

# Radiation Protection Plan for Calvin College

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Goals: First and foremost, to provide a safe environment for personnel using radioactive isotopes or other sources of radiation (such as x-rays) in teaching, learning and research. To prevent unintended exposure to radiation or contamination by rad materials of all persons and to ensure that intended uses involve exposures that are at safe levels. Second, to ensure safe storage of materials and to maintain accurate records of all materials in our possession or of material that has passed through our possession for permanent disposal. Finally, to ensure Calvin College is in full compliance with the requirements of all relevant State and Federal rules and regulations generally and as detailed in any applicable NRC and State licenses.

## Protection of Personnel

1. All radioactive (“rad”) materials will be stored in locked storage when not in use.
2. Licensed researchers and users of radiation producing devices or rad materials will be required to instruct students and employees working under their supervision with rad materials concerning radiation safety regarding those specific materials or devices. Workers not directly trained to use rad materials but using the same work rooms must be informed that rad materials are used there and be prohibited from contacting or otherwise moving the rad materials.
3. Proper warning signs will be posted by doors and in rooms where rad materials are used and stored. “notices to employees” required and provided by state and/or federal regulatory agencies will also be prominently posted.
4. Persons using rad materials or devices will be assigned dose monitors as appropriate. These will be collected and new ones distributed on a regular schedule. Records of monitor readings will be kept on file and will be scrutinized by the RSO for any nonzero readings in appropriate categories listed in the vendor dosage reports. Such readings will be reported to the wearer as soon as possible if above 5 mrem and at any time upon request. The 5 mrem level is 0.1% of the minimum Federal total dose equivalent for occupational exposure. (For comparison, the US average annual dose equivalent is 360 mrem from all sources.)
5. Sealed sources whose activity level requires periodic testing by federal or state agencies will be leak tested on a regular schedule. If leakage is discovered, immediate corrective action will be taken and the source will be removed from service. Follow up will be done to assess any use of the source in the period prior to detection of a leak and appropriate actions involving informing any potential “contaminees” of that possibility and appropriate decontamination measures will be taken if necessary.
6. Specific procedures for dealing with spills of rad materials or other accidents will be available in written form and workers informed of same. They will be readily accessible to workers if needed.

## Maintenance of Records

Records of rad materials shall be maintained for the following categories and purposes:

1. Dosimetry reports (see item 4 under Protection of Personnel) will be kept indefinitely for all personnel to whom dosimeters of any type have been issued. These reports will be available at any time from the RSO if requested by or authorized by the individual user.
2. Maintain an accurate inventory of all licensed material at Calvin College. Besides paper records, an Excel™ spreadsheet will be updated periodically with capability to calculate total

isotopic activity levels based on initial activity and half-life. These totals will be checked against licensing limits for specific isotopes and for the grand total limit of our license. This file is to be maintained on the RSO's "C drive" with a backup stored on network drive.

3. Completed "Requests To Order Licensed Radioactive Materials" forms and the "Receiving and Opening Packages Containing Radioactive Material" forms are to be filed once packages are received and inventory information entered into the aforementioned Excel spreadsheet.
4. When material is moved to decay in storage or just stored as waste until time of pickup and disposal, the spreadsheet is to be updated as to its status and location, which is normally to be in SB-030A, the isotope storage "vault".
5. A "Disposal of Licensed Radioactive Material" form is to be completed when materials are removed from inventory.
6. Records of sealed-source leak tests will be maintained as required by NRC regulations.
7. Records of periodic calibrations of radiation survey instruments shall be kept as required.

This document supersedes the previous version of Aug 12, 2002.