

APPENDIX 'A'

FUMEHOOD DECONTAMINATION PROTOCOL

**FUMEHOOD DECONTAMINATION PROTOCOL
SELECT FUMEHOODS
RADIATION PROTECTION BUILDING
775 BROOKFIELD ROAD
OTTAWA, ONTARIO**

MARCH 2017

DST FILE NO.GV-OT-28158

1.0 EXISTING CONDITIONS

1) Chemical Fumehoods

- a) The fumehoods (Items 1 – 19 below) were reportedly used for acids including Hydrochloric, Sulfuric, Nitric, Acetic, and for organic solvents, bases, etc. It is reported that the hoods were not used with concentrated Perchloric acid.
 - i) All surfaces of the fumehood and ducting servicing the fumehood shall be considered impacted by chemical residue.
 - ii) All ventilation components associated with the fumehood exhausts systems (e.g. fans, housing, etc.) shall be considered impacted by chemical residue.

Item	Floor	Lab Room No.	Fume Hoods ID
1	Basement	146	R75-273-C005
2	Basement	147	R75-273-C006
3	Basement	149B	R75-273-C008
4	Basement	149B	R75-273-C009
5	Basement	151	R75-273-C001
6	Basement	151	R75-273-C002
7	Basement	153	R75-273-C003
8	Basement	153	R75-273-C004
9	Ground Floor	259	R75-273-C019
10	Ground Floor	259	R75-273-C020
11	Ground Floor	261	R75-273-C021
12	Ground Floor	261	R75-273-C023
13	Ground Floor	266	R75-273-C010
14	Ground Floor	267	R75-273-C011*
15	Ground Floor	267	R75-273-C012*
16	Ground Floor	268	R75-273-C013
17	Ground Floor	268	R75-273-C014
18	Ground Floor	272	R75-273-C016
19	Ground Floor	272	R75-273-C017

* Hydrofluoric acid has also been used in fumehoods marked with an asterisk.

2) Chemical/Radioactive Use Fumehoods

- a) Fumehoods in labs 149A and 262 (Items 1R – 2R below) are reportedly used for chemicals as well as work with radioactive material.
 - i) All surfaces of the fumehood and ducting servicing the fumehood shall be considered impacted by chemical/radioactive residue.
 - ii) All ventilation components associated with the fumehood exhausts systems (e.g. fans, housing, etc.) shall be considered impacted by chemical/radioactive residue.

Item	Floor	Lab Room No.	Fume Hoods ID
1R	Basement	149A	R75-273-C007
2R	Ground Floor	262	R75-273-C032

2.0 FUMEHOOD DECONTAMINATION SCOPE OF WORK

1) Chemical Fumehoods (Items 1 – 19)

- a) Decontaminate fumehoods and associated fumehood exhausts systems (e.g. ducting, fans, housing, etc.) as required to accommodate the scope of work for the project.
 - i) Only those workers performing the work should be present within the work areas when the work is performed.
 - ii) Worker/Visitor Protection:
 - a. Provide, at minimum, each worker with National Institute for Occupational Health and Safety (NIOSH) approved tight-fitting, half-face, air purifying respirators equipped with P-100 (minimum)/multi-gas filter cartridges.
 - b. Eye protection which prohibits liquid splashes to the eye.
 - c. Disposable protective booties or appropriate footwear that can be effectively cleaned before leaving the work area.
 - d. Protective gloves suitable against chemicals (e.g. Silver Shield, Norfoil, 4H brands).
 - e. Disposable coveralls suitable against chemical exposure.
 - iii) A competent supervisor must be present during the work.
 - iv) Cover exposed floor/millwork in work area using fibre-reinforced polyethylene sheeting or 6 mil polyethylene sheeting and tape.
 - v) Ensure adequate ventilation of work area; minimum six (6) air changes per hour.
 - vi) Designate facilities for worker hygiene; Provide wash basin, water, soap, and towels for worker decontamination.
 - vii) No contaminated materials or persons to enter uncontaminated area.
 - viii) Clean all surfaces using *Contrad 70* brand detergent or equivalent acceptable to client/client representative. Clean in accordance with manufacturer's instruction for the product.
 - (1) Cleaning to be performed using non-powered hand tools/hands only.
 - (2) Pressure washing is prohibited.
 - (3) All wash water used in decontamination operations must be collected and/or absorbed.
 - (a) Wash water is subject to disposal requirements (see section 3.0).

- ix) All materials (e.g. rags, absorbents) used to clean material impacted by chemical residue, including waste items, shall be disposed of in accordance with requirements for the landfill accepting the waste (i.e. may be subject to leachate tests as required by the landfill).

- b) All decontamination work will be subject to evaluation by client/client representative.

2) Chemical/Radioactive Use Fumehoods (Items 1R – 2R)

- a) Decontaminate fumehoods in labs 149A and 262 and associated fumehood exhausts systems (e.g. ducting, fans, housing, etc.) as required to accommodate the scope of work for the project.
 - i) Only those workers performing the work should be present within the work areas when the work is performed.
 - ii) Worker/Visitor Protection:
 - a. Provide, at minimum, each worker with National Institute for Occupational Health and Safety (NIOSH) approved tight-fitting, half-face, air purifying respirators equipped with P-100 (minimum)/multi-gas filter cartridges.
 - b. Eye protection which prohibits liquid splashes to the eye.
 - c. Disposable protective booties or appropriate footwear that can be effectively cleaned before leaving the work area.
 - d. Protective gloves suitable against chemicals (e.g. Silver Shield, Norfoil, 4H brands).
 - e. Disposable coveralls suitable against chemical exposure.
 - iii) A competent supervisor must be present during the work.
 - iv) Cover exposed floor/millwork in work area using fibre-reinforced polyethylene sheeting or 6 mil polyethylene sheeting and tape.
 - v) Ensure adequate ventilation of work area; minimum six (6) air changes per hour.
 - vi) Designate facilities for worker hygiene; Provide wash basin, water, soap, and towels for worker decontamination.
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 - viii) Clean all surfaces using *Contrad 70* brand detergent or equivalent acceptable to client/client representative. Clean in accordance with manufacturer's instruction for the product.
 - (1) Cleaning to be performed using non-powered hand tools/hands only.
 - (2) Pressure washing is prohibited.
 - (3) All wash water used in decontamination operations must be collected and/or absorbed.
 - (a) Wash water is subject to disposal requirements (see section 3.0).
- ix) All materials (e.g. rags, absorbents) used to clean material impacted by chemical residue, including waste items, shall be disposed of in accordance with requirements for the landfill accepting the waste (i.e. may be subject to leachate tests as required by the landfill).
 - (1) In addition, all waste produced from decontamination operations in these labs, including any associated fumehood exhausts systems, will be subject to screening for radioactivity (see Section 2) b)).

- b) All decontamination work will be subject to evaluation by client/client representative.

- i) Waste shall be screened for radioactivity using methodologies acceptable to the client/client representative (i.e. surface contamination monitors, wipe sampling) shall be performed by the contractor).
- (1) Any waste exhibiting radioactivity levels above background shall be decontaminated at no extra charge.

3.0 GENERAL

1. All work is subject to evaluation by anyone designated by the Client. Additional work (e.g. additional cleaning, etc.) required to obtain satisfactory conditions as determined by those designated will be performed by the contractor at no extra charge.
2. Contractor is to verify that all required lock-out/tag-out, as required by the appropriate parties, has been performed prior to activities subject to lock-out/tag-out.
3. Contractor must have experience in hazardous materials abatement/decommissioning.
 - a. All workers must have training in hazardous materials abatement.
 - b. All workers working in labs 149A and 262 must also have appropriate radiation awareness training in addition to training in hazardous materials abatement.
4. Contractor must submit all waste disposal manifests as applicable following work.
5. All solid waste from cleaning operations (including PPE) is subject to the disposal requirements of *R.R.O. 1990, Reg. 347: General - Waste Management, as amended*.
6. All liquid waste from cleaning operations is subject to the disposal requirements of *R.R.O. 1990, Reg. 347: General - Waste Management, as amended* as well as *Sewer Use By-law No. 2003 – 514, City of Ottawa*.
7. In addition to the requirements set out in Section 3.0) 5. & 6., all waste from decontamination operations in labs 149A and 262 shall be screened for radioactivity prior to removal from these labs.
8. All waste transport is subject to Transportation of Dangerous Goods Regulations (at Transport Dangerous Goods Directorate) (SOR/2001-286).
9. Contractor will have access to the following facility utilities: hot and cold water, and electricity.
10. All work is to be carried out during hours specified by the Client.
11. All waste removal is to be performed during hours specified by the Client.
 - Any on-site waste bin placement, as well as waste transfer routes are to be approved by the client or as designated.
12. Eyewash stations and emergency showers on site are for emergency use only.

13. A spill kit, including absorbents, appropriate for corrosive substances must be present at all times in the areas of work.
14. First aid kits shall be provided in quantities sufficient for the size of crew on site. At least one kit shall contain first aid items suitable for the treatment of chemical burns including hydrofluoric acid (e.g. acid/base neutralizers, calcium gluconate gel, etc.).

END OF SECTION