

Laboratory Design for Radiation Work

Based on the CNSC Design Compliance Guide

Designation Codes:

B = required for Basic level laboratory

I = required for intermediate level laboratory

H = required for high level laboratory

Finishing and Fixtures		
Design Feature	Code	Comment
Flooring will have an impervious, chemical resistant, washable surface. Carpeting will not be used.	B, I, H	
Either all joints in the flooring material will be sealed, or the flooring will be a one-piece design.	I, H	Recommended for Basic
Flooring will be covered up walls and cabinets to prevent spills from penetrating underneath them.	I, H	Recommended for Basic
Work surfaces will have a smooth, impervious, washable, and chemical-resistant finish.	B, I, H	
Either all joints on work surfaces will be sealed, or bench tops will have a seamless one-piece design.	I, H	Recommended for Basic. If not installed in a Basic then alternative bench cover is required for all procedures.
The countertop will include a lip to prevent run-off onto the floor. If the countertop abuts a wall, it will either be coved or have a back-splash against the wall.	I, H	Recommended for Basic
All cupboards and shelving where nuclear substances may be stored will have a smooth, impervious, washable, and chemical-resistant finish.	B, I, H	
Walls will be finished with a smooth and washable surface and the joints will be sealed where applicable, for easier clean-up if contaminated due to backspray from a vial or some other such event.	B, I, H	
The ceiling will be finished with a smooth and washable surface and the joints will be sealed where applicable, for easier clean-up if contaminated due to backspray from a vial or some other such event.	H	Recommended for Intermediate

Design Feature	Code	Comment
If necessary, work surfaces will be reinforced to bear the (possibly considerable) weight of any shielding material that may be placed on the work surface.	B, I, H	
A separate hand washing sink and a wash-up/disposal sink will be provided and located close to the room's entrance, to encourage hand washing on the way out of the room.	B, I, H	
Sinks will be made of material that is readily decontaminated.	I, H	Recommended for Basic
Faucets will be operated by means not requiring direct hand contact.	H	Intermediate level areas must have a documented assessment to determine if this is required.
An emergency eye-wash and shower station will be provided in the room or in close proximity to the room.	B, I, H	
Facilities for storing outer garments and personal items will be provided outside the room.	I, H	Recommended for Basic
Security		
An access control system (key, keypad, key fob, other) will be in place to ensure that only authorized users can enter the restricted room.	I, H	Recommended for Basic
The room will be equipped with lockable doors that will remain closed and locked whenever nuclear substances and radiation devices are present in the room and the room is unoccupied.	B, I, H	
If the room is to be shared with workers not authorized to use nuclear substances, a secondary lockable storage area (refrigerator, freezer, cupboard) will be provided within the room.	B, I, H	
Shielding and Dose Control		
Dose estimates to NEWs and non-NEWs in the area will be attached as part of the UBC radiation permit application	B, I, H	
When appropriate, localized shielding will be used in areas where nuclear substances are to be used or stored depending on the quantities of nuclear substances that emit penetrating radiation.	B, I, H	

Design Feature	Code	Comment
When appropriate, shielding will be incorporated into the structure of the room. Assessment must be performed in conjunction with the UBC Radiation Office.	I, H	All Nuclear Medicine spaces must be assessed.
Miscellaneous		
Food and drink preparation, use, and storage areas will not be present in the laboratory.	B, I, H	
Office and study space will not be located near radioactive work areas.	I, H	Recommended for Basic
Movement of nuclear substances will be minimized by locating in proximity those areas between which nuclear substances must be moved.	B, I, H	
If the room or storage area is to be used for non-nuclear work as well, then separate labelled areas will be defined for the nuclear and non-nuclear work.	B	High level labs require a specific room dedicated to the work. Intermediate level labs require a documented assessment to determine appropriate space.
An accessible area will be designated to store materials and equipment used for decontamination and monitoring (spill kits, survey meters where required, contamination meters where required).	B, I, H	
Adequate space will be available for radioactive wastes generated by work within the nuclear substance laboratories or nuclear medicine rooms. This space may be within the lab/room or in a separate area.	B, I, H	
Ventilation		
The room will be at negative pressure with the surrounding area (unless the room will be used as a clean or sterile room). Air flow will always be from the area of low radiation. For clean or sterile rooms, an anteroom may be required.	B, I, H	
If fume hoods are required, a documented assessment has been performed with the UBC Radiation Safety Office to ensure that ALL the applicable standards and requirements are met.	B, I, H	
If Biological Safety Cabinets, glove boxes, or "hot cells" are required, contact the UBC Radiation Office to ensure the appropriate labels and other requirements are met.	B, I, H	

Plumbing		
Design Feature	Code	Comment
Drains that may carry radioactive material from the area will go directly to the main building sewer or to the facility's controlled active liquid waste system.	B, I, H	
Drains from the room will be identified on plans supplied to maintenance personnel.	I, H	Recommended for Basic
Drains will be constructed of chemical-resistant material.	B, I, H	
A backflow protection device will be in place to prevent potentially contaminated water from entering the public water system.	I, H	Recommended for Basic
Drain lines that may carry radioactive material will be marked at 3 meter intervals with the radiation warning symbol to indicate the possibility of contamination.	H	Intermediate level labs require a documented assessment to determine if this is required.
Sink drain traps will be accessible for monitoring.	B, I, H	
Faucets with vacuum or cooling line attachments will include backflow protection devices.	B, I, H	