

**RADIATION CONTROL DEPARTMENT**

**MEMORANDUM**

From: ESH&Q Division, Radiation Control Department (David Hamlette)

To: Test Lab Group (John Fischer)

Subject: Cryomodule re-work involving radioactive material controls

Date: 1/2/2024

During the cryomodule re-work, portions of the Test Lab, and the Test Lab Addition (TLA) area will be posted as Radioactive materials/Radiologically Controlled areas. Because these modules have had varying decay time, the disassembly process may also create more items requiring radioactive material labeling and controls. Radioactive Material (RAM) is defined, per the RadCon Manual, as any activated material, equipment or system component distinguishable from background.

**During the first C100 cryomodule (1L23) re-work, contamination was identified on several items that utilized indium seals. This is due to the high cross-section for neutron activation at relatively low residual dose rates, and oxidation tendency, that make it a particularly significant concern***.*

The following guidelines are to be adhered to during the disassembly process:

* Persons must be Radiation Worker I qualified to handle RAM.
* The SRF techs will remove items during the disassembly process and place them in designated bins (unless too large). Members of the RCD only, will periodically survey these bins, and if indistinguishable from background, transfer them out of the RMA/RCA.
* RCTs will perform contamination surveys on all items and surfaces that contain indium seals prior to any disassembly processes.
* Persons handling contaminated materials or working in contamination areas MUST be RW-II qualified.
* All work in contamination areas, or on contaminated items MUST be governed by a radiation work permit (RWP)
* Removal of indium seals and/or gaskets **will be performed** under the guidance of a member of the RCD. This will include a briefing of work controls, establishing a work area (with waste collection), and protocol for disposal.
* If SRF staff is absent when surveys are performed, “OK” tags will be attached to the bins to inform personnel of “cleared” status. Free release status can also be indicated through the use of magenta paint marker (i.e. “OK’d by RCD 9/28/20)
* RAM tags must accompany any activated item at all times, with the exception of cleaning, heating or any operation in which the tag will impede the process or the tag could be potentially damaged or destroyed*. (Lockable/securable containers with inventory lists, will also be used to manage numerous smaller activated items, or large items in crates, secured with RAM tag/tie wrap)*
* When performing processes referenced in previous bullet:
  + The tag is to be removed by the worker performing task and placed on the RAM tag board located in the area.
  + Once task is complete, the tag is to be placed back on the material/equipment.
* Activated waste will be placed in designated RAM garbage cans. These cans are to be used for potentially activated components that are no longer needed (i.e. gaskets and screws, but not paper products)
* Eating, drinking or smoking is not permitted in Radioactive Material Areas

Some Cryomodules may be significantly activated, and the Radiologically Controlled Areas (RCAs) associated with the rework process will create a larger footprint, and likely impact more work areas than previous C-50 modules.  RCAs are clearly posted areas where access is restricted to designated, properly trained radiation workers who are wearing appropriate dosimetry. RCAs are driven by dose rates. These areas contain items with dose rates at 30cm, in excess of 0.05 mR/hr. In addition to the above RMA guidelines, persons entering RCAs must:

* Be wearing a personal dosimeter (OSL)
* Must not remove any items from RCA that could potentially create other RCAs in addition to RMAs.

For any questions please contact the RadCon cell-(757)876-1743, or Zach Giunti-(757)817-5104