



National Institutes of Health
Bethesda, Maryland 20892
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Commercial and R&D Branch
Division of Nuclear Materials Safety
Region 1
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406-1415

RE: License No. 19-00296-10 03001786

Dear Madam/Sir:

The enclosed report is to document that a facility leased by the National Institutes of Health for biomedical research can be free released in accordance with NRC requirements. If you have any questions or need additional information, please contact me at 301-496-2254 or zoonr@mail.nih.gov.

Sincerely,

Robert A. Zoon, M.E., M.S.
Radiation Safety Officer, NIH

Enclosure

cc: Dr. Levin, Chair, RSC, NIH

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The National Institutes of Health (NIH) conducts biomedical research under a broad scope license (#19-00296-10) issued by the U.S. Nuclear Regulatory Commission (NRC). Most licensed activities take place at the main campus of NIH, 9000 Rockville Pike in Rockville, MD. However, NIH also conducts licensed activities in a number of leased facilities in Rockville, Kensington, Baltimore, and Frederick, MD.

From 1988 through 2007, NIH leased 23,128 square feet of laboratory space and 3,572 square feet of non-laboratory space in a facility located at 12501 Washington Avenue in Rockville, MD. Attachment 1 is a floor plan of the facility, which is referred to as the Flow building or Danac-4. Radioactive materials were used in this facility from 1988 through 2004. Then, from January 2005 until January 2008, the facility was undergoing renovation for reoccupancy by NIH researchers. However, in January 2008, the lease was abruptly terminated by the lessor, JBG/JER Twinbrook Metro, LLC (JBG). NIH did not have the opportunity to conduct MARSSIM type final status surveys before relinquishing the facility, as would be our usual practice. NIH and JBG are currently in litigation over breach of contract issues, and the NIH has no legal right to enter the facility. The facility has been gutted and is currently being used to store various items from an adjacent facility owned by JBG.

During NIH's period of occupancy, unsealed sources of radioactive material including tritium, carbon-14, sulfur-35, phosphorus-32, chlorine-36, calcium-45, rubidium-86, and iodine-125 were used under the supervision of 13 Authorized Users in 37 labs. Attachments 2 and 3 list the Authorized Users and labs, respectively. Comprehensive surveys were performed on at least a semi-annual basis in all laboratories in which radioactive materials were used or stored, as well as in corridors. These surveys involve measuring exposure levels, monitoring for contamination, and assessing compliance with over 20 programmatic requirements. Attachment 4 is the survey form on which the results of comprehensive surveys were documented. NIH no longer has comprehensive survey records from 1988 through 1996. However, survey records from 1997 through 2004 document that no contamination above 2200 dpm/100 cm² had been found. These records also document that radioactive waste from the facility was managed in accordance with NIH policy and NRC regulations.

In addition, each month in which radioactive materials were used, researchers were required to perform and document swipe surveys of their labs. No removable contamination above the 2200 dpm/100 cm² was identified on monthly surveys in this facility from 1998 through 2004. Attachment 5 is the form on which monthly surveys were documented.

When radioactive material usage ceased, a closeout survey was performed in each posted lab. Attachment 6 describes our current procedures for performing closeout surveys and demonstrating that no removable contamination above 220 dpm/100 cm² is present. The limits in Regulatory Guide 8.23 would be used for any fixed contamination. These contamination limits are orders of magnitude below the Decommissioning Contamination Guidance Limits for the long-lived radionuclides that were used in the facility, i.e., H-3, C-14, and Cl-36. NIH did not specifically monitor for alpha contamination because no NRC-regulated alpha emitters had been used. However, if removable alpha contamination had been present, e.g., from uranyl acetate, it would have shown up on the swipes collected during the closeout surveys.

According to NIH's sealed source records, no sealed sources that requiring leak testing were in the Flow building. There were, however, some generally licensed sources, e.g., 30 microcuries of Cs-137, 20 microcuries of Eu-152, and 10 microcuries of Ra-226 disposed of as radioactive waste. There also were 2 Ni-63 sources, 8 millicuries and 10 millicuries, respectively, that were disposed of as radioactive waste. It is not known where the Ni-63 sources came from. However, if they had leaked, swipes from the many surveys which were performed in the facility would have detected the contamination.

In summary, existing survey data for the Flow building demonstrate that the facility can be released for unrestricted use in accordance with NRC requirements.

Attachment 2: Authorized Users in Flow Building

Authorized User	Division of Radiation Safety #
Akinshola, B.	23344
Dave, J.	5224
Foley, T.	23750
Gao, B.	23130
Goldman, D.	5225
Ishac, E.	15703
Kim, H.	11054
King, M.	1680
Lazar-Wesley, E.	10557
Mitchell, D.	42877
Polozova, A.	35686
Salem, N.	1671
Zhang, L.	14861

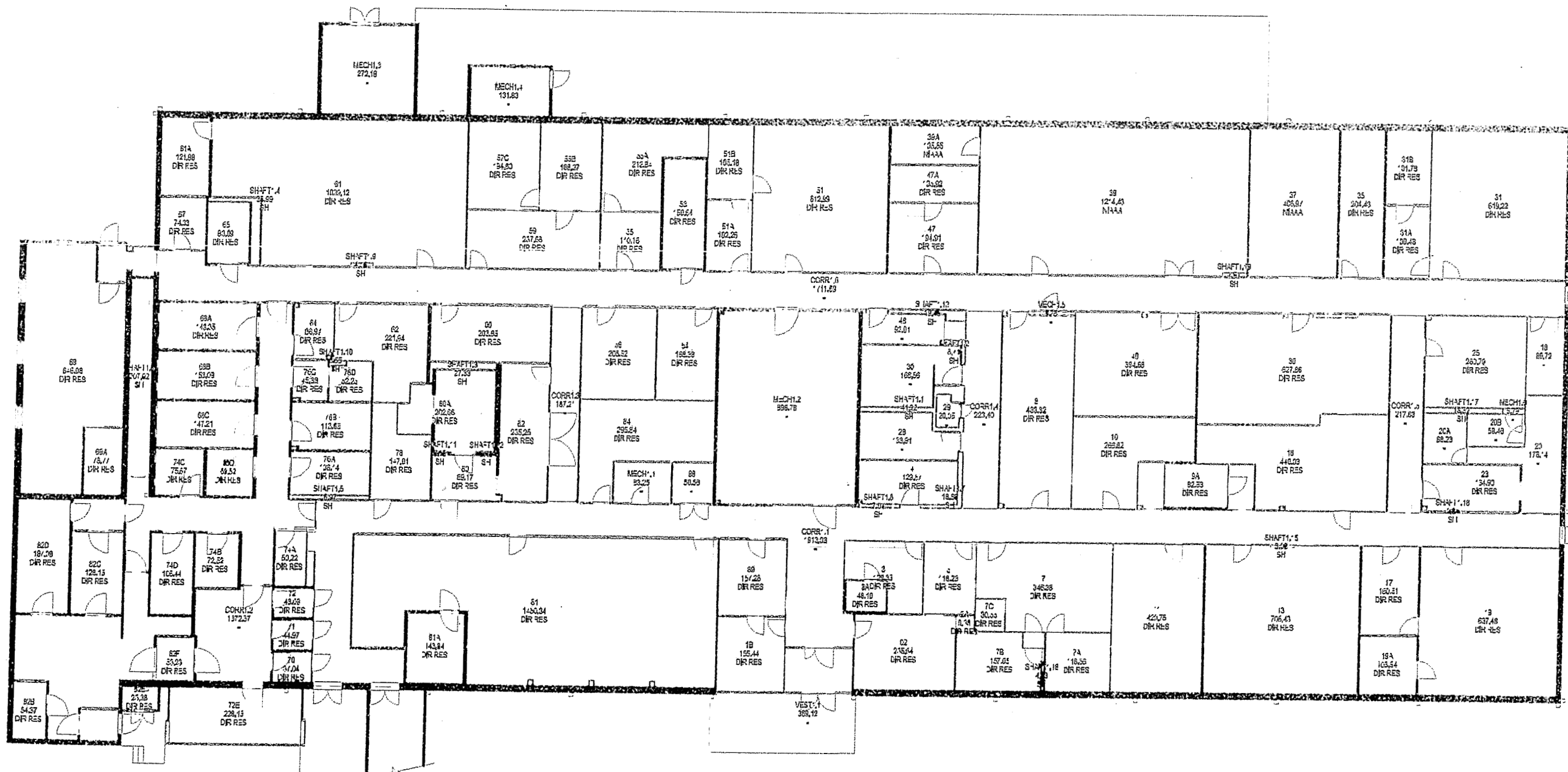
Attachment 3: Radioactive Material Use Labs in Flow Building

2	23	61
3	25	62
4	31	63
7	33	65
8	35	67
10	36B	68B
11	37	69A
13	39A	70
14	42	75
15	43	78
16	47	80
17	56	
19	60	

Attachment 4: Comprehensive Survey Report

National Institutes of Health Division of Radiation Safety					Radiation Safety Survey				HP Area	Report No.	
Bldg	BSufx	Floor	Wing	Room	RSufx	AU Name (Last, First)			AU No.	Phone	
List of radionuclides used and smear results (dpm/100cm ²)					Surveyors' Name			Date	Radionuclides NOT used since last survey		
Radionuclides					C	Surveyed by C = Contractors D = DRS			Survey Frequency M = Monthly B = Bimonthly S = Semiannual W = Weekly Q = Quarterly		
Locations						Desk:	Bench		↑ 237 B	Table	
1											
2											
3											
4											
5											
6											
7						Sink				Bench	
8											
9							Office				
10											
All Smears <220 DPM					YES	NO	Desk				
Surveyor Meter Information		Make/Model		S/N		Type		Cal Date	Bkgd/cpm /		
		Make/Model		S/N		Type		Cal Date	Bkgd/cpm		
		Make/Model		S/N		Type		Cal Date	Bkg-mR/hr		
Compliance Items (Mark YES if Compliant, NO if in Violation)											
Yes	No					Yes	No				
		1. Signs and labels: Room						9. Security/storage of RAM			
		2. Ref/freezer/equipment						10. Proper protective clothing/equipment			
		3. LSC vials						11. Routine use of shielding			
		4. Source containers						12. Radioactive waste management			
		5. Waste containers						13. Prohibition of eating, drinking			
		6. AP on radionuclide use area						14. Adequate pers. Monitoring			
		7. Adequate hood flow						15. Personnel trained			
		8. Hood calibrated Date:						16. Daily monitoring			
		17. Utilization/disposal records						18. Survey records current			
		19. Radiation levels acceptable						20. Contamination limits met			
		21. Meters available						22. Meters operational			
		23. Calibration current						24. Other			
Meter #1	Serial No.	Cal. Date	Meter #2	Serial No.	Cal. Date	Meter #3	Serial No.	Cal. Date			
Remarks (Refer to item No. Include violations corrected by surveyor.)											
15) _____ states all staff have taken RSL class.											
Person interviewed:											
Radiation Safety Use Only		HP received this form			Date follow-up completed			HP Signature			
Follow-up remarks											

Attachment 1: Floor Plan of Flow Building



Attachment 5: Monthly Survey Form

MONTHLY LABORATORY CONTAMINATION SURVEY							TYPE OF COUNTER USED TO ANALYZE SMEARS:			
National Institutes of Health Radiation Safety Branch (Bldg. 21/116) RSB 496-5774 or FAX 496-3544 Send original to RSB, and retain copy in lab records for 3 years.							Liquid Scintillation Counter [] Gamma Counter [] LSC or Gamma Counter Property #:			
Building	Suffix	Floor	Wing	Room	Rooms Linked on this Survey	Survey Date (mm/dd/yy)	Indicate radionuclides and activities used since last monthly survey: Activity - Total amount used since last monthly survey.			
							Isotope	Activity (in mCi)	Isotope	Activity (in mCi)
Authorized User: Last Name, First Name					RSB User Number		P-33		H-3	
							I-125		S-35	
							I-131		C-14	
Surveyor: Last Name, First Name					RSB User Number		Cr-51		P-32	
Check here if radionuclides were not used this month in all modules represented on this form. []										
SURVEYOR'S SIGNATURE							SMEAR RESULTS (in dpm/100cm²)			
DIAGRAM OF LABORATORY: Sketch module(s) and number locations smeared. A minimum of 10 smears must be taken in each module where radionuclides are used, with at least two on the floor. Clearly indicate on multiple-module surveys if any modules had no usage in this month.							Fill in radionuclides and indicate quantitative smear results in DPM. DPM = CPM / COUNTER EFFICIENCY PRINTOUT MUST BE ATTACHED!			
							Location	Nuclide 1	Nuclide 2	Nuclide 3
							BKG			
							1			
							2			
							3			
							4			
							5			
							6			
							7			
							8			
							9			
							10			
							11			
							12			
							13			
							14			
							15			
							16			
							17			
18										
19										
20										
REMARKS: Include explanation of actions taken for smears >2,200 dpm/100cm ² beta-gamma or >220 dpm/100 cm ² alpha.										

INSTRUCTIONS FOR COMPLETING MONTHLY LABORATORY CONTAMINATION SURVEY

LOCATION: complete information as requested.

"Rooms Linked on this Survey": include all attached modules which are actually surveyed on this form.

SURVEY DATE: the date the smears were actually taken (not when counted).

AUTH. USER: self explanatory

SURVEYOR: self explanatory

"Check here if radionuclides were not used this month in all modules represented on this form. []": this box should be checked ONLY if radionuclides were NOT USED in all modules represented on the form. A diagram is not required if this box is checked.

SURVEYOR SIGNATURE: should be signed by the person actually performing the survey (AU signature also acceptable).

DIAGRAM: Only required if radionuclides were used and smears were taken in the laboratory. The diagram should contain all rooms or modules listed at the top of the form. If diagram consists of multiple modules and radionuclides were not used in a particular module(s), this should be clearly identified on the diagram. A minimum of 10 smears must be taken for each module using radionuclides, with at least two on the floor.

REMARKS: A remark indicating corrective action is required for any contamination over set limits.

TYPE OF COUNTER: Indicate type of counter used to analyze smears and its NIH Property Number.

RADIONUCLIDES USED: Indicate which radionuclides were used and how much.

SMEAR RESULTS: A copy of the printout MUST be attached, with the dat3 and counting parameters shown. If date is incorrect or cannot be printed, surveyor must write in date and initial it. A quantitative result must be listed for each smear taken in DPM. If counter does not automatically convert results from CPM to DPM, the surveyor must convert all results to DPM. Writing statements such as "<100", and "< Background" will not be acceptable as results. "See Printout" will be acceptable IF results on printout are clearly shown in DPM. Smears are not required if no radionuclides were used. Also, it is suggested that a blank (BKG) smear be added to each group.

Attachment 6: Laboratory Closeout Procedures

DRS Contact Phone Numbers:

Radioactive material moving and storage service:	301-496-3277
Radioactive waste disposal service:	301-496-4451

I. Pre-Inspection (only for moves/renovations):

NOTE: For lab inactivations, see section II.

- Inspect** lab with lab personnel and **instruct** lab staff on appropriate clearance/moving procedures (*refer to AU clearance memorandum*).
- Verify** that all radioactive material (RAM), radioactive waste (RW), and potentially contaminated and labeled items have been removed from the lab area to be inactivated. **Resolve** any discrepancies or issues involving these items *prior* to removal.
- Identify** items or equipment with **inaccessible contaminated areas** (e.g. HPLC's, harvesters, etc) that should not be packed by movers (see section III). Be aware of the mover's contract.
- Review** lab closeout contamination survey of the area and note RAM used and usage areas (if possible).
- Ensure** that adequate arrangements (i.e. RAM moving and storage service) are made to safely move RAM and sealed sources (e.g. to DRS storage or new lab).
- Spot-check** for any other radiation safety related problems or radiological hazards.
- Inspect** lab by performing a portable meter survey (pancake G-M, NaI, and ZnS as appropriate) of all RAM accessible work areas, RAM and RW storage sites, floors, sinks, and equipment in which RAM may have been used to ensure the absence of contamination.
- Notify** lab staff of any issues and discuss appropriate solutions. Additionally, **document** conclusions and solutions from the discussion on the survey sheet. AHP is responsible for ensuring that all identified problems are corrected prior to the inactivation, renovation, or move.
- Schedule** a tentative date and time (at most two business days after the renovation or move) to perform the final lab clearance. Recommend reminding lab staff of their responsibility to notify the AHP of any changes to the scheduled time and reschedule the clearance in a timely manner.
- For partial renovations, simply **post** a DRS clearance sticker on the lab door or near the area in question. Note that the lab will have performed a swipe survey regardless of radionuclides used.

II. Final Clearance:

NOTE: For moves/complete renovations, the lab should be vacant! Final clearance *is not required* for partial renovations.

- Ensure** that all RAM, RW, and empty waste containers have been removed from the lab, all radiation warning signs/labels/tape have been removed or obliterated, and the lab is vacant (from a radiation safety perspective). Address any issues with the former staff.
- Monitor** the entire lab including inside *potentially* contaminated drawers, cabinets, refrigerators, freezers, incubators, RAM and RW storage areas, floors, and work benches using both pancake G-M and NaI probes (and ZnS if alpha emitting radionuclides have been used), regardless of isotope use, to confirm the absence of residual contamination (removable or fixed) and radiological hazards.
- Perform a **swipe** survey (10 swipes minimum) of RAM and RW areas, sinks, benches, and floors to ensure that removable contamination levels are below the appropriate release limits for unrestricted areas.

- Document** the survey using the lab's closeout survey, including monitored and swiped areas, results, and provide a brief summary of the clearance. If the lab is not moving (i.e. no future RAM use), include comprehensive documentation of all prior isotope usage in the lab area within the past three years (longer if possible).
- Remove** the lab door postings after the survey results confirm the absence of contamination and post a DRS clearance sticker.
- Attach** a copy of the closeout survey to the lab change form and submit the originals for data entry.
- If the lab has moved, **notify** RSA of new meter locations and **contact** appropriate DRS staff member to update lab personnel information in the database.
- For renovations/moves, **remind** lab staff of their responsibility to contact the AHP for reactivation, before RAM can be used or stored in the lab.

III. Equipment Clearances:

NOTE: Official DRS clearance is *typically* not required for lab equipment, except for liquid scintillation counters, gamma counters, and chemical fume hoods using volatile materials!

Liquid scintillation counters (LSCs), gamma counters:

- Ensure** radioactive source (and lead shielding if applicable) is removed.
- Examine** AU swipe survey to confirm absence of contamination.
- Monitor** (portable meter survey using pan-GM, NaI, and ZnS as appropriate) accessible portions of machine to confirm absence of removable/fixed contamination.
- Instruct** lab staff to affix a completed NIH Form 2683 (Certification that Equipment is Free from Hazards) to the unit.
- Attach** clearance sticker to machine to certify that it is free of radiological hazards. If contaminated, work with the lab staff to decontaminate.
- Complete** DRS clearance record for counters and submit to appropriate contact.

Radiation producing machines (i.e. cabinet x-ray, fluoroscopy, radiography, microCT, CT, electron microscope, bone densitometers, and x-ray diffraction units):

Note: *Special clearance is not required, however DRS must be notified when units are procured, moved, or surplused!*

- Document** DRS number (yellow tag), location, custodian, machine type, serial number, model number, and NIH number, if applicable, from unit and submit documentation to Project Officer and RSA for database update.
- If machine is only to be transferred, document custodian and new location to update the database and resurvey the unit. **Submit** documentation to Project Officer and RSA for database update.
- Remind** lab staff to affix a completed NIH Form 2683 (Certification that Equipment is Free from Hazards) to the unit, even though a DRS clearance is not required.
- For moves between campus buildings:

- Secure** source and lead shielding.
- Evaluate** lab survey.
- Attach** clearance sticker (stating source secured for on campus move). It is not necessary to complete a DRS clearance record in this case.

Devices containing radioactive sources:

Note: *These units are typically on the DRS sealed source list and cannot be surplused. Irradiators are handled differently and on a case-by-case basis!*

- Internal counter sources must be removed and disposed by the manufacturer. Otherwise, contact RMCB for removal and disposal of all other sources (e.g. mass spectrometers, gas chromatographs, ion mobility spectrometers, H-3 exit signs, etc).**
- For gas chromatographs and mass spectrometers:
 - Survey** the machine for contamination.
 - Surplus** or return the source-free unit to the manufacturer.
 - Notify** the sealed source custodian.

Chemical fume hoods using volatile radioactive material (i.e. I-125 and I-131 iodinations, H-3, and Cysteine and Methionine S-35):

- Review** lab clearance survey (swipe results) of chemical fume hood prior to repair (clearing hood). This should consist of 10 swipes taken from accessible areas of the fume hood.
- Spot check** chemical fume hood. If applicable, perform additional swipe surveys of hood area. If hood is to be disassembled, verify it is free from radiological hazards by monitoring (pan-GM and NaI) and swiping the hood duct.
- Attach** DRS clearance sticker to chemical fume hood.
- Instruct** lab staff to affix a completed NIH Form 2683 (Certification that Equipment is Free from Hazards) to the fume hood.

Centrifuges:

- Ensure** that the exterior is free from contamination. Contaminated rotors can be locked inside the centrifuge. However, contamination *must not* be removable during packing and transit!

This is to acknowledge the receipt of your letter/application dated 10/6/08, and to inform you that the initial processing which includes an administrative review has been performed.

Amendment (19-00296-10) There were no administrative omissions. Your application was assigned to a technical reviewer. Please note that the technical review may identify additional omissions or require additional information.

Please provide to this office within 30 days of your receipt of this card

A copy of your action has been forwarded to our License Fee & Accounts Receivable Branch, who will contact you separately if there is a fee issue involved.

Your action has been assigned **Mail Control Number** 142887.
When calling to inquire about this action, please refer to this control number.
You may call us on (610) 337-5398, or 337-5260.