
PURPOSE

This procedure provides instructions to radiation safety personnel for performing radiological evaluations of laboratories using radioactive materials or ionizing producing machines. It also contains instructions and forms for recording and reporting the results of such evaluations.

RULES AND REGULATIONS

The RCO shall ensure that all areas where radioactive materials or ionizing producing machines are stored or handled are inspected at appropriate intervals to ascertain the radiological risks and to evaluate the control measures in use. Radiation surveys shall be performed, when necessary, by technically qualified personnel using instruments appropriate to the nature of the radioactive materials or ionizing producing machines.

For radioisotope laboratories, i.e. those where dispersible radioisotopes are used, the frequency of routine evaluations is based on the "interval inventory". The "interval inventory" is the number of ALI's on hand at the beginning of the interval plus the total number of ALI's acquired during the interval. The routine evaluation frequencies for various average monthly inventories are shown in the box below.

If no work with radioisotopes or ionizing producing machines is being done, and all radioisotopes are stored in a locked location conspicuously labeled with a sign or ionizing producing machines are disabled and notification of the RCO is required prior to any further use of radioisotopes or ionizing producing machines, the laboratory may be considered to be inactive. An inactive laboratory need not be evaluated routinely, but the status must be verified at least annually.

The nominal evaluation frequencies given in the table below are to be interpreted as guidelines. In cases where continuing problems are found, the interval between surveys may be shortened. If results obtained over a period of a year indicate no problems, the routine evaluation interval may be increased. The evaluation interval is determined and voted on by the Radiation Safety Committee (RSC) before any changes are initiated. In no case, however, will the interval be more than double the nominal interval. To assure a realistic and independent evaluation of typical conditions, the schedule for evaluations may be varied randomly.

RCO ROUTINE RADIOISOTOPE LABORATORY EVALUATIONS

Interval Inventory*

>30 ALIs
1-30 ALIs
<1 ALI
Inactive**

Nominal Frequency

Monthly***
Each bioassay interval
Twice-annually
Annually

* Monthly average during interval.

** See text.

*** For sealed or nondispersible forms of radioisotopes or ionizing producing machines, the laboratory shall be surveyed at least semi-annually, regardless of the quantity on hand.

DEFINITIONS

Bioassay Interval: The maximum time that may elapse between bioassays that will assure detection of the verification level. See "BIOASSAYS FOR INTERNAL RADIOISOTOPES" (RI-12).

Radioisotope Laboratory: Any room or area in which 10 or more Reference Quantities of unsealed radioactive materials are stored or used

Reference Quantity: A quantity of any radioisotope related to its relative hazard potential and used to prescribe requirements for handling, monitoring, labeling and disposal. See "RADIONUCLIDE CATEGORIES AND DATA" (RI-10).

Interval Inventory: The number of ALI's on hand at the beginning of the interval plus the total number of ALI's acquired during the interval.

Controlled Area: Any area to which access is limited for any reason. Radioisotope laboratories are controlled by posting and locking for the purpose of preventing unauthorized removal of radioactive materials. Exposure to radioactive materials is prevented by controlling the materials, not by limiting normal access to the laboratory when it is open and attended.

Restricted Area: Any area to which access is limited for the purpose of protecting individuals against undue risks from exposure to radiation and/or radioactive material. The mere presence of any radiation source, if adequately controlled to limit potential exposures, does not necessitate a restricted area designation. Areas containing sources or ionizing producing machines with the potential for producing significant exposures require specific authorizations and procedures for access and are designated as restricted areas.

Radiation Area: Any accessible area in which an individual could receive a dose equivalent exceeding 5 mrem in 1 hour at 30 cm (1 ft) from the source or from any surface the radiation penetrates.

High Radiation Area: Any accessible area in which an individual could receive a dose equivalent exceeding 100 mrem in 1 hour at 30 cm (1 ft) from the source or from any surface the radiation penetrates.

Airborne Radioactivity Area: Any room or enclosure in which airborne radioactive material exists in concentrations exceeding the derived air concentrations (DAC's) or in which any individual could be exposed to more than 0.6% of the ALI in one calendar week.

INITIAL OR PRE-START EVALUATIONS

Before radioactive materials or ionizing producing machines are introduced into a laboratory, a general evaluation is made by the RCO to ascertain that equipment, instruments and supplies necessary for controlling contamination and exposures are present or will be available when work begins. A floor plan map should be prepared during the pre-start evaluation. This map should be approximately to scale and should identify the locations of storage and work areas, waste storage locations, hoods, sinks, machine location(s) etc.

For dispersible radioisotope laboratories, the anticipated quantities and frequencies of radioisotope orders should be reviewed and verified with the user. Calculate the expected average monthly inventory, in ALIs, and review with the user the significance of the inventory to the routine survey and bioassay requirements. If animals are to be used, review "HOUSING AND HANDLING OF RADIOACTIVE ANIMALS" (RI-15) with the user.

Procedures for handling and storing radioisotopes or ionizing producing machines, for surveying and monitoring, for waste disposal and for record keeping should be discussed with the Principal User (PU). If an analytical instrument is to be used for counting bioassay samples or contamination wipe tests, review with the user the counting efficiency for each sample type and for each anticipated isotope. Review with the user appropriate sample sizes and counting times for bioassay samples, and the results that would require verification.

Prior to the start of work with radioisotopes in the laboratory, waste containers are to be available and the necessary signs and labels are to be posted. The appropriate "LABORATORY EVALUATION CHECK LIST" is used as a guideline for items to be evaluated and is retained in the PU's laboratory survey file.

ROUTINE EVALUATIONS

Preparation

1. Select the appropriate "LABORATORY EVALUATION CHECK LIST" relative to the ionizing radiation use in the area(s). Go through the checklist and complete all sections.
2. For radioisotope laboratories, make or print a map of the lab(s) showing wipe test and direct survey locations with corresponding item numbers. Items 1, 11, 21, 31 etc. will be designated as blanks.
3. Review the emissions, energies and ALIs of the isotopes used. Determine the removable contamination limit(s) that apply to the isotopes used (RI-10).
4. Review the PU's current radioisotope inventory. Which isotopes are significant for contamination or exposure potential? What is the interval inventory?
5. Review the previous survey results. Were there any problems? Were there recommendations that require follow-up during this evaluation?

Exposure and Contamination Surveys

1. Record the make, model, serial numbers, efficiencies, calibration factor and background of survey meters used for the survey on the "CONTAMINATION / RADIATION SURVEY REPORT" form (RF-53A) under the "(DIRECT)" section for the efficiencies and background, the "Calibration Factor" section and the "Contamination Survey, INSTRUMENT / SERIAL #, ALPHA (DIRECT), BETA-GAMMA (DIRECT) section.
2. If the lab uses only tritium, the entire contamination survey must be done by wipe testing. The results are to be recorded on the "CONTAMINATION / RADIATION SURVEY REPORT" form (RF- 53A).
3. Unless the lab uses only tritium, the first priority should be a direct survey for contamination. For I-125, a thin-crystal scintillation detector is best. For alpha emitters an appropriate alpha detector should be used. Otherwise, use a thin-window G-M survey meter with audible indicator. Move the detector slowly, 1 detector width per second, over all surfaces/items identified on the lab map(s), holding the detector 1-2 cm from the surface. If there are other areas/items with potential contamination, survey these also and add these to the map and the RF-53A form with the next available item #. Record all readings on the RF-53A under the Alpha or Beta-Gamma CPM column or the Beta-Gamma column and mark the appropriate units relative to the item #. The specific "ITEM OR LOCATION" i.e. benchtop, centrifuge, sink, should be recorded relative to the corresponding "ITEM #".
4. At locations with positive indications of exposure or contamination, first ascertain whether the reading could be penetrating radiation coming through the surface, rather than from contamination on the surface. If significant penetrating

radiation is detected, i.e. more than 0.2 mrem/hr (approximately 10 times background), an exposure rate measurement should be made with a calibrated exposure-rate survey meter, usually at 30 cm (1 ft) from the surface. Record the results and post the area if necessary.

5. For all surfaces/items identified on the lab map(s) take a wipe with an absorbent material, e.g. filter paper. If possible, wipe at least 300 cm²; if not, wipe 100 cm² or the entire surface. (A 300 cm² area is any equivalent of a 7-inch square or a strip 2 cm wide and 1.5 meter long; a 100 cm² area is any equivalent of a 4-inch square or a strip 1 cm wide and 1 meter long. An S-wipe over a distance of 12-14 inches can also be used and is approximately 100 cm².) All locations with a positive indication of surface contamination with a direct survey should be cleaned immediately.
6. All wipes are to be counted on a gas-flow proportional counter which includes a NaI detector and in a liquid scintillation counter. The results should be attached to the RF-53A form.
7. If contamination is detected and the isotope is not known, the procedure in the following section may be used in the laboratory to categorize the contaminant for further analysis.

Contaminant Evaluation by Direct Measurement

- a. Make a measurement of the contaminated surface or of a wipe with the thin-window G-M survey meter.
- b. Make a second measurement after placing a sheet of paper over the contamination while keeping the meter in the same position relative to the contamination. If the second result is less than 1% of the first, the most likely contaminant is an alpha emitter. Use a gas-flow, internal proportional counter or a liquid scintillation counter to make a quantitative measurement.
- c. If the second result is reduced to about 15% of the first, the contamination is most likely a low-energy beta emitter, e.g. ¹⁴C, ³⁵S, or ⁴⁵C. Use a liquid scintillation counter to make a quantitative measurement.
- d. If the second result is more than 50% of the first, the contamination could be a high-energy beta and/or gamma emitter. Make a third measurement with a 1-mm thick piece of aluminum over the contamination.
- e. If the third result is less than 20% of the first, the isotope is most likely a high-energy, pure-beta emitter, e.g. ³²P. Use the appropriate efficiency for the portable survey meter to quantify the result.
- f. If the result obtained through 1 mm Al is more than 50% of the first, the contaminant is a gamma emitter. If it is important to identify the isotope, take a wipe or sample of the contamination for gamma-spectrum analysis.

Routine Audit

A radiation safety audit is a systematic review of all operational and administrative radiation protection requirements in addition to a survey for exposure rates and removable contamination. An audit includes, but is not necessarily limited to, the following items:

Storage and Security

The regulations governing the use of radioactive materials require that they be secured from unauthorized removal. To accomplish this, the lab entrance and any cabinets, refrigerators or freezers in which radioisotopes are stored, must be locked when the lab is unattended. This should be verified by noting that locks are available and by querying the users. Any discrepancies in security measures shall be reported promptly to the Principal User and any recurrence shall be reported to the RSC.

Fume Hoods

The velocity of air entering the hood should be measured annually. Since the sash of the hood is intended to serve as a shield to protect the face from spatters, as well as to control air flow, it should be set at an appropriate working height when measuring the air flow rate. It is usually necessary to discuss proper use of the sash with the person who uses the hood before deciding where the sash should be for the measurement. It is also important to clear the hood of major obstructions to the flow of air. This necessity should also be discussed with the user to assure that the hood provides the intended protection.

Environmental Health Services certifies all fume hoods at CSU. Procedures and velocities for certifying radioactive fume hoods are as follows. With the hood free of major obstructions and with the sash at the appropriate height, the face velocity is measured with a small anemometer held with the inlet facing directly out from the hood. At least six measurements at different locations are made within the opening and the average velocity in feet per minute (fpm) is recorded. **No single measurement will be less than 60 fpm or more than 150 fpm; the average face velocity should be in the range of 80 to 100 fpm.** If the desired velocity cannot be attained, possible modifications in techniques or to the equipment are discussed with the user or the fume hood is posted to not be used until appropriate repairs or modifications are completed. If the face velocity is acceptable, the velocity, date, use category and name of the individual performing the measurements is recorded on a fume hood label and attached to the frame of the fume hood. At the level of the bottom edge of the sash that provides the appropriate velocity, a posting is placed to alert individuals to keep the sash at or below this height.

The fume hood should be visually inspected during each routine audit to assure that it is functioning and being used properly.

Contamination Control

Gloves, lab coats, or other protective clothing as needed for the work, should be available and worn in the lab. Lab coats and gloves should not be worn outside of radionuclide handling areas. Sandals or other open-toed shoes or exposed legs are not acceptable for work with radioisotopes.

Work, storage and waste areas are required to have secondary containers and should be covered with absorbent paper. Plastic trays and dishpans are suitable for use as secondary containers. The protective covering should be replaced when it becomes excessively dirty or contaminated.

There should be no evidence of mouth or skin contact with objects used in the radioisotope work areas. Any signs of eating, drinking, smoking or mouth pipetting in the lab is considered de facto evidence of a violation of this requirement and shall be reported to the Principal User promptly. However, it is important to watch for other personal contacts, e.g. pencils in the mouth, application of makeup, etc.

Any recurring problems with inadequate contamination control in a laboratory shall be reported to the RSC.

Exposure Control

If isotopes that emit penetrating radiation are used, the appropriate use of shielding and distance should be reviewed. Phosphorous-32 should be shielded with at least 8 mm (3/8") of any low atomic number material, e.g. plastic or wood. Iodine-125 should be shielded with at least 3 mm (1/8") of lead. Other isotopes that emit higher energy gamma rays may require 5 cm (2") or more of lead. Make sure that the shielding extends entirely around the source by making measurements of exposure rates above, below, in back and at the sides of storage locations. Adjacent locations with elevated exposure rates should not be regularly occupied. If any dose rate exceeds 5 mrem/hour at 30 cm from a source or a surface, the room must be labeled with a "CAUTION - RADIATION AREA" sign. If doses to the head or trunk could exceed 10% of the occupational dose, body badges should be issued.

Review handling techniques and the use of tongs with the user. If doses exceeding 10% of the occupational dose to the hands are possible, ring badges should be issued.

Instruments

Verify that appropriate survey instruments are available, operable and in use. Verify that no repairs or modifications have been made since the instrument was calibrated and that the calibration is not overdue. Make certain that the window is not covered

by any material such as plastic or parafilm. Check the QA/QC chart to ensure that the instruments have been checked prior to each daily use.

If an instrument is used for counting wipe tests or urine samples, verify the efficiency used for calculating activity in samples and the user's understanding of sample counting results.

Waste Containers and Storage Areas

Verify that radioactive wastes are being segregated properly and placed in appropriate containers. Wastes must be segregated by material categories, e.g. dry, animals, scintillation vials, bulk liquids, etc.

Dry waste containing only isotopes with half-lives less than 100 days should be segregated from other dry waste. All "RADIOACTIVE MATERIAL" labels (including tape) must be removed or totally obliterated from this waste.

Bulk liquids containing radioiodines should be segregated from other isotopes.

Waste containers should be conspicuously labeled and should be in secondary containers in locations that do not create unnecessary exposures to nearby personnel.

Signs and Labels

The entrance to the lab should be posted with a "CAUTION RADIOACTIVE MATERIAL" label. This label should show the isotopes used in the lab, the name of the Principal User and his or her office and home phone numbers. A Notification to Workers and RCO emergency contact information should also be posted at the lab entrance. All waste storage areas and work areas should be properly posted. Fume hoods should be posted if used for radioactive material use. Posting of a fume hood assumes all material in the fume hood is contaminated until verified as clean by RCO personnel.

Personal Monitoring

Observe and note whether dosimeters issued to lab occupants are being used. Report any discrepancies in dosimeter use to the Principal User and the RSC.

Records

Review the records prepared and maintained by the users. All inventory forms should be current and should be forwarded to the RCO as soon as the inventory item is removed from the lab. Sink disposals should be logged and summarized on the appropriate disposition form (RI-13H). All survey records should contain the identification, efficiency and calibration date of the instrument used. Personnel surveys should indicate the name of the individual surveyed and, if any

contamination was found, the location on the body or on the clothing. If records are not complete and up-to-date, bring this to the attention of the Principal User. If deficiencies persist, report this to the RSC.

Recommended Survey Frequency

As part of a routine audit, the frequency for routine lab evaluations should be reviewed. The default frequency should be followed for at least the first year. If contamination is found other than rarely, the intervals between surveys should be shortened after consultation with the RSC. If contamination has been well controlled, the survey interval may be lengthened in consultation with the RSC, but the interval shall not be increased by more than a factor of 2.

ATTACHMENTS

RF-50A DISPERSIBLE RADIOACTIVE MATERIAL LABORATORY EVALUATION CHECK LIST

RF-50B LABORATORY EVALUATION CHECK LIST SEALED-SOURCES NOT TO BE USED ON HUMANS AND NOT DEFINED AS AN IRRADIATOR THESE SEALED SOURCES DO NOT GIVE RISE TO AREAS THAT ARE HIGH RADIATION AREAS OR VERY HIGH RADIATION AREAS

RF-50C LABORATORY EVALUATION CHECK LIST SEALED SOURCES NOT TO BE USED ON HUMANS, AND NOT DEFINED AS AN IRRADIATOR THESE SEALED SOURCES GIVE RISE TO AREAS THAT ARE HIGH RADIATION AREAS BUT NOT VERY HIGH RADIATION AREAS

RF-50D ANALYTICAL X-RAY MACHINES LABORATORY EVALUATION CHECK LIST

RF-50E LABORATORY EVALUATION CHECK LIST SEALED SOURCES NOT TO BE USED ON HUMANS, DEFINED AS AN IRRADIATOR. THESE SEALED SOURCES GIVE RISE TO AREAS THAT ARE HIGH RADIATION AREAS OR VERY HIGH RADIATION AREAS

RF-50F PROJECT CLOSE OUT CHECK LIST

RF-50G LABORATORY CLOSE OUT CHECK LIST

RF-50H LABORATORY EVALUATION CHECKLIST X-RAY MACHINES USED IN VETERINARY MEDICINE

RF-50I X-RAY MACHINES USED IN THE HEALING ARTS LABORATORY EVALUATION CHECKLIST

AVAILABLE SIGNS AND LABELS

"ADMITTANCE TO AUTHORIZED PERSONNEL ONLY" self-adhesive label used on entrances to laboratories using ionizing radiation, with space for emissions and the Principal User.

"RADIATION EMERGENCY CONTACT INFORMATION" self-adhesive label used on entrances to laboratories using ionizing radiation with RCO, CSUPD and EHS telephone numbers. This posting also states where licenses, State Rules and Regulations and the Radiation Control Manual are located for inspection.

"NOTICE TO EMPLOYEES" to be posted at each entrance to a radioisotope laboratory.

"CAUTION - RADIOACTIVE MATERIALS" self-adhesive labels, used on cabinets, entrance doors, refrigerators, freezers, etc.

"CAUTION - RADIATION AREA" paper or metal signs

ADMITTANCE TO AUTHORIZED PERSONNEL ONLY

SPECIAL PROCEDURES OR PRECAUTIONS: Alpha Beta Gamma

Name	Office	Office Phone	Home Phone
1.			
2.			
3.			

EMERGENCY DIAL 911 Environmental Health Services: 491-6745 DATE POSTED: _____

ADMITTANCE TO AUTHORIZED PERSONNEL ONLY

SPECIAL PROCEDURES OR PRECAUTIONS: Alpha Beta Gamma

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RADIATION EMERGENCY CONTACT INFORMATION



RADIATION CONTROL OFFICE 491-4835
RADIATION SAFETY OFFICER.....491-3736
ALTERNATE RADIATION SAFETY OFFICER.....491-3928
ENVIRONMENTAL HEALTH SERVICES 491-6745
AFTER HOURS CONTACT: CSU Police Department491-6425

Current and complete copies of the State of *Colorado Rules and Regulations Pertaining to Radiation Control*, specific radioactive materials Licenses, Registrations, and the CSU *Radiation Control Manual* are available for inspection in the Radiation Control Office of Environmental Health Services, 133 General Services Building, 491-4835.

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RF-50A DISPERSIBLE RADIOACTIVE MATERIAL LABORATORY EVALUATION CHECK LIST

(Page 1 of 4)

(Please type or print legibly)

Principal User: _____ Date: _____

Building: _____ Rooms: _____

Reason: Initial/ Pre-Start Special/ Suspected Contamination Routine Audit

Uses: Animals/ What Kind? _____ Housed Where? _____

Radionuclides used since last inspection: _____

Pre-Inspection Checklist

Other/ Comments

Pull File and organize	
1. Project Approval sorted by date (oldest to newest) and clipped.	
2. Correspondence sorted by date (oldest to newest) and clipped. Comment on any problems.	
3. Inventory	
• Sort by inventory number, (lowest to highest) RF-13A, RF-13B, File Copy, RF-13C and clip.	
• Sort RF-13F forms by pail number (lowest to highest) and clip.	
• Verify old inventory over 5 years old.	
• Inventory verification forms sorted by date (oldest to newest) and clipped.	
4. Lab evaluations sorted by date and clipped.	
5. Personnel files sorted by last name with RF-1A forms in front followed by other information by date (oldest to newest) then by modules in increasing order and clipped.	
6. Check U: Drive P.U. File and sort all files by date	
7. Check HP-Assist against file	
Following information sent to P.U. or delivered during the inspection:	
1. Inventory Verification and Preliminary Inspection Report	
2. Training Update	

Inspection Checklist

Other/ Comments

Survey Kit and inspection check sheets are on hand (RCO)	
Review items from last inspection (001)	
PU Train not fin (002)	1 mod needed; deadline next class
Lab train not fin. (003)	If > 1 mod give 3 month deadline

**RF-50A DISPERSIBLE RADIOACTIVE MATERIAL
LABORATORY EVALUATION CHECK LIST**

(Page 2 of 4)

Security and Postings	Other/ Comments
Was room attended ? If not, was door locked? (004)	
Room entrance posted (058); Emergency Stickers posted? (059)	
Notification to workers posed on all outside entrances? (060)	
Are isotopes accessible to unauthorized personnel? (006)	
Work areas posted? (061)	
Fume Hoods, Refrigerators, Freezers? (062)	
Sinks; one Rad sticker – label p-trap? (063)	
All areas or equipment properly labeled? (064)	
ALARA Statement posted? (065)	
Emergency procedures posted? (066)	
All use locations are current with approved project? (033)	
Fume Hood	Other/ Comments
Certified as a Class ‘C’? (012)	
Does the hood need to be sealed around the corners? (013)	
Required filtration in place and recently checked ? (014)	
Is the sink plugged? (015)	
Secondary containment used inside the fume hood ? (016)	
Fume hood, glove box, etc. being used as required? (017)	
Certified for RAM Use?	
Contamination Control	Other/ Comments
Are lab coats and gloves available and in use? (022)	
Trays, secondary containers, and benchtops adequately covered? (023)	
Evidence of eating, smoking, mouth pipetting etc.? (024)	
Spill Kit available? (025)	
Personal exit surveys being performed? (026)	
Effective shielding for isotopes used? (027)	
Look under hood, sinks and in fridge? (028)	
Any Uranium or Thorium compounds? (029)	
Staff wearing open-toed shoes or shorts? (030)	
Instruments	Other/ Comments
For surveys (Type)?	
Survey meters appropriate for isotopes used? (038)	
All survey instruments operational and calibrated within the last year? (041)	
Back-up survey meter available in building? (042)	
Covering over the probe? (043)	
Quality control Charts being used? (040)	
What is used for counting samples? (035)	
Who is responsible for the counter?(Stds account for?) (036)	
Last calibration performed on counter? (037)	
Efficiency known for counting instruments? (039)	

**RF-50A DISPERSIBLE RADIOACTIVE MATERIAL
LABORATORY EVALUATION CHECK LIST**

(Page 3 of 4)

Waste	Other/ Comments
Are all wastes segregated with appropriate containers? (046)	
Is the waste secured ? will it spill if kicked? (047)	
Vials bucket (glass, plastic, centrifuge tubes, test tubes, microfuge tubes) No Pipette Tips. (049)	
Short-lived buckets no RAD stickers (obliterate). (050)	
Is there adequate freezer space for animals? (051)	
What fluors/ tissue solubilizers are used? (052)	
Sink disposal following RCO procedures? (056)	

Personal Monitoring	Other/ Comments
Are Body Dosimeters Req? (072)	Are badges in use? (072)
Are ring badges required? (073)	Are ring in use? (073)
Bioassays required? (074) I-125, H-3	
Badges need to be ordered for? Type	

Records	Other/ Comments
Explain Program Books 1 and 2 Delivered / In Place / Updated (circle appropriate action(s)).	
P.U. safety plan not signed and/or copy not available with approval? (088)	
Laboratory personnel have not signed RF-43C.(090)	
Inventory records complete? (078)	
Any radionuclide shipments received directly? (079)	
Utilization logs complete? (RF-13C) (081)	
RF-13B forms completed/sent to RCO after receiving packages. (093) or (094)	
RF-13C forms sent to RCO when inventory is decayed. (92)	
Lab survey records complete? (082)	
Wipe tests being performed at correct intervals? (083)	
Any contamination events detected/ cleanup? (084)	
Background wipes being used? (085)	
Talk about 'free wipes and random sampling'	
Have there been any personnel changes? (086)	
Is reciprocity required ? On file with RCO (095)	

**RF-50A DISPERSIBLE RADIOACTIVE MATERIAL
LABORATORY EVALUATION CHECK LIST**

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Post-Inspection

Other/ Comments

	Enter any due dates into scheduler and HPAssist.	
	Get wipe results and follow-up on contamination events (089)	
	Complete write-up and send report to P.U.	
	Response request date was updated when report was send?	

Persons Interviewed:

Initials

Other Notes:

Evaluation By: _____ Survey Frequency : _____ days

Attachments :

Direct Survey Data _____ Wipe Test Data _____ Survey Map _____ Other _____

RF-50B LABORATORY EVALUATION CHECK LIST
SEALED-SOURCES NOT TO BE USED ON HUMANS AND NOT DEFINED AS
AN IRRADIATOR THESE SEALED SOURCES DO NOT GIVE RISE TO
AREAS THAT ARE HIGH RADIATION AREAS OR VERY HIGH RADIATION
AREAS

(Page 1 of 3)

(Please type or print legibly)

Principal User: _____ Date: _____

Building : _____ Rooms : _____

Reason: Initial/ Pre-Start Special/ Suspected Contamination Routine Audit

Uses: Animals/ What Kind _____ Housed Where ? _____

Pre-Inspection Checklist

Other/ Comments

	Pull File and organize	
	Check HP-Assist against file	
	Following information sent to P.U. or delivered during the inspection:	
	1. Inventory Verification	
	2. Training Update	

√	Type	Manufacturer	Model	Serial No.
	Portable Density and/or Neutron Gauge			
	Non-portable Density and/or Neutron Gauge			
	GC			

Inspection Checklist

Other/ Comments

	Survey Kit and inspection check sheets are on hand (RCO)	
	Review items from last inspection (001)	
	PU Train not fin (002)	1 mod needed; deadline next class
	Lab train not fin. (003)	If > 1 mod give 3 month deadline

RF-50B LABORATORY EVALUATION CHECK LIST
SEALED-SOURCES NOT TO BE USED ON HUMANS AND NOT DEFINED AS
AN IRRADIATOR THESE SEALED SOURCES DO NOT GIVE RISE TO
AREAS THAT ARE HIGH RADIATION AREAS OR VERY HIGH RADIATION
AREAS

(Page 2 of 3)

Security	Other/ Comments
Was area attended ? If not, was area locked ? (004)	
Area accessible to auth. pers. Only. Area locked ? (005)	
Is source stored in lockable cabinet or refrigerator? (area accessible to unauthorized personnel) (006)	
No RAM material in unrestricted areas ? (007)	
RAM Material secured (008)	
Fume Hood (GC instruments required to be exhausted in hood)	Other/ Comments
Certified as a Class 'C' ? (012)	
Required filtration in place and recently checked ? (014)	
Certified for RAM Use?	
Contamination Control	Other/ Comments
Evidence of eating, smoking, mouth pipetting etc.? (024)	
Effective shielding for isotopes used ? (027)	
Look under hood, sinks and in fridge? (028)	
Any Uranium or Thorium compounds? (029)	
Staff wearing open-toed shoes or shorts ? (030)	
Use or storage of RAM in an unauthorized area ? (032)	
All use locations are current with approved project (033)	
Instruments	Other/ Comments
For surveys (Type) ?	
Survey meters appropriate for isotopes used? (038)	
Quality control Charts being used ? (040)	
All survey instruments operational ? (041)	
Back-up survey meter available in building ? (042)	
Postings	Other/ Comments
Room entrance posted (058); Emergency Stickers posted? (059)	
Notification to workers posed on all outside entrances? (060)	
Work areas posted? (061)	
All areas or equipment properly labeled? (064)	
ALARA Statement posted ? (065)	
Emergency procedures posted ? (066)	
Personal Monitoring	Other/ Comments
Are Body Dosimeters Req? (072)	Are badges in use? (072)
Are ring badges required? (073)	Are ring in use ? (073)
Bioassays required ? (074)	
Badges need to be ordered for?	Type

RF-50B LABORATORY EVALUATION CHECK LIST
SEALED-SOURCES NOT TO BE USED ON HUMANS AND NOT DEFINED AS
AN IRRADIATOR THESE SEALED SOURCES DO NOT GIVE RISE TO
AREAS THAT ARE HIGH RADIATION AREAS OR VERY HIGH RADIATION
AREAS

(Page 3 of 3)

Records	Other/ Comments
Inventory records complete? (078)	
Any radionuclide shipments received directly ? (079)	
Utilization logs complete (RF-13C) (081)	
Program Books 1 and 2 in place?	
P.U. safety plan available with approval ? (088)	
Manuals Updated?	
Is reciprocity required ? On file with RCO ? (095)	

Post-Inspection	Other/ Comments
Enter any due dates into scheduler	
Get wipe results and follow-up on contamination evnts (089)	
Complete write-up and send report to P.U.	
Response request date was updated when report was send?	

Persons Interviewed:	Initials
_____	_____
_____	_____
_____	_____
_____	_____

Other Notes:

Evaluation By: _____ Survey Frequency : _____ days

Attachments :

Direct Survey Data _____ Wipe Test Data _____ Survey Map _____ Other _____

RF-50C LABORATORY EVALUATION CHECK LIST
SEALED SOURCES NOT TO BE USED ON HUMANS, AND NOT DEFINED AS
AN IRRADIATOR THESE SEALED SOURCES GIVE RISE TO AREAS THAT
ARE HIGH RADIATION AREAS BUT NOT VERY HIGH RADIATION AREAS

(Page 1 of 3)

(Please type or print legibly)

Principal User: _____ Date: _____

Building : _____ Rooms : _____

Reason: Initial/ Pre-Start Special/ Suspected Contamination Routine Audit

Uses: Animals/ What Kind _____ Housed Where ? _____

Pre-Inspection Checklist

Other/ Comments

<input type="checkbox"/>	Pull File and organize	_____
<input type="checkbox"/>	Check HP-Assist against file	_____
<input type="checkbox"/>	Following information sent to P.U. or delivered during the inspection:	_____
<input type="checkbox"/>	1. Inventory Verification and Preliminary Inspection Report	_____
<input type="checkbox"/>	2. Training Update	_____
<input type="checkbox"/>	3. Copy of Approval	_____

√	Type	Manufacturer	Model	Serial No.

Inspection Checklist

Other/ Comments

<input type="checkbox"/>	Explain Program Books 1 and 2 Delivered/ In Place	_____
<input type="checkbox"/>	Survey Kit and inspection check sheets are on hand (RCO)	_____
<input type="checkbox"/>	Review items from last inspection (001)	_____
<input type="checkbox"/>	PU Train not fin (002)	1 mod needed; deadline next class
<input type="checkbox"/>	Lab train not fin. (003)	If > 1 mod give 3 month deadline

Security

Other/ Comments

<input type="checkbox"/>	Was area attended ? If not, was area locked ? (004)	_____
<input type="checkbox"/>	Area accessible to auth. pers. Only. Area locked ? (005)	_____

RF-50C LABORATORY EVALUATION CHECK LIST
SEALED SOURCES NOT TO BE USED ON HUMANS, AND NOT DEFINED AS
AN IRRADIATOR THESE SEALED SOURCES GIVE RISE TO AREAS THAT
ARE HIGH RADIATION AREAS BUT NOT VERY HIGH RADIATION AREAS

(Page 2 of 3)

Control of Access to High Radiation Areas shall ensure that each entrance or access point to a high radiation area has one or more of the following features. Check the feature or features that apply to the source. (300)

	A control device that, upon entry into the area, causes the level of radiation to be reduced below that level at which an individual might receive a deep dose equivalent of 1 mSv (0.1 rem) in 1 hour at 30 centimeters from the source of radiation from any surface that the radiation penetrates.	
	A control device that energizes a conspicuous visible or audible alarm signal so that the individual entering the high radiation area and the supervisor of the activity are made aware of the entry.	
	Entryways that are locked, except during periods when access to the areas is required, with positive control over each individual entry.	
	Continuous direct or electronic surveillance that is capable of preventing unauthorized entry.	
	Approval by the CDPHE of alternative methods for controlling access (attach documentation).	
	The previous required control(s) do not prevent individuals from leaving the high radiation area. (301)	
	No RAM material in unrestricted areas ? (007)	

Contamination Control

Other/ Comments

	Evidence of eating, smoking, mouth pipetting etc.? (024)	
	Effective shielding for isotopes used ? (027)	
	Look under hood, sinks and in fridge? (028)	
	Any Uranium or Thorium compounds? (029)	
	All use locations are current with approved project (033)	

Instruments

Other/ Comments

	For surveys (Type) ?	
	Survey meters appropriate for isotopes used? (038)	
	Quality control Charts being used ? (040)	
	All survey instruments operational ? (041)	
	Back-up survey meter available in building ? (042)	

Postings

Other/ Comments

	Room entrance posted (058); Emergency Stickers posted? (059)	
	Notification to workers posed on all outside entrances? (060)	
	Work areas posted? (061)	
	All areas or equipment properly labeled? (064)	
	ALARA Statement posted ? (065)	
	Emergency procedures posted ? (066)	

RF-50C LABORATORY EVALUATION CHECK LIST
SEALED SOURCES NOT TO BE USED ON HUMANS, AND NOT DEFINED AS
AN IRRADIATOR THESE SEALED SOURCES GIVE RISE TO AREAS THAT
ARE HIGH RADIATION AREAS BUT NOT VERY HIGH RADIATION AREAS

(Page 3 of 3)

Personal Monitoring

Other/ Comments

Are Body Dosimeters Req? (072)		Are badges in use? (072)	
Are ring badges required? (073)		Are ring in use ? (073)	
Bioassays required ? (074)			
Badges need to be ordered for?	Type		

Records

Other/ Comments

Inventory records complete? (078)	
Any radionuclide shipments received directly ? (079)	
Utilization logs complete (RF-13C) (081)	
Wipe tests being performed at correct intervals ? (083)	
Have there been any personnel changes ? (086)	
Radiation Control Manual and State Regs available ? (087)	
Safety plan and/or a signed copy of your permit not accessible to laboratory personnel.? (088)	
Manuals Updated?	
Laboratory personnel have not signed the RF-43C. (090)	

Post-Inspection

Other/ Comments

Enter any due dates into scheduler	
Get wipe results and follow-up on contamination evnts (089)	
Complete write-up and send report to P.U.	
Response request date was updated when report was send?	

Persons Interviewed:

Initials

Other Notes:

Evaluation By: _____ Survey Frequency : _____ days

Attachments :

Direct Survey Data _____ Wipe Test Data _____ Survey Map _____ Other _____

RF-50D ANALYTICAL X-RAY MACHINES LABORATORY EVALUATION CHECK LIST

(Page 1 of 6)
(Please type or print legibly)

Principal User: _____ Date: _____

Building : _____ Rooms : _____

Reason: Initial/ Pre-Start Special/ Suspected Contamination Routine Audit

Uses: Animals/ What Kind _____ Housed Where ? _____

Open Beam [XO] Fully Enclosed [CX] Diffraction [XD] Fluorescence [XF]

MACHINE INFORMATION:

	Manufacturer	Model	Serial #	Number of Ports Available	Number of Ports in Use	Target Material	Max. kVp	Max. mA	Room # CSU#
Control Unit									
Control Unit									
Control Unit									
Control Unit									
Control Unit									
X-ray tube									
X-ray tube									
X-ray tube									
X-ray tube									
X-ray tube									

Pre-Inspection Checklist

Other/ Comments

Pull File and organize	
4. Project Approval sorted by date (oldest to newest) and clipped.	
5. Correspondence sorted by date (oldest to newest) and clipped. Comment on any problems.	
6. Inventory verification forms sorted by date (oldest to newest) and clipped.	
8. Lab evaluations sorted by date and clipped.	
9. Personnel files sorted by last name with RF-1A forms in front followed by other information by date (oldest to newest) then by modules in increasing order and clipped.	

**RF-50D ANALYTICAL X-RAY MACHINES
LABORATORY EVALUATION CHECK LIST**

(Page 2 of 6)

10. Check U: Drive P.U. File and sort all files by date	
11. Check HP-Assist against file	
Following information sent to P.U. or delivered during the inspection:	
1. Inventory Verification and Preliminary Inspection Report	
2. Training Update	

Inspection Checklist **Other/ Comments**

Survey Kit and inspection check sheets are on hand (RCO)	
Review items from last inspection (001)	
PU Train not fin (002)	1 mod needed; deadline next class
Lab train not fin. (003)	If > 1 mod give 3 month deadline

Security **Other/ Comments**

Was room attended ? If not, was door locked? (004)	
Are machines stored in lockable cabinet? (area accessible to unauthorized personnel) (006)	
No machine in unrestricted area? (007)	
Is there any accessory equipment (powder cameras, ganimeters, etc.?)	

Postings **Other/ Comments**

Room entrance posted (058); Emergency Stickers posted? (059)	
Notification to workers posed on all outside entrances? (060)	
ALARA Statement posted? (065)	
Emergency procedures posted? (066)	
Unique CSU identification on unit? (102)	

Instruments **Other/ Comments**

For surveys (Type)?	
Last certification performed? (037)	
Survey meters appropriate for isotopes used? (038)	
Quality control Charts being used? (040)	
All survey instruments operational? (041)	
Back-up survey meter available in building? (042)	

Regulations

8.3.1 Safety Device

For open beam units - a device which prevents the entry of any portion of an individual's body into the primary x-ray beam path, or which causes the beam to be shut off upon entry into its path. CDPHE 8.3.1 (103)	
--	--

8.3.2 Warning Devices

If open beam – indication of x-ray tube "on-off" status located near the radiation source housing (CDPHE 8.3.2.1.1) or indication of shutter "open-closed" status located near each port on the radiation source housing (CDPHE 8.3.2.1.2). (104)	
---	--

RF-50D ANALYTICAL X-RAY MACHINES LABORATORY EVALUATION CHECK LIST

(Page 3 of 6)

	A warning light labeled "X-RAY ON", located near the switch(s) that energize the x-ray tube and is illuminated only when the tube is energized or the unit contains a radioactive source and the warning light is located near the switch(s) that open the housing shutter and is illuminated only when the shutter(s) is/are open. (CDPHE 8.3.2.2) (109)	
--	---	--

8.3.3 Ports

	All unused ports have been secured preventing casual opening (CDPHE 8.3.3). (110)	
--	---	--

8.3.4 Labeling

	"CAUTION - HIGH INTENSITY X-RAY BEAM", or words having a similar intent, on the x-ray source housing (required on all units). (CDPHE 8.3.4.1) (119)	
--	--	--

	"CAUTION RADIATION – THIS EQUIPMENT PRODUCES RADIATION WHEN ENERGIZED", or words having a similar intent, near any switch that energizes an x-ray tube if the radiation source is an x-ray tube. (CDPHE 8.3.4.2) (120)	
--	--	--

8.3.8 Generator Cabinet

	Each x-ray generator shall be supplied with a protective cabinet which limits leakage radiation measured at a distance of 5 centimeters from its surface such that it is not capable of producing a dose in excess of 0.25 millirem (2.5 uSv) in one hour. See attached measurements (CDPHE 8.3.8). (100)	
--	---	--

8.4 Area Requirements

8.4.1 Radiation Levels

	Public dose limits met. See attached measurements. (113)	
--	--	--

8.4.2 Surveys

	<p>Radiation surveys have been performed for the following conditions:</p> <ul style="list-style-type: none"> • upon installation of the equipment, and at least once every 12 months thereafter; • following any change in the initial arrangement, number, or type of local components in the system; • following any maintenance requiring the disassembly, or removal of a local component in the system; • during the performance of maintenance and alignment procedures if the procedures require the presence of a primary x-ray beam • when any local component in the system is disassembled, or removed; • any time a visual inspection of the local components in the system reveals an abnormal condition; • whenever personnel monitoring devices show a significant increase over the previous monitoring period (114) 	
--	--	--

**RF-50D ANALYTICAL X-RAY MACHINES
LABORATORY EVALUATION CHECK LIST**

(Page 4 of 6)

8.5 Operating Requirements

8.5.1 Procedures

	Normal operating procedures are available to all analytical x-ray equipment workers. No individual has been permitted to operate the analytical x-ray equipment in the PU's application in any manner other than that specified in the procedures unless such individual has obtained written approval of the Radiation Safety Officer. (CDPHE 8.5.1)	
--	---	--

8.5.2 Bypassing

	No individual has bypassed a safety device or interlock or A safety device or interlock was bypassed and a readily discernible sign bearing the words "SAFETY DEVICE NOT WORKING", or words having a similar intent, was placed on the radiation source housing. A written approval was received from the Radiation Safety Officer for a specified period of time to do this. (CDPHE 8.5.2) (115)	
--	---	--

8.5.3 Repair or Modification

	No operation involving removal of covers, shielding materials, or tube housings, or modifications to shutters, collimators, or beam stops was performed or if so, it was ascertained that the tube was off and remained off until safe conditions were restored. The main switch, rather than interlocks, was used for routine shutdown in preparation for repairs. (CDPHE 8.5.3) (116)	
--	---	--

8.6. Personnel requirements

8.6.1 Instruction

	No individual has been permitted to operate or maintain the analytical x-ray equipment unless trained : <ul style="list-style-type: none">• radiation hazards associated with the use of the equipment;• radiation warning, safety devices, and interlocks proper operating procedures for the equipment;• recognition of symptoms of an acute localized exposure; and• proper procedures for reporting an actual or suspected exposure (CDPHE 8.6.1)	
--	--	--

Personal Monitoring

8.6.2 Personnel Monitoring

	Ring badges devices shall be provided to and shall be used by: <ul style="list-style-type: none">• workers using systems having an open-beam configuration and not equipped with a safety device (CDPHE 8.6.2.1.1);• personnel maintaining equipment if the maintenance procedures require the presence of a primary x-ray beam when any local component in the analytical x-ray system is disassembled or removed (CDPHE 8.6.2.1.2). (106)	
--	--	--

**RF-50D ANALYTICAL X-RAY MACHINES
LABORATORY EVALUATION CHECK LIST**

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8.6.2 Personnel Monitoring

	Are Body Dosimeters Req? (072)		Are badges in use? (072)
	Are ring badges required? (073)		Are ring in use? (073)
	Badges need to be ordered for?	Type	

Exposure Control

Other/ Comments

	Are lead equivalent gloves and aprons required? If required are they available and in use? (118)	
	All use locations are current with approved project? (033)	

Records

Other/ Comments

	Explain Program Books 1 and 2 Delivered/ In Place/Updated	
	P.U. safety plan not signed and/or copy not available with approval? (088)	
	Laboratory personnel have not signed RF-43C.(090)	
	Radiation Control Manual and State Regs available? (087)	
	Utilization logs complete? (081)	
	Certification up to date? (101)	
	Have there been any personnel changes?	
	There are exemptions for this machine.	
	This x-ray units contains a sealed source. If so see state regulations for additional requirements.	

Post-Inspection

Other/ Comments

	Enter any due dates into scheduler	
	Complete write-up and send report to P.U.	
	Response request date was updated when report was send?	

Persons Interviewed:

Initials

**RF-50D ANALYTICAL X-RAY MACHINES
LABORATORY EVALUATION CHECK LIST**

(Page 6 of 6)

Other Notes:

Evaluation By: _____ Survey Frequency : _____ days

Attachments :

Direct Survey Data _____ Wipe Test Data _____ Survey Map _____ Other _____

RF-50E LABORATORY EVALUATION CHECK LIST
SEALED SOURCES NOT TO BE USED ON HUMANS, DEFINED AS AN
IRRADIATOR. THESE SEALED SOURCES GIVE RISE TO AREAS THAT ARE
HIGH RADIATION AREAS OR VERY HIGH RADIATION AREAS

(Page 1 of 5)

(Please type or print legibly)

Principal User: _____ Date: _____

Building : _____ Rooms : _____

Reason: Initial/ Pre-Start Special/ Suspected Contamination Routine Audit

Uses: Animals/ What Kind _____ Housed Where ? _____

Pre-Inspection Checklist

Other/ Comments

	Pull File and organize	
	Check HP-Assist against file	
	Following information sent to P.U. or delivered during the inspection:	
	1. Inventory Verification and Preliminary Inspection Report	
	2. Training Update	
	3. Copy of Approval	

√	Type	Manufacturer	Model	Serial No.

Inspection Checklist

Other/ Comments

	Explain Program Books 1 and 2 Delivered/ In Place	
	Survey Kit and inspection check sheets are on hand (RCO)	
	Review items from last inspection (001)	
	PU Train not fin (002)	1 mod needed; deadline next class
	Lab train not fin. (003)	If > 1 mod give 3 month deadline

RF-50E LABORATORY EVALUATION CHECK LIST
SEALED SOURCES NOT TO BE USED ON HUMANS, DEFINED AS AN
IRRADIATOR. THESE SEALED SOURCES GIVE RISE TO AREAS THAT ARE
HIGH RADIATION AREAS OR VERY HIGH RADIATION AREAS

(Page 2 of 5)

Security	Other/ Comments
Was area attended ? If not, was area locked ? (004)	
Area accessible to auth. pers. Only. Area locked ? (005)	
Are inspection and maintenance checks up to date?	
No RAM material in unrestricted areas ? (007)	
Does each entrance have a door or other physical barrier to prevent inadvertent entry of personnel if the sources are not in the shielded position? (200)	
It must not be possible to move the sources out of their shielded position if the door or barrier is open. (201)	
Opening the door or barrier while the sources are exposed must cause the sources to return promptly to their shielded position. (202)	
The personnel entrance door or barrier must have a lock that is operated by the same key used to move the sources. (203)	
The doors and barriers must not prevent any individual in the radiation room from leaving. (204)	
Does each entrance have an independent backup access control to detect personnel entry while the sources are exposed that causes the sources to return to their fully shielded position and must activates a visible and audible alarm to make the individual entering the room aware of the hazard? (205)	
Does the alarm alert at least one other individual who is onsite of the entry that is trained on how to respond to the alarm and be prepared to promptly render or summon assistance? (206)	
Is a radiation monitor provided to detect the presence of high radiation levels in the radiation room before personnel entry? The monitor may be located in the entrance (normally referred to as the maze) but not in the direct radiation beam. (207)	
Is the monitor integrated with personnel access door locks to prevent room access when radiation levels are high? (208)	
When there is an attempted personnel entry while the monitor measures high radiation levels, is an alarm described in RH 19.8.2 activated? (209)	
Before the sources move from their shielded position, does the source control automatically activate conspicuous visible and audible alarms to alert people in the radiation room that the sources will be moved from their shielded position? (210)	
Do the alarms give individuals enough time to leave the room before the sources leave the shielded position? (211)	

RF-50E LABORATORY EVALUATION CHECK LIST
SEALED SOURCES NOT TO BE USED ON HUMANS, DEFINED AS AN
IRRADIATOR. THESE SEALED SOURCES GIVE RISE TO AREAS THAT ARE
HIGH RADIATION AREAS OR VERY HIGH RADIATION AREAS

(Page 3 of 5)

Does the room have a clearly visible and readily accessible control that would allow an individual in the room to make the sources return to their fully shielded position? (212)	
Does the room contain a control that prevents the sources from moving from the shielded position unless the control has been activated and the door or barrier to the radiation room has been closed within a preset time after activation of the control? (213)	
Does the mechanism that moves the sources of a panoramic irradiator require a key to actuate? (214)	
Are heat and smoke detectors present that activate an audible alarm that alerts a person to summon assistance and makes the source return to the shielded position? (223)	
Does actuation of the mechanism cause an audible signal to indicate that the source(s) are leaving the shielded position? (215)	
Is there only one key that may be used at any time, and only one operator or facility management that possesses it? (216)	
Is the key attached to a portable radiation survey meter by a chain or cable? (217)	
Is the lock for source control designed so that the key may not be removed if the sources are in an unshielded position? (218)	
Does the door to the radiation room require the same key? (219)	
Does the console have a source position indicator that indicates when the source(s) are in the fully shielded position, when they are in transit, and when the sources are exposed? (220)	
Does the control console have a control that promptly returns the sources to the shielded position? (221)	
Is each control clearly marked as to its function? (222)	
Is the operator and another individual trained to respond to emergencies on site during irradiations? (224)	
During static irradiations is a person on site that has received training on how to respond to alarms? (225)	
Contamination Control	Other/ Comments
Evidence of eating, smoking, mouth pipetting etc.? (024)	
Effective shielding for isotopes used ? (027)	
Look under hood, sinks and in fridge? (028)	
Any Uranium or Thorium compounds? (029)	
All use locations are current with approved project (033)	

RF-50E LABORATORY EVALUATION CHECK LIST
SEALED SOURCES NOT TO BE USED ON HUMANS, DEFINED AS AN
IRRADIATOR. THESE SEALED SOURCES GIVE RISE TO AREAS THAT ARE
HIGH RADIATION AREAS OR VERY HIGH RADIATION AREAS

(Page 4 of 5)

Instruments	Other/ Comments
For surveys (Type) ?	
Survey meters appropriate for isotopes used? (038)	
Quality control Charts being used ? (040)	
All survey instruments operational ? (041)	
Back-up survey meter available in building ? (042)	

Postings	Other/ Comments
Room entrance posted (058); Emergency Stickers posted? (059)	
Notification to workers posed on all outside entrances? (060)	
Work areas posted? (061)	
All areas or equipment properly labeled? (064)	
ALARA Statement posted ? (065)	
Emergency procedures posted ? (066)	

Personal Monitoring	Other/ Comments
Are Body Dosimeters Req? (072)	Are badges in use? (072)
Are ring badges required? (073)	Are ring in use ? (073)
Bioassays required ? (074)	
Badges need to be ordered for?	Type

Records	Other/ Comments
Inventory records complete? (078)	
Any radionuclide shipments received directly ? (079)	
Utilization logs complete (RF-13C) (081)	
Wipe tests being performed at correct intervals ? (083)	
Have there been any personnel changes ? (086)	
Radiation Control Manual and State Regs available ? (087)	
P.U. safety plan available with approval ? (088)	
Manuals Updated?	
Any abnormal situations recorded?	

Post-Inspection	Other/ Comments
Enter any due dates into scheduler	
Get wipe results and follow-up on contamination evnts (089)	
Complete write-up and send report to P.U.	
Response request date was updated when report was send?	

RF-50F PROJECT CLOSE OUT CHECK LIST

(Page 1 of 2)

(Please type or print legibly)

Principal User: _____ Date: _____

Building : _____ Rooms : _____

Uses: Animals/ What Kind _____ Housed Where ? _____

Pre-Inspection Checklist

Other/ Comments

	Pull File and organize.	
	Check HP-Assist against file.	
	Following information sent to P.U. or delivered during the inspection:	
	1. Inventory Verification.	
	2. Survey Kit and inspection check sheets are on hand (RCO)?	
	3. Review items from last inspection.	

Inspection Checklist

Other/ Comments

	Pick UP Program Books 1 and 2.	
--	--------------------------------	--

Contamination Control

Other/ Comments

	Look under hood, sinks and in fridge?	
	Any Uranium or Thorium compounds?	

Instruments

√	Type	Manufacturer	Model	Serial No.

Other/ Comments

	Status of Survey Instruments?	
	What is used for counting samples?	
	Who is responsible for the counter?(Stds accounted for?)	

Waste

Other/ Comments

	Is all waste removed?				
	Types of containers	Pail #	Types of Containers	Pail #	
	Short-lived liq. NH		Short-lived sol. Haz.		
	Long-lived liq. NH		Long-lived sol. Haz.		
	Short-lived liq. Haz.		Short-lived vials		
	Long-lived liq. Haz.		Long-lived vials		
	Short-lived sol. NH		Animals		
	Long-lived sol. NH		Other		

RF-50F PROJECT CLOSE OUT CHECK LIST

(Page 2 of 2)

Postings

Other/ Comments

Room entrance posting; Emergency Stickers removed?	
Notification to workers removed from all outside entrances?	
Waste and work area postings removed?	
Fume Hood, Refrigerator, Freezer postings removed?	
Sinks; one Rad sticker – p-trap postings removed?	
All areas or equipment postings removed?	
ALARA Statement removed?	
Emergency procedures posting removed?	

Personal Monitoring

Other/ Comments

Are Body Dosimeters issued?		Badges cancelled?	
Are ring badges issued?		Rings cancelled?	

Records

Other/ Comments

Inventory records filed in corresponding PU archive file?	
Lab survey records filed in corresponding PU archive file?	
Wipe tests records filed in corresponding PU archive file?	
Personnel files archived in database and filing cabinet?	

Post-Inspection

Other/ Comments

Archive PU in database and filing cabinet.	
Get wipe results and follow-up on contamination events.	
Complete write-up and send report to P.U.	

Persons Interviewed:

Initials

Other Notes:

Evaluation By: _____

Attachments :

Direct Survey Data _____ Wipe Test Data _____ Survey Map _____ Other _____

RF-50G LABORATORY CLOSE OUT CHECK LIST

(Page 1 of 2)

(Please type or print legibly)

Principal User: _____ Date: _____

Building : _____ Rooms : _____

Uses: Animals/ What Kind _____ Housed Where ? _____

Pre-Inspection Checklist

Other/ Comments

	Pull File and organize.	
	Check HP-Assist against file.	
	The following are on hand:	
	1. Inventory Verification.	
	2. Survey Kit and inspection check sheets are on hand (RCO)?	
	3. Review items from last inspection.	

Contamination Control

Other/ Comments

	Look under hood, sinks and in fridge?	
	Any Uranium or Thorium compounds?	

Radioactive Materials

Other/ Comments

	Is all waste removed?	
	Are all radioactive materials removed?	

Postings

Other/ Comments

	Room entrance posting; Emergency Stickers removed?	
	Notification to workers removed from all outside entrances?	
	Waste and work area postings removed?	
	Fume Hood, Refrigerator, Freezer postings removed?	
	Sinks; one Rad sticker – p-trap postings removed?	
	All areas or equipment postings removed?	
	ALARA Statement removed?	
	Emergency procedures posting removed?	

Post-Inspection

Other/ Comments

	Get wipe results and follow-up on contamination events.	
	Complete write-up and send report to P.U.	

RF-50G LABORATORY CLOSE OUT CHECK LIST

(Page 2 of 2)

Other Notes:

Persons Interviewed:

Initials

Evaluation By: _____

Attachments :

Direct Survey Data _____ Wipe Test Data _____ Survey Map _____ Other _____

RF-50H PROJECT BASELINE CHECK LIST

(Page 1 of 3)

(Please type or print legibly)

Principal User: _____ Date: _____

Building : _____ Rooms : _____

Uses: Animals/ What Kind _____ Housed Where ? _____

Pre-Inspection Checklist

Other/ Comments

Pull File and organize.	
Check HP-Assist against file.	
The following are on hand:	
1. Survey Kit and inspection check sheets are on hand (RCO)?	
2. RCO Program books #1 and #2	
PU Train not fin (002)	1 mod needed; deadline next class
Lab train not fin. (003)	If > 1 mod give 3 month deadline

Security and Postings

Other/ Comments

Discuss radioactive materials security.	
Room entrance posted? Emergency Stickers posted?	
Notification to workers posed on all outside entrances?	
Will isotopes be accessible to unauthorized personnel? (006)	
Work areas posted? (061)	
Fume Hoods, Refrigerators, Freezers?	
Sinks; one Rad sticker – label p-trap?	
All areas or equipment properly labeled? (064)	
ALARA Statement posted?	
Emergency procedures posted?	
All use locations are current with approved/proposed project? (033)	

Fume Hood

Other/ Comments

Certified as a Class 'C'? (012)	
Does the hood need to be sealed around the corners? (013)	
Required filtration in place and recently checked ? (014)	
Is the sink plugged? (015)	
Secondary containment used inside the fume hood ? (016)	
Fume hood, glove box, etc. being used as required? (017)	
Certified for RAM Use?	

Contamination Control

Other/ Comments

Are lab coats and gloves available for use? (022)	
Trays, secondary containers, and benchtops adequately covered? (023)	

RF-50H PROJECT BASELINE CHECK LIST

(page 2 of 3)

Discuss eating, smoking, mouth pipetting etc.? (024)	
Spill Kit available? (025)	
Personal exit survey forms available?	
Effective shielding for isotopes? (027)	
Look under hood, sinks and in fridge? (028)	
Any Uranium or Thorium compounds? (029)	
Staff wearing open-toed shoes or shorts? (030)	

Instruments

Other/ Comments

For surveys (Type)?	
Survey meters appropriate for isotopes used? (038)	
All survey instruments operational and calibrated within the last year? (041)	
Back-up survey meter available in building? (042)	
Covering over the probe? (043)	
Quality control Charts completed? (040)	
What is used for counting samples? (035)	
Who is responsible for the counter?(Stds account for?) (036)	
Last calibration performed on counter? (037)	
Efficiency known for counting instruments? (039)	

Personal Monitoring

Other/ Comments

Are Body Dosimeters Req? (072)		Are badges in use? (072)	
Are ring badges required? (073)		Are ring in use ? (073)	
Bioassays required ? (074)			
Badges need to be ordered for?	Type		

Waste

Other/ Comments

Briefly discuss waste segregation? Vials vs bulk liquids etc.	
Will waste be stored in a secure area.	
Is there adequate freezer space for animals?	
What fluors/ tissue solubilizers to be used?	
Sink disposal to follow RCO procedures?	

Records

Other/ Comments

Explain Program Books 1 and 2.	
Discuss completion of utilization logs and inventory records. (RF-13C)	
RF-13B forms completed/sent to RCO after receiving packages.	
RF-13C forms sent to RCO when inventory is decayed.	
Discuss wipe test frequency .	

RF-50H PROJECT BASELINE CHECK LIST

(Page 3 of 3)

	Discuss contamination events detection / cleanup and documentation.	
	Background wipes being used? (085)	
	Talk about 'free wipes and random sampling'	
	Is reciprocity required ? On file with RCO (095)	

Post-Inspection

Other/ Comments

	Enter any due dates into scheduler and HPAssist.	
	Get wipe results and follow-up on contamination events (089)	
	Complete write-up and send report to P.U.	
	Response request date was updated when report was send?	

Other Notes:

Persons Interviewed:

Initials

Evaluation By: _____

Attachments :

Direct Survey Data _____ Wipe Test Data _____ Survey Map _____ Other _____

RF-50I LABORATORY BASELINE CHECK LIST

(Page 1 of 2)

(Please type or print legibly)

Principal User: _____ Date: _____

Building : _____ Rooms : _____

Uses: Animals/ What Kind _____ Housed Where ? _____

Pre-Inspection Checklist

Other/ Comments

	Pull File and organize.	
	Check HP-Assist against file.	
	The following are on hand:	
	1. Survey Kit and inspection check sheets are on hand (RCO)?	
	PU Train not fin (002)	1 mod needed; deadline next class
	Lab train not fin. (003)	If > 1 mod give 3 month deadline

Security and Postings

Other/ Comments

	Room entrance posted? Emergency Stickers posted?	
	Notification to workers posed on all outside entrances?	
	Will isotopes be accessible to unauthorized personnel? (006)	
	Work areas posted? (061)	
	Fume Hoods, Refrigerators, Freezers?	
	Sinks; one Rad sticker – label p-trap?	
	All areas or equipment properly labeled? (064)	
	ALARA Statement posted?	
	Emergency procedures posted?	
	All use locations are current with approved/proposed project? (033)	

Fume Hood

Other/ Comments

	Certified as a Class 'C'? (012)	
	Does the hood need to be sealed around the corners? (013)	
	Required filtration in place and recently checked ? (014)	
	Is the sink plugged? (015)	
	Secondary containment used inside the fume hood ? (016)	
	Fume hood, glove box, etc. being used as required? (017)	
	Certified for RAM Use?	

Contamination Control

Other/ Comments

	Are lab coats and gloves available for use? (022)	
	Trays, secondary containers, and benchtops adequately covered? (023)	

RF-50I LABORATORY BASELINE CHECK LIST

(page 2 of 2)

	Evidence of eating, smoking, mouth pipetting etc.? (024)	
	Spill Kit available? (025)	
	Personal exit survey forms available?	
	Effective shielding for isotopes? (027)	
	Look under hood, sinks and in fridge? (028)	
	Any Uranium or Thorium compounds? (029)	
	Staff wearing open-toed shoes or shorts? (030)	

Post-Inspection

Other/ Comments

	Enter any due dates into scheduler and HPAssist.	
	Get wipe results and follow-up on contamination events (089)	
	Complete write-up and send report to P.U.	

Other Notes:

Persons Interviewed:

Initials

Evaluation By: _____

Attachments :

Direct Survey Data _____ Wipe Test Data _____ Survey Map _____ Other _____

RF-50J LABORATORY EVALUATION CHECKLIST X-RAY MACHINES USED IN VETERINARY MEDICINE

(Page 1 of 4)

(Please type or print legibly)

Principal User: _____ Date: _____

Building : _____ Rooms : _____

Reason: Initial/ Pre-Start Special/ Suspected Contamination Routine Audit

Uses: Animals/ What Kind _____ Housed Where? _____

Pre-Inspection Checklist

Other/ Comments

<input type="checkbox"/>	Pull File and organize	
<input type="checkbox"/>	Check HP-Assist against file	
<input type="checkbox"/>	Following information sent to P.U. or delivered during the inspection:	
<input type="checkbox"/>	1. Inventory Verification and Preliminary Inspection Report	
<input type="checkbox"/>	2. Training Update	
<input type="checkbox"/>	3. Copy of Approval	

Inspection Checklist

Other/ Comments

<input type="checkbox"/>	Explain Program Books 1 and 2 Delivered/ In Place	
<input type="checkbox"/>	Survey Kit and inspection check sheets are on hand (RCO)	
<input type="checkbox"/>	Review items from last inspection (001)	
<input type="checkbox"/>	PU Train not fin (002)	1 mod needed; deadline next class
<input type="checkbox"/>	Lab train not fin. (003)	If > 1 mod give 3 month deadline

Security

Other/ Comments

<input type="checkbox"/>	Was room attended ? If not, was door locked? (004)	
<input type="checkbox"/>	Are machines stored in lockable cabinet? (area accessible to unauthorized personnel) (006)	
<input type="checkbox"/>	No machine in unrestricted area? (007)	
<input type="checkbox"/>	Is there any accessory equipment (powder cameras, goniometers, etc.?)	

Exposure Control

Other/ Comments

<input type="checkbox"/>	Are lead equivalent gloves and aprons required? If required are they available and in use? (118)	
<input type="checkbox"/>	Evidence of eating, smoking, mouth pipetting etc.? (024)	
<input type="checkbox"/>	Effective shielding for isotopes used? (027)	
<input type="checkbox"/>	All use locations are current with approved project? (033)	

Postings

Other/ Comments

<input type="checkbox"/>	Room entrance posted (058); Emergency Stickers posted? (059)	
<input type="checkbox"/>	Notification to workers posed on all outside entrances? (060)	
<input type="checkbox"/>	“CAUTION - HIGH INTENSITY X-RAY BEAM”, or words having a similar intent, on the x-ray source housing (required on all units). (119)	

**RF-50J LABORATORY EVALUATION CHECKLIST
X-RAY MACHINES USED IN VETERINARY MEDICINE**

(Page 2 of 4)

“CAUTION RADIATION – THIS EQUIPMENT PRODUCES RADIATION WHEN ENERGIZED”, or words having a similar intent, near any switch that energizes an x-ray tube if the radiation source is an x-ray tube <u>required on all units if the source is not a radionuclide</u> . (120)	
"CAUTION – RADIOACTIVE MATERIAL”, or words having a similar intent, on the source housing if the radiation source is a radionuclide. (121)	
ALARA Statement posted? (065)	
Emergency procedures posted? (066)	

Personal Monitoring

Other/ Comments

Are Body Dosimeters Req? (072)		Are badges in use? (072)	
Are ring badges required? (073)		Are ring in use? (073)	
Bioassays required? (074)			
Badges need to be ordered for?	Type		

Records

Other/ Comments

Utilization logs complete? (RF-13C) (081)	
Have there been any personnel changes? (086)	
Radiation Control Manual and State Regs available? (087)	
P.U. safety plan available with approval? (088)	
There are exemptions for this machine.	
Manuals Updated?	

Post-Inspection

Other/ Comments

Enter any due dates into scheduler.	
Complete write-up and send report to P.U.	
Response request date was updated when report was send?	

Persons Interviewed:	Initials

**RF-50J LABORATORY EVALUATION CHECKLIST
X-RAY MACHINES USED IN VETERINARY MEDICINE**

(Page 3 of 4)

Other Notes:

Evaluation By: _____ Survey Frequency : _____ days

Attachments:

Direct Survey Data _____ Wipe Test Data _____ Survey Map _____ Other _____

RF-50J LABORATORY EVALUATION CHECKLIST X-RAY MACHINES USED IN VETERINARY MEDICINE

MACHINE INFORMATION:

(Page 4 of 4)

	Manufacturer	Model	Serial #	Number of Ports Available	Number of Ports in Use	QRS #	Max. kVp	Max. mA	Room # CSU#
Control Unit									
X-ray tube				<input type="checkbox"/> Open Beam [XO]		<input type="checkbox"/> Fully Enclosed [CX]			
X-ray tube				<input type="checkbox"/> Diffraction [XD]		<input type="checkbox"/> Fluorescence [XF]			
<input type="checkbox"/>	A device is provided to terminate the exposure after a preset time or exposure.								
<input type="checkbox"/>	A dead-man type of exposure switch is provided, together with an electrical cord of sufficient length, so that the operator can stand out of the useful beam and at least 6 feet (1.83 m) from the animal during all x-ray exposures.								
<input type="checkbox"/>	A technique chart is provided in the vicinity of the diagnostic x-ray system's control panel for all common procedures performed with this system in this application.								
<input type="checkbox"/>	The PU maintains the following information for each x-ray system for inspection by the State and the RCO; <ol style="list-style-type: none"> maximum technique factors for which the machine has been rated (see page 1 of RF-2F);; model and serial numbers of each tube housing assembly and control panel (see page 1 of RF-2F);; tube rating charts and cooling curves; records of survey measurements, calibrations, maintenance, and modifications performed on the x-ray system(s) after September 1, 1992 with the names of persons who performed such services;								
<input type="checkbox"/>	The RCO has assigned a unique identification number to each tube housing assembly and/or control panel. The tube housing assembly and/or control panel is labeled or stenciled with this number. This number is used by the PU to identify this machine in all correspondence with the RCO.								
In addition to other requirements of this Part, all diagnostic x-ray systems shall meet the following requirements:									
<input type="checkbox"/>	1. The control panel containing the main power switch bears this or an equivalent warning statement, legible and accessible to view: "WARNING: This x-ray unit may be dangerous to patient and operator unless safe exposure factors and operating instructions are observed." See page 7 of RF-2B.								
<input type="checkbox"/> N/A <input type="checkbox"/> Met	2. On battery-powered x-ray generators, visual means shall be provided on the control panel to indicate whether the battery needs to be changed, or the battery is in a state of charge adequate for proper operation.								
<input type="checkbox"/>	3. A warning statement, legible and accessible to view: "NOT FOR USE ON HUMANS" or some other statement with similar intent.								
All fluoroscopic x-ray systems shall meet the following requirements:									
<input type="checkbox"/> N/A <input type="checkbox"/> Met	The fluoroscopic imaging assembly is provided with a primary protective barrier, which intercepts the entire cross section of the useful beam at any SID.								
<input type="checkbox"/> N/A <input type="checkbox"/> Met	The x-ray tube used for fluoroscopy does not produce x rays unless the barrier is in position to intercept the entire useful beam.								
<input type="checkbox"/> N/A <input type="checkbox"/> Met	The use of non-image-intensified fluoroscopic equipment is prohibited after June 30, 1993.								
<input type="checkbox"/> N/A <input type="checkbox"/> Met	Special means of activation of high-level controls shall be required. The high level control is only operable when continuous manual activation is provided by the operator.								
<input type="checkbox"/> N/A <input type="checkbox"/> Met	A continuous signal audible to the fluoroscopist indicates that the high level control is being employed.								
<input type="checkbox"/> N/A <input type="checkbox"/> Met	Means is provided to preset the cumulative on-time of the fluoroscopic x-ray tube. The maximum cumulative time of the timing device does not exceed 5 minutes without resetting.								
<input type="checkbox"/> N/A <input type="checkbox"/> Met	A signal to the fluoroscopist indicates the completion of any preset cumulative on-time. Such signal continues to sound while x-rays are produced until the timing device is reset.								
<input type="checkbox"/> N/A <input type="checkbox"/> Met	In addition to the other requirements of RH 6.5, this mobile fluoroscope is equipped with image intensifiers.								
<input type="checkbox"/> N/A <input type="checkbox"/> Met	Conventional fluoroscopic table designs when combined with procedures utilized shall be such that no unprotected part of any staff or ancillary individual's body shall be exposed to unattenuated scattered radiation which originates from under the table. The attenuation required shall be not less than 0.25 millimeter lead equivalent.								
<input type="checkbox"/> N/A <input type="checkbox"/> Met	Equipment configuration when combined with procedures shall be such that no portion of any staff or ancillary individual's body, except the extremities or head, shall be exposed to the unattenuated scattered radiation emanating from above the tabletop unless that individual: is at least 120 centimeters from the center of the useful beam, or the radiation has passed through not less than 0.25 millimeter lead equivalent material including, but not limited to, drapes, Bucky-slot cover panel, or self-supporting curtains, in addition to any lead equivalency provided by the protective apron.								

<input type="checkbox"/> N/A <input type="checkbox"/> Met <input type="checkbox"/> See Exemptions	The State may grant exemptions where a sterile field will not permit the use of the normal protective barriers. Where the use of prefitted sterilized covers for the barriers is practical, the Department shall not permit such exemption.
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RF-50K X-RAY MACHINES USED IN THE HEALING ARTS LABORATORY EVALUATION CHECKLIST

(Page 1 of 4)

(Please type or print legibly)

Principal User: _____

Date: _____

Building : _____

Rooms : _____

Reason: Initial/ Pre-Start

Special / Inadvertent Exposure

Routine Audit

Uses: Human Research

Human Diagnosis

Human Dentistry

Pre-Inspection Checklist

Other/ Comments

1. Pull File and organize	
2. Project Approval sorted by date (oldest to newest) and clipped.	
3. Correspondence sorted by date (oldest to newest) and clipped. Comment on any problems.	
4. Inventory	
<ul style="list-style-type: none"> • List of X-Ray machines by CSU ID # (HPA) • Copy of latest State Certifications from Qualified Inspector 	
5. Lab evaluations sorted by date and clipped.	
6. Personnel files sorted by last name with RF-1A forms in front followed by other information by date (oldest to newest) then by modules in increasing order and clipped. <ul style="list-style-type: none"> • Double check worker classifications between files and HPAassist 	
7. Check HPAassist against entire P.U. File	
Following information sent to P.U. or delivered during the inspection:	
8. Inventory Verification and Preliminary Inspection Report	
9. Training Update	

Inspection Checklist

Other/ Comments

Survey Kit and inspection check sheets are on hand (RCO)	
Review items from last inspection (001)	
PU Train not fin (002)	1 mod needed; deadline next class
Lab train not fin. (003)	If > 1 mod give 3 month deadline

RF-50K X-RAY MACHINES USED IN THE HEALING ARTS LABORATORY EVALUATION CHECKLIST

(Page 2 of 4)

Security and Postings	Other/ Comments
Was room attended ? If not, was door locked? (004)	
Room entrance posted (058); Emergency Stickers posted? (059)	
Notification to workers posed on all outside entrances 10.2.3 (060)	
Is there a technique chart posted 6.3.1.1.3 (150)	
X-Ray Machine(s) current on State Inspection (101)	
X-Ray Machine(s) marked with CSU ID Number (102)	
All x-ray machines labeled with a radiation sticker(064)	
ALARA Statement posted? (065)	
Emergency procedures posted? (066)	
All use locations are current with approved project? (033)	
Control Panel is posted "Warning: This x-ray unit may be dangerous to patient and operator unless safe exposure factors and operating instructions are observed", or words with similar intent. 6.4.1 (125)	

Instruments	Other/ Comments
Are survey meters required for this x-ray use ?	
Quality control Charts being used? (040)	
RCO performed survey of use areas ?	

Operating Procedures	Other/ Comments
Are Body Dosimeters Req?(072)	Are badges in use? (072)
Are ring badges required? (073)	Are ring in use? (073)
Badges need to be ordered for?	Type
Is the radiation safety plan provided to each operator? 6.3.1.1.4 (123)	
Is the operator's manual available to all users ? 2.6.3.2 (126)	
Are women screened for pregnancy before exposure ? 4.13 (127)	
Are the general public dose limits met ? 4.14	
Human research exposures: Is a use log kept which states – the time and date of exposure, the operator, patient ID (123)	
Human research exposures: RCO pick 3 random ID numbers from use log and view consent forms required to be signed by subject.	
Are the human use consent forms being signed ? (124)	

**RF-50K X-RAY MACHINES USED IN THE HEALING ARTS
LABORATORY EVALUATION CHECKLIST**

(Page 3 of 4)

	Do operators stand at least 2 meters from tube head when not protected with lead? (128)	
	Are lead equivalent protective devices available for operators 0.25 mm thickness for scatter radiation ? 6.3.1.1.4 (129)	
	Are gonad shields available and used for patients? 6.3.1.1.6 (130)	

Records

Other/ Comments

	Explain Program Books 1 and 2 Delivered / In Place / Updated (circle appropriate action(s)).	
	P.U. safety plan available with approval? (088)	
	Inventory records complete? (078)	
	Copy of the state certifications on hand and current (101)?	
	For Diagnostic use: Are operators licensed practitioners? 6.3.1.1.2.1 (131)	
	Is there documentation of personal instruction on the x-ray machine(s)? 10.3 (132)	
	If necessary, is mechanical image receptor holding device available? 6.3.1.1.8.1 (133)	
	Are intensifying screens of the appropriate speed? 6.3.1.1.9.1.1 (134)	
	Have the machines been serviced in the last year? If so, are the records of service and calibrations on hand ? 6.3.1.1.12 (135)	
	Is a processor QA program in place 6.12.2 (136)	
	Are the manufacturer's processing recommendations followed 6.3.1.1.14.1 (137)	
	Is the automatic processor temperature and time monitored and logged weekly ? 6.3.1.1.14.3 (138)	
	Is the darkroom safelight tested and logged ? 6.3.1.1.14.6 (139)	
	Have the x-ray tubes been replaced in the last year? If so, was the RCO informed/ tubes logged into HPA? (140)	
	PU maintains maximum technique factors for which the machine has been rated ? (141)	
	PU maintains tube rating charts and cooling curves (142)	
	PU maintains a written policy on collimation of each tube (143)	

**RF-50K X-RAY MACHINES USED IN THE HEALING ARTS
LABORATORY EVALUATION CHECKLIST**

(Page 4 of 4)

Have there been any personnel changes? (086)

Post-Inspection

Other/ Comments

Enter any due dates into scheduler	
Get wipe results and follow-up on contamination events (089)	
Complete write-up and send report to P.U.	
Response request date was updated when report was send?	

Persons Interviewed:

Initials

Other Notes:

Signature of Inspector: _____ Survey Frequency : _____ days

Attachments:

Direct Survey Data _____ Wipe Test Data _____ Survey Map _____ Other _____

RF-50L INACTIVE STATUS LABORATORY CHECK LIST

(Page 1 of 2)

Principal User: _____ Date: _____

Building : _____ Rooms : _____

Uses: Animals/ What Kind _____ Housed Where ? _____

Radionuclides in storage: _____ Radionuclides used since last inspection: _____

Pre-Inspection Checklist

Other/ Comments

Pull File and organize.	
Check HP-Assist against file.	
1. Survey Kit and inspection check sheets are on hand (RCO)?	
2. Inventory Verification Report	

Security and Postings

Other/ Comments

Room entrance posted? Emergency Stickers posted?	
Notification to workers posed on all outside entrances?	
Is stored inventory accessible to unauthorized personnel? (006)	
Work areas posted? (061)	
Fume Hoods, Refrigerators, Freezers?	
Sinks; one Rad sticker – label p-trap?	
All areas or equipment properly labeled? (064)	
ALARA Statement posted?	
Emergency procedures posted?	

Spill Kit available? (025)	
Look under hood, sinks and in fridge? (028)	
Any Uranium or Thorium compounds? (029)	
All waste and waste containers removed?	

Records

Other/ Comments

Program Books 1 and 2 in Place	
P.U. safety plan available with approval? (088)	
P.U. radiation safety plan and permit signed and accessible to laboratory personnel.(88)	
Does utilization log indicate use? (RF-13C)	
Any radionuclide shipments received directly? (079)	
Have there been any personnel changes? (086)	

Post-Inspection

Other/ Comments

Enter any dates into scheduler and HPAssist.	
Get wipe results and follow-up on contamination events (089)	
Complete write-up and send report to P.U.	
Response request date was updated when report was send?	

RF-50L INACTIVE STATUS LABORATORY CHECK LIST

(page 2 of 2)

Other Notes:

Persons Interviewed:

Initials

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Evaluation By: _____

Attachments :

Direct Survey Data _____ Wipe Test Data _____ Survey Map _____ Other _____