Application to Use Radiation Sources / Laboratory Chemicals

At Sea on Columbia University Research Vessels

NOTE: This form must be completed by the Principal Investigator or Research Scientist **at least 180 days prior** to use of any radioactive materials (RAM) or hazardous chemicals (hazmat) in the field or at sea on Columbia University research vessels and emailed to rso-ehrs@columbia.edu and LamontLangsethForm@ldeo.columbia.edu. For questions, contact Columbia University Radiation Safety at 212-305-0303 and Lamont Doherty Earth Observatory (LDEO) Office of Marine Operations at 845-365-8367.

Please complete this form electronically. The final version will be printed and signed once all information has been reviewed and accepted by the Columbia University EH&S and/or Columbia University Radiation Safety Committee (CURSC) for radioisotope use.

Do Not Write in this Space
This application is approved with the following conditions for the time period _____ to

_____.

_____
Signed by the Columbia University EH&S and Title

Date: _____

GENERAL INFORMATION

Table 1. Researcher(s) and Home Institution* Information	
Name of Home Institution	
PI Email Addresses	
Home Institution EH&S and Radiation Safety Contact	
Home Institution EH&S and Radiation Safety Contact Phone and Email	
PI's authorized radiation user approval by the Home Institution's Radiation Safety Committee	Date doc(s) sent:
Name of Collaborating Institution	
Name of Collaborating Research Scientist(s)	
RS Email Address(es)	
Collaborating Institution EH&S and Radiation Safety Contact	
Collaborating Institution EH&S and Radiation Safety Contact Phone and Email	
List the members of your team (and the collaborating team) that will be using hazardous chemicals and/or RAM.	

Describe all unsealed RAM users' experience (e.g. permitted RAM user at home institution, number of years of experience of using RAM on land and at sea, type of RAM work, etc.)	
*: Home institution refers to the institution which sponsors the PI.	
Time period when PI will be on board:	MM/DD/YYYY to MM/DD/YYYY
Time period when radiation experiments will be performed on board:	MM/DD/YYYY to MM/DD/YYYY
If the PI is not onboard for the entire duration of the radiation experiments, please list the individual who will supervise the experiments in PI's absence.	Name of Radiation Experiment Supervisor in PI's Absence:
Loading of radiation sources Note: A receipt inspection of RAM shipment must be performed no later than 72 hours upon receipt. Provide a copy of the inspection report afterwards.	Date: Dock Location: Name of Researcher Performing Receipt Survey/Leak Test for RAM or devices containing RAM:
Unloading of radiation sources Note: A pre-shipment survey for RAM or leak test for devices containing RAM must be performed within 24 hours prior to unloading the radiation sources off the research vessel. Provide a copy of the pre-shipment survey or leak test afterwards.	Date: Dock Location: Name of Researcher Performing Pre-Shipment Survey/Leak Test for RAM or devices containing RAM:

Required Radiation Safety Documents

If using RAM, provide a copy of Home Institution and Collaborator Institution's State and/or Federal NRC license/reciprocity under which RAM will be used at sea.	Home Institution State License #: Collaborator Institution State License #: US NRC License or Reciprocity #: Date doc(s) sent:
If shipping non-DOT Class 7 exempt RAM samples or wastes or devices containing non-exempt RAM off of Columbia University research vessel, provide a copy of the RAM shipper's DOT Class 7 training certificate. If a waste transporter is hired, provide a copy of the waste transporter's RAM license and transporter permit.	Name of RAM Shipper: RAM Shipper Phone and Email: Name of RAM Waste Transporter: Waste Transporter Phone and Email: Date doc(s) sent:
If using RAM or devices containing RAM, PI must have access to a working liquid scintillation counter (LSC). Provide a copy of the LSC user manual and recent PM report including any counting efficiency calibration.	LSC Make and Model: LSC SN: LSC cocktail brand: Flash point of LSC cocktail: LSC Owner Institution: LSC Owner Contact: LSC Owner Contact Phone and Email: Will the LSC be on board: ☐ Yes ☐ No

	Date doc(s) sent:
If using sealed RAM or device containing unsealed RAM, provide a copy of device specification and the most recent leak test report.	Device Make and Model: Device Serial Number: Date doc(s) sent:
If using an X-ray device, provide a copy of the device specification and the most recent X-ray protection survey report.	X-ray Device Make and Model: Device Serial Number: Date doc(s) sent:
Provide a copy of radiation safety training certificates for all radiation users.	Date doc(s) sent:
If using portable radiation survey meters, provide a copy of the most recent calibration certificates.	Survey Meter Make and Model: Device Serial Number: Date doc(s) sent:

RESEARCH SPECIFIC INFORMATION (Attach additional pages if needed)

Describe the radioactive / chemical protocol(s) that will be conducted. Include the research objective, list RAM and/or hazmat that will be used and, for each radionuclide, the maximum activity that will be on-board at any one time. Include sealed sources and radiation generating devices (e.g. core loggers, GC and electron capture devices, X-ray units, etc.)	Radiation Source(s): Maximum Radioactivity for each RAM and/or Radiation Exposure Rate from Device: Research Objective:
Submit a copy of the MSDS (or SDS) for ALL chemicals, rad compounds, and incidental items (e.g. cleaners, solvents, lubricants, etc.)	Date doc(s) sent:
Columbia University expects that the research vessel and/or radioisotope use areas will be kept free of radioactive and chemical contamination (i.e. at background). Researcher(s) may be held responsible for all decontamination costs. Describe the controls (engineering and administrative) to be used to control contamination at RAM use area and spills during transport. Describe how RAM use area, RAM-containing device and containers will be labeled.	
Will radioactive gases or aerosols be generated as a result of activities? If yes, describe the	☐ NO ☐ YES

controls (engineering and administrative) to be used to limit inhalation exposures to researchers and ship's crew.	
Provide shipping plans for how each radioisotope, sealed source, radiation generating device, and chemical will be transported to the research vessel.	
Provide details regarding what supplies, including personal protective equipment, workbench absorbent pads, scintillation fluid, swipes, secondary containment, decontamination supplies, etc. will be provided	
Provide details regarding how all radioactive and chemical materials, including wastes, will be secured on board.	
Describe shipping plans for how radiation sources (including activity for each container) and chemical material (and volumes) are expected to be transported off the vessel. Consult the RSO at home institution for determination of DOT classification and shipping plans. Describe what containers will be used and how RAM packages will be labeled.	Maximum Radioactivity for Each RAM in Each Container or Package: DOT Classification of Each RAM Package: ☐ Exempt ☐ Excepted (UN ____) ☐Type A Shipping plan:
Provide details on all radioisotope waste (including activity and volumes) and chemical waste volumes expected to be produced. Indicate how wastes will be stored aboard ship. <u>PIs and waste</u> Waste disposal: The Home Institution will specify waste disposal requirements and timelines. Where possible, disposal through the Home Institution is preferred. Disposal costs to be covered by the PI/RS through home institution or collaborator institution approved waste vendor(s). <u>Non-Columbia PIs and waste</u> NOTE: All such waste will need to be removed and disposed immediately at the end of the cruise by the Home Institution. Use of an appropriate waste vendor is required and it is the RS / PI's responsibility to schedule and pay for disposal. No wastes are to be disposed at sea.	

For radioisotopes, Columbia University Radiation Safety Committee (CURSC) approval (not applicable if no radioisotopes are used):	CURSC Approval Date Chair Signature

Date Form Submitted _____

RS / PI Name _____

RS / PI Signature _____
(Note: Do not sign until instructed to by Columbia University EH&S)