RADIONUCLIDE LABORATORY EVALUATIONS

PURPOSE

This procedure provides instructions to radiation safety personnel for performing radiological evaluations of radionuclide laboratories. It also contains instructions and forms for recording and reporting the results of such evaluations.

POLICY

The RSO shall ensure that all areas where radioactive materials 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 to be detected or radiation exposures to be measured.

For radionuclide laboratories, i.e. those where dispersible radionuclides are used, the frequency of routine evaluations is based on the "interval inventory", as defined in the Radiation Safety Policy Manual. The "interval inventory" is the total quantity of radionuclides introduced into the laboratory in a month, averaged over the most restrictive bioassay interval, expressed in ALIs. The routine evaluation frequencies for various average monthly inventories are shown in the box below.

If no work with radionuclides is being done, and all radionuclides are stored in a locked location conspicuously labeled with a sign that requires notification of the RSO prior to any further use of radionuclides, the laboratory may be considered to be inactive. An inactive laboratory need not be surveyed routinely, but the status must be verified at least annually.

The nominal survey frequencies given in the box are to be interpreted as guidelines. In cases where continuing contamination problems are found, the interval between surveys will be shortened. If survey results obtained over a period of a year indicate no contamination or exposure problems, the routine survey interval may be increased. 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 surveys may be varied randomly.

DEFINITIONS

Annual Limit on Intake (ALI): The quantity of a radionuclide (expressed in millicuries) which, if taken into the body, produces an effective dose equivalent in risk to the annual whole body dose limit of 5 rems. Because of differences in physiological transport mechanisms, the ALIs vary depending on the route of intake. For purposes of contamination control and bioassay procedures, the ALI for ingestion is used, since that is the most common route of accidental intake in research laboratories. See 'RADIONUCLIDE CATEGORIES AND DATA" (RPR 10A).

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

ROUTINE RADIONUCLIDE LABORATORY EVALUATIONS

Interval Inventory ALIs*	Nominal Frequency
>30	Monthly
1-30 ALIs	Each bioassay interval
<1	ALISemi-annually
Inactive**	Annually

* Monthly average during interval.
** See text.

Radioisotope Laboratory (Lab): Any room or area in which 10 or more Reference Quantities of unsealed radioactive materials are stored or used. Since the only laboratories referred to in this procedure are radioisotope laboratories, they are referred to simply as "labs".

Reference Quantity (RQ): 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" (RPR 10A).

Removable Contamination Limit (RCL): A quantity of removable radioactive contamination related to its relative radiotoxicity used to prescribe corrective actions for contamination situations. See "CONTAMINATION LIMITS AND ACTION LEVELS" (RPR10B).

Non-Removable Contamination Limit (NRCL): A quantity of radioactivity remaining on a surface after repeated decontamination attempts fail to significantly reduce the contamination level. Note that non-removable contamination does not include area where radioactivity is expected (e.g. waste storage areas, sources, etc.). See "CONTAMINATION LIMITS AND ACTION LEVELS" (RPR10B).

Interval Inventory: The total quantity of radionuclides introduced into the lab each month, averaged over the bioassay interval, expressed in ALIs.

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 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 are introduced into a laboratory, a general evaluation is made by the RSO to ascertain that equipment, instruments and supplies necessary for controlling contamination and exposures are present or will be available when work with radionuclides begins. Unless the lab is very small and simple, 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 major radioisotope storage and work areas, waste storage locations, hoods, sinks, etc.

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" (RPR 15) with the user.

Procedures for handling and storing radionuclides, for surveying and monitoring, for waste disposal and for record keeping should be discussed with the responsible user. If an analytical instrument is to be used for counting urine 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 urine samples, and the results that would require verification.

Prior to the start of work with radionuclides in the laboratory, waste containers are to be available and the necessary signs and labels are to be posted. The "LABORATORY EVALUATION CHECK LIST" (RPR 50A) is used as a guideline for items to be evaluated and is retained in the RSO's laboratory survey file.

ROUTINE EVALUATIONS

Preparation

1 Review the emissions, energies and ALIs of the radionuclides used. Determine the removable and non-removable contamination limit(s) (RCL/NRCL) that apply to the radionuclides used.

2 Review the user's current radionuclide inventory. Which nuclides are significant for contamination or exposure potential? What is the interval inventory?

3 Review the previous survey results. Were there any problems? Were there recommendations that require follow-up during this survey?

Exposure and Contamination Surveys

1 All surveys of areas where radioactive materials are used will include, at least, both a *Total Contamination Survey* (TCS) (RPR 50B) and a *Removable Contamination Survey* (RCS) (RPR 50C). Some areas require that an *Exposure Rate Survey* (RPR 50D) be performed.
2 Upon initiating a laboratory survey, a TCS should be performed first. A properly performed TCS will help identify areas that should be surveyed during an RCS.

Total Contamination Survey:

1 Use the appropriate detector to survey areas in which radioactive materials use is allowed. Be sure to include areas that may become contaminated due to normal working conditions (i.e. door and drawer handles, lab notebooks, instruments, etc.). Also include areas that are not designated for the use of radioactive materials (i.e. computer keyboards, seats, desks, floor, corridor, etc.).
2 While conducting the survey, record a representative value for each *general* area surveyed (on the *Total Contamination Survey (RPR 50 B)* form). In some locations, a general area may be defined as an item, a defined area on a counter top or other surface, etc. For areas in which significant counts are observed, it will be necessary to record sufficient readings to adequately characterize the area.
3 Any area observed to exceed the Non-removable contamination limit must be appropriately managed/modified in order to reduce the level below the NRCL.

Removable Contamination Survey:

1 Using the appropriate absorbent material, select several areas to wipe for removable contamination. Be sure to include any area found during the TCS that may have removable contamination.
2 The wipes may be counted either by Liquid Scintillation Counting techniques or by Direct Static counts using the survey meter, the appropriate detector, and adequate count time.
3 Any areas found to have removable contamination above the RCL shall be decontaminated. Any areas found to have removable contamination above the MDA but less than the RCL should be decontaminated.

Exposure Rate Survey:

1 Exposure rate surveys should be performed in areas where individuals may be exposed to intensities that might cause the occupational radiation dose to exceed 10% of the annual dose limit or in areas where an individual is working with radioactive material or sources that could produce radiation levels greater than 1.0 mR/hr at 1 meter.
2 Record exposure rate readings on *Exposure Rate Surveys (RPR 50 D)* form. Be sure to include enough readings to adequately characterize the exposure environment.

Contaminant Evaluation by Direct Measurement

1 Make a measurement of the contaminated surface or of a wipe with the thin-window G-M survey meter.
2 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 either the gas-flow, internal proportional counter or a liquid scintillation counter to make a quantitative measurement.
3 If the second result is reduced to about 15% of the first, the contamination is most likely a low-energy beta emitter, e.g. C-14, S-35, or C-45. Use a liquid scintillation counter to make a quantitative measurement.
4 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 (or plastic, such as a credit card) over the contamination.
5 If the third result is less than 20% of the first, the isotope is most likely a high-energy, pure-beta emitter, e.g. P-32. Use the appropriate efficiency for the portable survey meter to quantify the result.
6 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 radionuclides 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 responsible user and any recurrence shall be reported to the RSO.

Fume Hoods

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

The velocity of air entering the hood should be measured at least annually as part of the University fume hood maintenance program. The primary goal is to ensure all laboratory fume hoods function in a manner capable of providing adequate protection for faculty, staff and student users.

Airflow performance is the critical indicator used to assess the performance of laboratory fume hoods. A fume hood with an 18" sash height corrected average face velocity of 100 ± 20 fpm and a smoke test rating of fair or good can be approved for laboratory use. Fume hoods with face velocities greater than 120 fpm can also be approved as long as a smoke test rating of good is achieved. Table 2 summarizes the velocity approval requirements:

18" Sash height velocity	
< 80 fpm	Non-approved
80-120 fpm	Approved
>120 fpm	Approved only if smoke test is good

Hoods not gaining approval will be posted with a "Non-Approved Fume Hood" Notice. The notice will indicate the reason that the hood was not approved and what corrective actions are necessary. Reinspection after the problem(s) has been corrected will be necessary.

As resources become available, approved hoods with face velocities above 120 fpm will be coordinated with University mechanical engineering staff to determine system corrections that will bring the hood(s) in question within the target range.

If a fume hood used for iodinations is provided with a vacuum line, it must be provided with an activated charcoal filter and the vacuum pump shall be labeled with a "RADIOACTIVE MATERIAL" label to assure that it is surveyed prior to maintenance or replacement.

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 to the cafeteria, library, classrooms or home. Sandals or other open-toed shoes are not appropriate for work with radionuclides.

Work, storage and waste areas should be provided with secondary containers and covered with absorbent paper. Plastic trays and dish pans 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 radionuclide work areas. Any signs of eating, drinking, smoking or mouth pipetting in the lab is considered de facto evidence of violation of this requirement and shall be reported to the responsible 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 RSO.

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 100 mrem in a calendar quarter, body badges should be issued.

Review handling techniques and the use of tongs with the user. If doses exceeding 1,000 mrem per calendar quarter 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.

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. Verify MDA can be achieved and recommend count time to user.

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 of less than 120 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 (RPR 50E). This label should show the isotopes used in the lab, the name of the responsible user and his or her office and home phone numbers.

Personal Monitoring

Observe and note whether dosimeters issued to lab occupants are being used. Report any discrepancies in dosimeter use to the responsible user and the RSO.

Records

Review the records prepared and maintained by the users. All inventory forms should be current and should be forwarded to the RSO as soon as the inventory item is used up. Sink disposals should be logged and summarized on the inventory disposition form. 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 responsible user. If deficiencies persist, report this to the RSO.

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. If contamination has been well controlled, the survey interval may be lengthened, but the interval shall not be increased by more than a factor of 2.

REFERENCES

National Council on Radiation Protection and Measurements, *Maintaining Radiation Protection Records*, NCRP Report No. 114, Bethesda, MD, 1992.

U. S. Nuclear Regulatory Commission, *Standards for Protection Against Radiation,* 10 CFR 20.

U.S. Nuclear Regulatory Commission, *Radiation Surveys at Medical Institutions,* Regulatory Guide 8.23, January 1991.

Utah Department of Health, *Standards for Protection Against Radiation,* Utah Radiation Control Rules, Chapter R313-15.

ATTACHMENTS

50A LABORATORY EVALUATION CHECK LIST

50B TOTAL CONTAMINATION SURVEYS

50C REMOVABLE CONTAMINATION SURVEYS

50D EXPOSURE RATE SURVEY

50E RADIONUCLIDE LABORATORY EVALUATION REPORT

50F RADIOISOTOPE LABORATORY LABEL

50G FUME HOOD SASH LABEL

AVAILABLE SIGNS AND LABELS

"CAUTION - RADIOACTIVE MATERIALS" (RPR 50F) self-adhesive label used on entrances to radionuclide laboratories, with space for entering isotopes and the responsible user.

"CLOSE SASH TO HERE FOR PROPER AIR FLOW" (RPR 50G) self-adhesive label for fume hood or fume hood labels used by EHS.

"NOTICE TO EMPLOYEES" (DRC-04), with added footnote and reduced in size, to be posted at each entrance to a radionuclide laboratory.

"CAUTION - RADIOACTIVE MATERIALS" self-adhesive labels, 3"x4" or 5"x6", used on cabinets, refrigerators, freezers. etc.

"CAUTION - RADIATION AREA", 8"X10" paper or metal signs.

RPR 50A. LABORATORY EVALUATION CHECK LIST

Responsible User: _____ Group #: _____ Date: _____

Building: _____ Room(s): _____ Task #: _____

Reason: ☐ Initial/Pre-start ☐ Contamination Survey ☐ Routine Audit ☐ Special/Incident ☐ Final/Close-out

Isotopes in Use: _____ _____ _____ _____ _____

Interval (ALIs): _____ _____ _____ _____ _____

Combined interval inventory: ☐ <1 ALI ☐ 1-30 ALIs ☐ >30 ALIs

Yes No

Uses:

☐ ☐ Only *in vitro?*
If animals, what kind? _____
How many? _____
Housed where? _____

Storage & Security:

☐ ☐ Are isotopes stored in *lockable* cabinet, freezer or refrigerator?
If not, where? _____
☐ ☐ Was room attended?
☐ ☐ Locked? _____

Contamination Control:

☐ ☐ Are gloves & lab coats available and used?
☐ ☐ Are trays, secondary containers and absorbent paper in use?
☐ ☐ Is there any evidence of eating, drinking, mouth pipetting, etc.? _____

Records:

Are the following records current and complete?
☐ ☐ Radioisotope inventory?
☐ ☐ Disposition records?
☐ ☐ Area surveys?
☐ ☐ Personnel surveys?
☐ ☐ Are there any personnel changes? (If yes, complete RPR 1A or list of names and SS Nos.)
☐ ☐ Are the Radiation Safety Policy Manual and current RPR's available?
Date of last Update? _____

Yes No

Waste:

☐ ☐ Are all wastes segregated by categories with appropriate containers & labels?
Check types of containers in use:
☐ ☐ Short-lived isotopes in dry waste, **NO LABELS?**
☐ ☐ Mixed Waste?
☐ ☐ Aqueous bulk liquids?
☐ ☐ Animals?
☐ ☐ Is there adequate freezer space for animal wastes?
☐ ☐ LS Vials? What fluors/tissue solubilizers are used**?** _____

Signs & Labels:

☐ ☐ Is room posting current?
☐ ☐ Is "Notice to Employees" posting current?
☐ ☐ Refrigerator(s) properly labeled?
☐ ☐ Freezer(s) properly labeled?
☐ ☐ Sink(s) & drain(s) properly labeled?
☐ ☐ Hood(s) properly labeled?

Personal Monitoring:

☐ ☐ Are body or ring dosimeters issued?
☐ ☐ Are they in use?

Exposure Control:

☐ ☐ Are shielding & distance used effectively?

Fume Hood:

Face Velocity: _____ fpm
Inst. Used: _____
☐ ☐ Labeled? Date of flow check: _____
☐ ☐ Vacuum line in hood?
☐ ☐ If yes, is it filtered? (Iodine users only)

RPR 50A. LABORATORY EVALUATION CHECK LIST (CON'T)

Responsible User: _____ **Group #:** _____ **Building:** _____ **Task #:** _____

Instruments:

Manufacturer	Model	Serial Number	Date of Calibration	Operational and Batteries Good?				Instrument Shared?				Task Number	Comments
				Yes		No		Yes		No			
				Yes		No		Yes		No			
				Yes		No		Yes		No			
				Yes		No		Yes		No			
				Yes		No		Yes		No			
				Yes		No		Yes		No			
				Yes		No		Yes		No			
				Yes		No		Yes		No			
				Yes		No		Yes		No			
				Yes		No		Yes		No			
				Yes		No		Yes		No			

Yes No

☐ ☐ **Is the Instrument(s) appropriate for the isotopes used in this lab?**

Comments:

_____

_____

_____

Attachments: ☐ **RPR 50B Direct Radiation Survey Results** ☐ **RPR 50C Contamination Survey Results** ☐ **Other** _____

Signature: _____ Date: _____

RPR 50B. TOTAL CONTAMINATION SURVEY

User: _____ **Group #:** _____ **Building:** _____ **Room(s):** _____ **Task #:** _____ **Page:** ____ **of** ____

Instrument		Serial Number	Detector Type	Detector Area
Radio-nuclide	**Efficiency**	**NRCL** DPM/100cm^2	**Bkg Rate** CPM	**MDA** DPM/100cm^2

Sample #	Gross CPM	Net CPM	Activity DPM	>NRCL? DPM/100cm^2

Signature: _____ Date: _____

RPR 50C. REMOVABLE CONTAMINATION SURVEY

User: _____ **Group #:** _____ **Building:** _____ **Room(s):** _____ **Task #:** _____ **Page:** ____ **of** ____

Instrument	Serial Number	Program/ Setup	Preset: Min	Preset: Counts	Instrument Units

Counting Channel:	1	2	3	MDA
Background counts:				DPM
Isotope: Efficiency:				
Isotope: Efficiency:				
Isotope: Efficiency:				

Sample #	Area cm^2	Gross Channel Response 1	2	3	Activity	>MDA?	>RCL?

Signature: _____ Date: _____

RPR 50D. EXPOSURE RATE SURVEY

User: _____ **Group #:** _____ **Building:** _____ **Room(s):** _____ **Task #:** _____ **Page:** ____ **of** ____

Instrument _____ **Model** _____ **Serial Number** _____

Signature: _____ Date: _____

RPR 50E. RADIONUCLIDE LABORATORY EVALUATION REPORT

To: _____ Group #: _____ Date: _____

Building: _____ Room(s): _____

Reason: ☐ Contamination survey ☐ Routine audit ☐ Special/Incident ☐ Final/Close-out ☐ Startup

SUMMARY OF SIGNIFICANT SURVEY RESULTS:

☐ No removable contamination or significant exposure rates were found during this survey. We appreciate your effort to keep it that way!

☐ Serious contamination [S] was found on:_____
- ☐ Contamination must be removed before work continues in the area.
- ☐ The contamination has been cleaned up.

☐ Unacceptable contamination [U] was found on: _____

☐ Until removed, it must be covered, isolated, labeled, etc. to prevent contact by individuals in the area.

☐ Low-level contamination [L] was found on: _____
Although this contamination poses no undue risk to personnel, it indicates that improvement in handling techniques is possible and desirable.

☐ A screening bioassay is required promptly [P] (within 5 days) from each potentially exposed individual.

☐ A screening bioassay is required within the normal bioassay interval [B] from each potentially exposed individual.

☐ Significant exposure rates (>0.5 mrem/hour at 30 cm) were found at:

Contaminated area categories:	Quantities (multiples of RCL)			
	>100	10-100	1-10	<1
Skin, hair or clothing in contact with skin	☐ [S,P]	☐[S,P]	☐ [S,B]	☐[U]
Readily accessible surfaces; uncontrolled contact	☐ [S,P]	☐ [S,B]	☐[U]	☐[L]
Inaccessible surfaces; limited contact potential	☐U	☐[U]	☐[L]	☐ [L]

PLEASE NOTE COMMENTS ON ITEMS CHECKED BELOW:

- ☐ Contamination control
- ☐ Survey instruments
- ☐ Personal surveys & records
- ☐ Storage, security, signs and labels
- ☐ Inventory and disposition records
- ☐ Exposure control
- ☐ Area monitoring & records
- ☐ Wearing of dosimeters
- ☐ Waste segregation

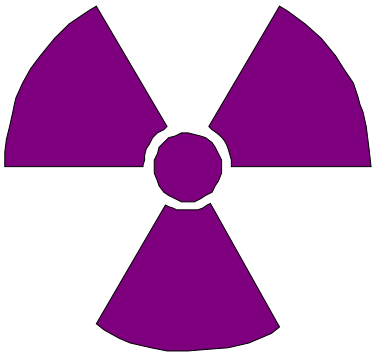
Attachments: ☐ Check list with comments ☐ Measurements data ☐ Survey map ☐ Other:

Signature: _____ Date: _____

RPR 50F RADIONUCLIDE LABORATORY LABEL

Magenta print on tallow stock; self-adhesive, peel-off back

CAUTION - RADIOACTIVE MATERIALS



MAJOR NUCLIDES: _____

IN CASE OF EMERGENCY, NOTIFY:

_____ Phone: _____

RADIATION SAFETY OFFICER: 1-6141

UNIVERSITY POLICE: 5-2677 (5-COPS)

AMBULANCE OR FIRE: 9-911

RPR 50E (3/97)

RPR 50G FUME HOOD SASH LABEL

Black on green; self-adhesive, peel-off back

CLOSE SASH TO HERE
FOR PROPER AIR FLOW

FLOW:_____ DATE:_____ BY:_____

RPR 50F (12/93)