Step 8: Application approved:
RSO visits the laboratory to ensure warning signs (if required) are in place and discuss with the LSR and PI the required documentation if was not sent with the application.

Step 9: RSO notifies the RCO that the RUA Approval letter can be sent

Step 10: RCO sends the RUA approval letter to the PI/responsible person who becomes a RUA holder and distributes the summary report/note to all IRSC members for information

B – RUA application requires RSO review and approval

Step 4: RSO has 10 days to review the RUA application and associated documents and ask any questions.

Step 5: Application rejected/requires amendments:
RSO informs RCO and states the reasons for rejections or required amendments.

Step 6: RCO sends a letter to the PI/responsible person stating the reasons for rejection or for requesting amendments.

Step 7: Application Approved:
RSO visits the laboratory to ensure warning signs (if required) are in place and discuss with the LSR and PI the required documentation if was not sent with the application.

Step 8: RSO sends a summary report/note to RCO and sign the prepared the RUA approval letter prepared by the RCO.

Step 9: RCO sends the RUA approval letter to the PI/responsible person who becomes a RUA holder and distributes the summary report/note to all IRSC members for information.

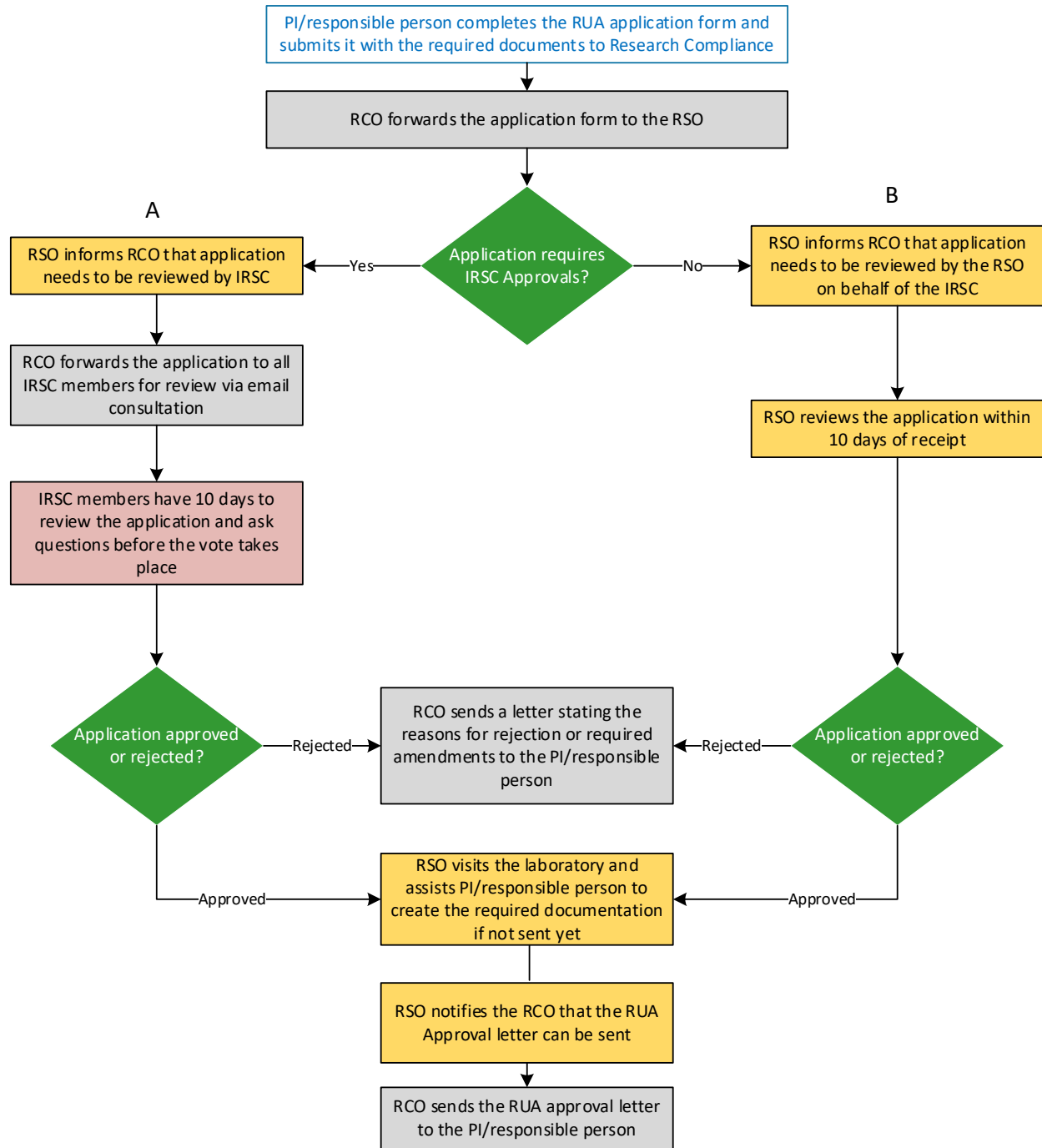


Figure 1. Radiation Use Authorization Application Process for Radiation-Producing Equipment

5. RUA Application – *Radioactive Material (Sealed & Unsealed Sources)*

5.1. Sealed radioactive substances

Sealed sources could be stand-alone sources such as calibration sources or embedded radioactive sources inside an equipment such as LSC or Gas-Chromatograph. If a PI/responsible person wants to use sealed radioactive sources, they must first contact the RSO to discuss the requirements and in particular whether such use is covered by the KAUST license. If the RSO pre-approves the use of a particular sealed source the PI/responsible person must then apply for a RUA.

5.2. Unsealed radioactive sources

The use of unsealed radioactive substances is only allowed in the RLCL (except for the use of uranyl acetate, uranyl nitrate or as deemed by the IRSC in coordination with the RSO). If a PI/responsible person decides to use any unsealed radioactive substances, they must coordinate with the RLCL management to ensure that the necessary equipment/consumables for the planned experiments are available (i.e., the experiment can be carried out in the RLCL). The purchase of all open radioactive substances that will be used in RLCL is done in coordination with the RLCL lab safety specialist and must be approved by the RSO.

The process to apply for a RUA for radioactive materials is described below and in Figure 2:

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| Step 1: | The PI/responsible person completes the RUA-RM application form available on the Research Compliance webpage and sends it to IRSC@kaust.edu.sa . |
| Step 2: | RCO forwards the application to all IRSC members within 2 days of receipt for review via email consultation within 10 days. |
| Step 3: | IRSC members have 10 days to review the RUA application and ask any question. |
| Step 4: | IRSC members vote whether they approve, reject or request amendments to the application. |
| Step 5: | <u>Application rejected/requires amendments:</u>
RCO sends a letter to the PI/responsible person stating the reasons for rejection or for requesting amendments. |
| Step 6: | <u>Application approved:</u>
RSO contacts the PI/responsible person to complete and send the authorized user forms to radsafety@kaust.edu.sa |
| Step 7: | When all authorized user forms have been received, the RSO informs RCO that the RUA approval letter can be sent. |
| Step 8: | RCO sends the RUA approval letter to the PI/responsible person who becomes a RUA holder. |

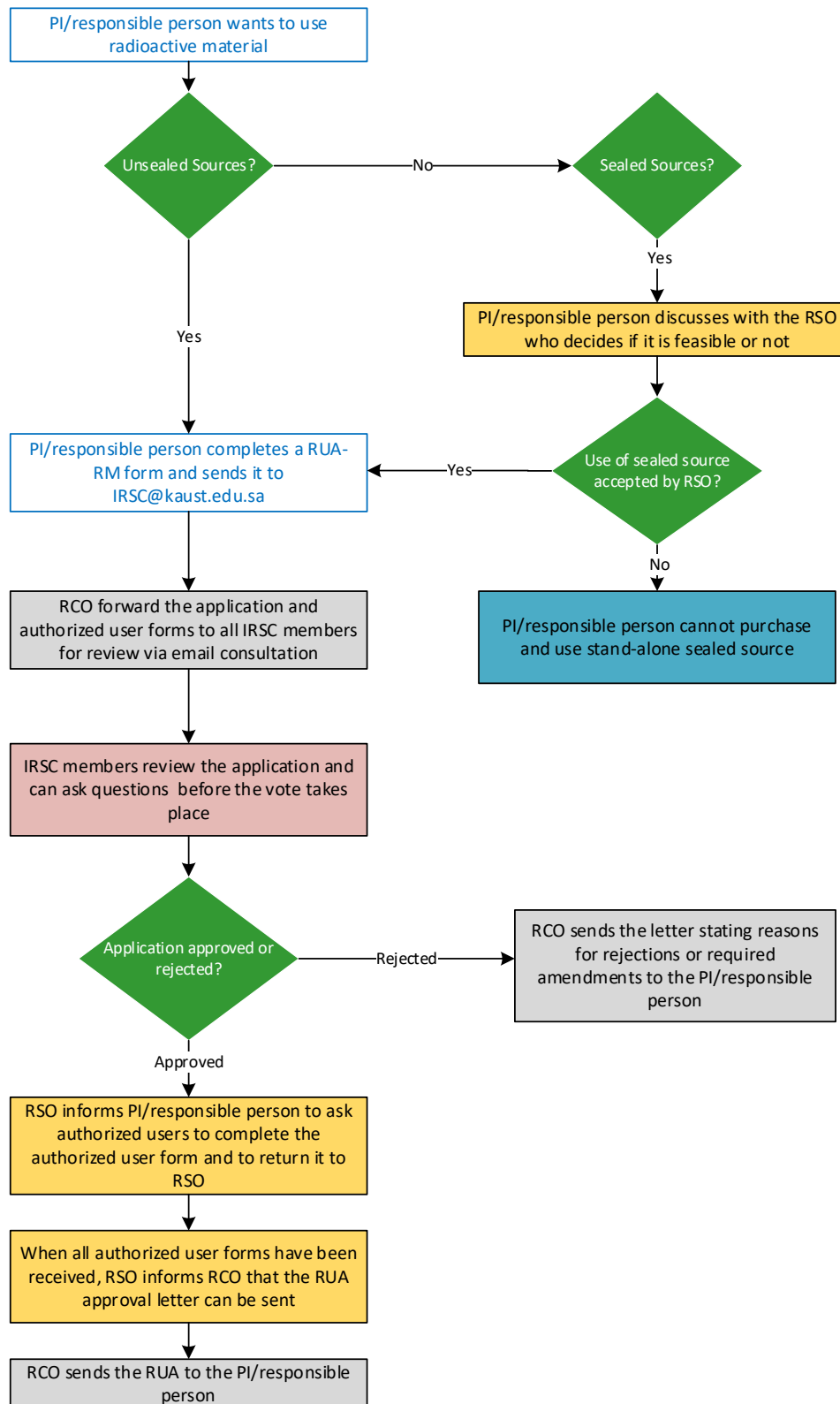


Figure 2. Radiation Use Authorization Application for radioactive material.