

01900 Decommissioning - Decontamination

Part 1 – General

1.01 Demolition, repair, and renovation projects may involve building materials and equipment which have had contact with hazardous materials.

Some University buildings have been evaluated for hazards associated with construction materials (primarily asbestos and lead paint). Lab by lab inventories of hazardous chemicals presently used or stored in the laboratory will be available to the project designer for consultation. Areas shall be surveyed for presence of lead, asbestos, and radioactive materials, as appropriate, prior to demolition / construction activities as part of the design process. The designer should consult with the Facilities Planning and Design project manager prior to arranging lead or asbestos surveys to review existing campus survey history and information. Areas in which radioactive materials have been used will be surveyed by NC State Radiation Protection staff (division of Environmental, Health and Public Safety)

Depending upon the particular project, it may be necessary for the designer to include a specification for the decontamination of hazardous materials from building surfaces, prior to building demolition

The Designer will retain full responsibility for a complete and comprehensive specification. The following information may be useful as a guide for the development of such a specification.

Part 2 – Specification Guidelines -

SECTION DESCRIPTION

NC State University's teaching and research laboratories may use hazardous chemicals, bio-hazardous agents, and radioactive substances. Construction projects may involve laboratory space. This section contains specifications for laboratory decontamination work to be performed by the Contractor.

Part 1.0 CONTRACTOR QUALIFICATIONS

1.01 All contractors performing decontamination work involving hazardous materials on NC State University property shall be pre-qualified by the University prior to selection and contracting.

1.02 The following items shall be required to be submitted for pre-qualification review:

- Evidence of a minimum 5 years experience in decontamination work involving hazardous material. Include evidence of experience and training of personnel to be performing decontamination activities.
- Proof of Insurance in the following amounts:

Workman's Compensation –Employer's Liability –minimum \$100,000

Public Liability Insurance in an amount not less than \$300,000 for injuries, including accidental death, to any one person and subject to the same limit for each person, in amount not less than \$500,000 on account of one accident; and Property Damage Insurance in an amount not less than \$100,000/\$300,000.

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Additional insurance as may be required by General Statutes of North Carolina, including motor vehicle insurance in amounts not less than \$100,000 per person per incident, \$300,000 per accident, and Property Damage Insurance in an amount not less than \$50,000/\$100,000.

- DOT Hazardous Waste Transportation ID Number
- Proof of all training required under OSHA and EPA standards for all workers involved, including but limited to: Hazard Communication Training and Personal Protective Device Training..
- Name, Address, and ID Number of Hazardous Waste Treatment and Storage Depot (TSD) proposed to be used.

Part 2.0 CONTRACTOR SCOPE OF WORK

2.01 General Requirements

Contractor will provide all materials, personnel, protective equipment, chemical analysis capabilities, and knowledge to remove hazardous chemical residues from laboratories. The Contractor shall take appropriate measures to assure the safety of their workers.

Contractor is responsible for their employee hazard awareness, personal protective equipment, and safety training. Contractor shall submit a copy of their Health and Safety Plan to the NC State Construction Manager prior to beginning their first project with the University and following substantial changes to their plan. NC State Construction Mgt shall retain this document for the duration of the contract. The Contractor shall comply with all the requirements of applicable federal, state, and local safety, health, and environmental regulations while working at the job-site. See Part Five for additional reporting requirements. Proof of employee training will be subject to review on demand. Providing a worker to an NC State project that has not received required training will be grounds for immediate removal from the project and loss of pre-qualified status.

Prior to the Contractor's decontamination work, NC State Environmental Health & Safety (EH&S) will have removed all hazardous chemical containers from the room. The Contractor is not responsible for removing containers of hazardous chemicals. If the Contractor finds a hazardous chemical container, contractor should notify the project's NC State Construction Manager project manager (CM). The CM will notify EH&S to remove the container. The contractor is responsible for removing any potentially hazardous waste generated by his decontamination activities.

2.02 Contractors will be expected to utilize decontamination methods that minimize the generation of hazardous wastes. The contractor shall apply methods that utilize non-hazardous cleaning agents and methods that generate the lowest possible quantity of waste materials For example, if steam cleaning is utilized, rinse material should be filtered/treated in a manner to allow discharge to the sanitary sewer. Contractors will obtain pre-approval from NC State EH&S for methods of cleaning prior to first project and then on a project-by-project basis.

2.03 Assessment: The Contractor will be provided with a copy of the latest chemical inventory for each laboratory through the NC State Construction Manager who will be provided this information by NC State EH&S. This information will be supplemented by any additional information, if available, on the work history of the space. This will represent “best available information” and contractor should assume that the potential for unlisted residues exists. If a specific chemical was used that has unique clean-up requirements, then the Contractor will identify the clean-up requirements, cleanup verification sampling requirements, and perform the work after assessing each room to determine the time, labor, materials, and cost estimate required for room decontamination.

Part 3.0 SPECIFIC REQUIREMENTS

3.01 Work Area Boundary: The Contractor is responsible for establishing a work area boundary that will accomplish the following objectives:

- Establish a decontamination zone to allow only authorized access to the contaminated area and the personnel decontamination area
- Ensure that non-authorized people do not accidentally enter the contaminated’ area
- Ensure the safety of people in the vicinity of the work area
- Ensure contaminants are not spread outside the work area.

3.02 Bio-hazardous Materials: Standard laboratory decontamination methods will be adequate for the majority of NC State laboratory work surfaces for which biological hazards are used. Contractors will be expected to utilize NSF 49 methodology for decontamination of biological safety cabinets. Areas requiring extraordinary procedures will be identified to the NCSU PM who will convey this information to the contractor.

3.03 Radioactive Materials: State, federal, and campus regulations require laboratories to be free of regulated radioactive materials before they are released to the Contractor. If regulated radioactive materials were used in the room, the room will be cleared by NCSU EH&S Radiation Safety Division (RSD) prior to the Contractor performing work in the room. For posted areas, the NCSU CM will provide documentation to the Contractor that RSD has determined the room to be free of regulated radioactive contamination.

If the Contractor discovers an intact radioactivity warning label, immediately notify NCSU EH&S Radiation Protection – (515-5208.).

3.04 Chemical Materials

3.04.1 Fume Hoods and Ductwork: NCSU EH&S will inform the NCSU Construction Manager if chemical usage records on hand indicate that perchloric acid was used in the fume hood (fume hoods which have been used with perchloric acid should have water wash down features). As applicable, the contractor shall follow appropriate procedures for preventing fire or explosion while decontaminating. Contractors should consider the benefits of utilizing perchlorate-screening tests since it is difficult to positively rule out the past use of perchloric acid in hoods without water wash down features.

Hoods that will be removed for relocation or salvage should have accessible wetted surfaces rendered safe for further handling.

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3.04.2 Benches, cabinets, floors, walls: Where part of the requested scope of work, the contractor will use a non-hazardous detergent (such as Simple Green®) to triple wash and rinse surfaces. If these items will be reused, then they can be released.

3.04.3 Drain Traps and Plumbing: It is to be assumed that laboratory drain traps may contain mercury. If drain traps are to be removed, the Contractor will remove the trap so that the trap contents are contained to prevent spillage during removal and a visual check for mercury can be conducted

3.04.4 Vacuum Pumps and Lines: Vacuum systems may contain mercury. Use spill prevention methods to avoid spilling mercury when removing vacuum lines.

3.04.5 Fluorescent Light Ballasts: Fluorescent light ballasts that do not display a “NO PCBs” label (probably manufactured before 1979) are assumed to contain PCBs. The contractor will collect non-PCB ballasts and send them to a metal recovery facility.

3.04.6 Fluorescent Lamps: The Contractor shall collect light tubes and place them in labeled boxes for pick-up by NC State EH&S Hazardous Waste Contractor.

3.04.7 Mercury: The contractor shall have a mercury spill kit, mercury vacuum or other appropriate equipment, on site at all times when working on sanitary sewers. The Contractor shall clean up any visible mercury that may be discovered or accidentally spilled while emptying sink traps or plumbing lines (sanitary sewer and lab waste lines). If mercury is detected visually or by mercury vapor detection, the Contractor shall immediately notify the NCSU CM and the contractor will initiate cleanup activities.

Pooled mercury may be encountered under cabinet bottoms or in cabinets under p-traps. All visible mercury must be removed when it is observed. Areas that have high mercury vapor but have no visible mercury, should be thoroughly cleaned using Mercon wipes, vacuuming (using a vacuum designed for mercury containment), or other suitable method proposed by contractor.

The Contractor shall clean up all mercury-contaminated surfaces including floors, benchtops, equipment, walls, and fumehoods using methods that will not spread contamination to non-contaminated areas.

The Contractor shall verify that mercury vapor levels in rooms requiring mercury decontamination are below the decontamination clearance level of 0.005 mg/m^3 . [Note: This level is one-tenth of the 8-hour OSHA Permissible Exposure Limit (PEL) of 0.050 mg/m^3 .]

Contractor shall not leave visible mercury contamination in rooms.

Clearance air samples shall be taken using a calibrated mercury vapor analyzer that can accurately detect mercury vapor to 0.001 mg/m^3 . The Contractor shall include the instrument name and manufacturer, model number, and date calibrated, for this and other detection equipment with the project file.

Clearance samples for contaminated areas will be taken by dividing the area into a square grid with 2 x 2 foot spacing and measuring mercury vapor in the approximate center of each grid area. Contractor shall document location, time, date, sample value (mg/m^3), and sample identification number on a map of the area being cleared to be included in the project file.

Clearance samples for contaminated areas less than 4 square feet will require 2 samples within the boundaries of the cleaned area.

Clearance level is 0.005 mg/m^3 at a distance of approximately 2 inches above the cleaned surface. To pass clearance, all samples within the area must average below 0.005 mg/m^3 mercury vapor clearance criteria.

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3.04.8 Ozone Depleting Compounds / Refrigerators: The Contractor shall decontaminate refrigeration or air conditioning equipment before Facilities Operations removes the ozone depleting compounds (refrigerants) from the unit. The Contractor shall notify the CM *when* the equipment is ready for servicing. CM shall contact Facilities Operations for equipment servicing.

Part 4.0 HAZARDOUS WASTE STORAGE AND PICK-UP

4.01 Hazardous Waste Liabilities: Because of the nature of the project work, waste generated will be attributable to both the contractor and the University.

The contractor will submit a waste management plan to the University for approval prior to implementing any work. The approved plan will serve as the basis for project-specific plans. The Plan will specify procedures for all aspects of waste management.

Management of waste generated by project activities will be the responsibility of the contractor, as defined in their plan. The University will provide oversight.

The contractor will prepare waste for shipment to vendors identified in the approved waste management plan.

The waste will leave the University under the University's signature.

The University will receive copies of disposal certifications for all waste shipped.

4.02 Containers: Containers used for storage of waste must be United States Department of Transportation (DOT) approved. The contractor shall supply bins, tanks, or tank trucks when necessary. Containers shall remain closed at all times except when material is being added.

4.03 Labels: Containers of hazardous waste shall display hazardous waste labels. Before waste is accumulated, the Contractor, the PM and EH&S shall identify *and* define waste streams. The Contractor shall not mix different waste streams in the same container. The Contractor shall mark the initial accumulation date on the hazardous waste label when waste is first placed in the container.

4.04 Waste Storage Area: Contractor will store closed and sealed waste containers on the construction site in a locked, secure area out of the elements. The storage area, room, or structure, shall be identified by the CM, EH&S and the Contractor on an as needed basis

4.05 Inspections: Contractor shall inspect the waste storage area Contractor shall inspect the storage area to ensure the containers are not leaking, are segregated into compatible groups, and labeled properly with appropriate dates and waste description. Contractor shall complete the inspection form on a weekly basis. The Contractor shall maintain the completed inspection forms in the project file.

4.06 Spill Response: Contractor shall maintain enough spill response supplies to contain at least 110% of any accumulated waste. Immediately call the CM if there is a spill. Respond to the spill at the soonest, safest possible moment. Contractor shall clean up the spill and contain it according to the requirements of this specification. CM shall immediately notify EH&S. EH&S will provide assistance in regulatory agency notification, and reporting (if necessary).

Part 5.0 REPORTS / ANALYTICAL

5.01 Personnel: Names of personnel and evidence of required training (hazcom, respirator training, etc shall be supplied for each employee who will be working at the site, upon request. All personnel shall be suitably trained in accordance with federal and state regulations.

5.02 Spreadsheet/Decontamination Tracking: Contractor will use a spreadsheet to list rooms to be decontaminated and track decontamination progress. A sign shall be posted on each room indicating the status of the cleaning / demolition process. The completed spreadsheet shall be kept in the project file for future reference.

5.03 Samples and Analytical Reports: For cases where analytical testing after cleaning is requested by NC State EH&S, the NC State CM will be notified. The contractor shall provide a price per sample, including a breakdown of labor to collect the sample, materials, and analytical costs.

Where sampling is requested, the Contractor shall use a unique identification number that can be referenced to the location sampled. The contractor shall use industry standards to collect samples, including methods, preservation, containers, and chain of custody. The Contractor will provide a map of the sample locations along with the original analytical reports to the PM to be included in the project file.

5.04 Subcontracting Restriction: HMDDS work under this contact will not be sublet. HMDDS contractors are ONLY authorized to subcontract work that does not involve disturbance of hazardous materials.

Ductwork removal may be subcontracted if demonstrated by the contractor to be non-hazardous. Any breach of this rule without prior approval from the Construction Management Department may result in removal from the project.

5.05 Certification of Clean: As a base requirement, surfaced cleaned shall be certified by the vendor that they have been cleaned according to the University/Contractor mutually established protocol. Unless specifically requested, test samples are not requested for closeout of a work area.

5.06 Regulatory Compliance and Worker Safety: HMDDS contractors are required to follow, as a minimum, all OSHA, State of North Carolina, and NC State requirements when conducting work. However, this does not relieve the contractor of his/her responsibility to follow any additional practices necessary for the protection of their personnel.