

Hazardous Materials Management Plan **For: Project Managers and Supervisors**

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Compliance on any project ultimately rests with the Project Manager or Supervisor. In recognition of this responsibility and the diversity of backgrounds of the Project Managers or Supervisors, EHS has designed and written the Hazardous Materials Management Plan. The focus of this document is to give support to Project Managers and Supervisors as they take control of hazardous materials tasks on their projects and to assist them in keeping Dartmouth College compliant with State and Federal regulations as well as Dartmouth College Policy. Projects must be registered with EHS in the planning stages of the project to ensure that EHS is fully prepared to support the project. By following these guidelines, Project Managers ensure good working conditions for contractors and Dartmouth College Employees working in common spaces.

Minimum Requirements: What you must do

- Learn what you can about the history of the site or facility as it relates to hazardous materials (ex- underground storage tank sites, former research facilities, former industrial/manufacturing locations)
- Register projects with EHS early in the planning stages to discuss potential hazardous materials issues
- Consider potential hazardous material abatement issues in budget and scheduling activities.

EPA requires that all building renovations/demolitions be surveyed for the presence of asbestos containing material before work begins.

Minimum Training Qualifications – 10 Hour OSHA Outreach Training for Construction

Purpose: To outline required components of the Hazardous Materials Management Plan for Project Managers/Supervisors to maintain compliance with regulatory agencies and Dartmouth College policies.

Scope: This plan applies to all Project Managers, Supervisors responsible for renovations and demolition and any specific hazardous materials related activities. Materials may include: Lead, Asbestos, Mercury, PCB's, Mold, Silica, Radioactive Materials,

Definitions:

ACBM – Asbestos Containing Building Material

DC – Dartmouth College

DES – NH Department of Environmental Services

EHS – Environmental Health & Safety at Dartmouth College

EPA – Environmental Protection Agency

FAQ – Frequently asked questions

GC – General Contractor

Hazardous Waste – solid or liquid materials regulated by the State of NH or EPA and requiring specialized storage and disposal

Hazardous Material – any chemical or product classified by the Department of Transportation as a hazardous material in 49 CFR. These products will have a DOT diamond indicating the hazard class on the product container or package.

HEPA – High Efficiency Particulate Air

Hg - Mercury

LFt – Linear Feet

NH – New Hampshire

NIOSH – National Institutes for Occupational Safety & Health

NTP – National Toxicology Program

OSHA – Occupational Health & Safety Administration

Pb - Lead

PEL – Permissible Exposure Limit

PCB - Polychlorinated Biphenyl

PM's – Project Managers (includes supervisors)

PPE – Personal Protective Equipment

Project Manager – Any Dartmouth Employee or contracted employee responsible for construction, renovation, redecorating of Dartmouth owned property

SAA – Satellite Accumulation Area for hazardous waste

SOP – Standard Operating Procedure

Sq. Ft. – Square Feet

State – State of New Hampshire

TCLP – Toxic Characteristic Leaching Procedure, an EPA SW-846 analytical method (Method 1311) that simulates sanitary landfill contaminant leaching in waste samples. Based upon concentrations of the TCLP constituents and guidelines set forth in 40 CFR 261.4, the solid waste samples can deem hazardous or non-hazardous.

VAT – Vinyl Asbestos Floor Tile

ASBESTOS

The following requirements apply if the Project Manager is taking responsibility for compliance related to the proper handling and disposal of asbestos materials on their job site.

Asbestos is regulated by OSHA (29 CFR 1926.1101 and 29 CFR 1910.1001), EPA 40 CFR part 763, NH (Env-A 1800 and He-P 5000), DC SOP #6, #7, #8, #9

State of NH Personnel:

- DES, Steve Cullinane - all asbestos abatement projects
- DES, Joy Perkins (Hannington)-licensing (primarily for contractors)
- Solid Waste Management of NH – soils contaminated with asbestos, asbestos disposal sites

State/Federal Requirements

Notifications:

- 10 working day notification required for projects involving more than 160 LF, 260 Sq. Ft. or 36 Cubic ft.
- No notification required for less than 160 LF, 260 Sq. Ft. or 36 Cubic ft. total for the entire project provided annual notification is maintained. It is not acceptable to phase a removal project to avoid the 10-day requirement.
- Surveys:
 - The EPA requires all buildings, or areas within a building, scheduled for renovation or demolition to have a survey completed prior to the job starting.
- Site Safety & Contingency Plans:
 - Plans must be submitted to the State of NH and approved prior to work starting (allow plenty of time for review).
- Changes to an already approved plan must be submitted in writing for approval prior to making the change.
- A qualified consultant or the contractor or a Dartmouth College PM can submit plans.
- Waste:
 - Waste must be removed from the work area by shift end every day
 - Waste may be stored on-site in an appropriately labeled and secured container until the end of the project provided all regulations for doing so are met
 - Contractor is responsible for waste containers and disposal
 - Landfills accepting asbestos waste must be licensed by the state they are in
 - A waste shipment record will be generated and returned to the PM within 30 days of disposal. DC Legal Affairs asks that these records be kept indefinitely.

Record Keeping Requirements

EHS will maintain the annual State of NH notification (\$1,500) provided the following conditions are met:

- Asbestos quantities must not exceed the limits set by the State for the annual notification (160 LF, 260 Sq. Ft. or 36 Cubic ft.)
- PM's must send quarterly statements to the State of NH Dept. of Air Resources for any work done under the annual notification with a copy to EHS.

- Forward all documentation pertaining to the removal of asbestos containing materials to EHS. This information must be kept on file and accessible indefinitely.
 - Survey information
 - Bid documentation
 - Scope of work
 - All pertinent air monitoring data {personal, area, clearance}
 - Payment documentation
 - Waste shipment records

Annually a tabulation of all asbestos related costs must be reported to the Trustees of Dartmouth College. Each PM must track amounts spent each year and forward that information to EHS.

Qualifications for PM's

Training:

- 40 Hour Asbestos Supervisor class (8 hr. annual refresher)
- 24 Hour Inspector class (4 hr. annual refresher)

FAQ's

? How do I get started?

- Identify the scope of the project/materials that will be impacted
- It's more cost effective to include as much as possible in the initial abatement scope especially when overall project parameters aren't clearly identified, costs add up fast when the abatement contractors are required to return.
- Ensure that the property has been sufficiently surveyed (EPA requirement)
- Check for existing surveys – many buildings have noninvasive surveys already done
- Hire a qualified consultant to conduct or complete a survey – consider using the same consultant who completed the prior survey to perhaps avoid duplicating work (save money)

? Who is a qualified consultant?

- Meets the College insurance requirements.
- Is approved by EHS.
- Knows NH laws and regulations. (Vt. & Ma. Are different)

? When do I need to hire a consultant?

- For completion of the survey in advance of the project.(required)
- To write the Site Safety & Contingency Plan, work plans and to get State approvals for these plans.(recommended)
- For monitoring-area air monitoring, personal air monitoring & clearance air monitoring (required).
- For their regulatory expertise and guidance.(recommended)
- Oversight of the abatement contractor.(recommended on complex, highly visible or sensitive projects)

? How do I select an Abatement Contractor?

- Meets the College insurance requirements.
- Licensed in the State of NH
- Must have good references
- Must have experience – 3 years minimum.
- Should be large enough to meet the demands of the project
- Flexible enough to adjust for scheduling delays
- Must possess the additional resources required to complete the project (training and equipment for operations like welding/torch cutting, confined space, electrical safety, fall protection, etc.)

Note: Some contractor bids will be all inclusive others will itemize or exclude certain things from the proposal to be addressed by Dartmouth under separate bid.

LEAD

Activities involving lead based paint are regulated by OSHA (29 CFR 1910.1025, 29 CFR 1926.62), EPA (40 CFR various sections), and by Health and Human Services - protecting children Chapter He-P 1600 Lead Poisoning and Prevention Control Rule. SOP #21 and #24 are Dartmouth College procedures for work involving known or suspected lead materials.

Determining the presence of Lead

Dartmouth College project monitors, architects, engineers and supervisors will determine if there is any reason to believe that lead might be present in the building materials or paint being disturbed. EHS will sample materials upon request, offer guidance on engineering controls, proper personal protective equipment (PPE) and/or work practices. In the absence of testing, older (pre 1980) building materials are assumed to have lead or to be painted with lead paint. Common materials known to contain lead:

- Paints
- Pipes/solder
- Roof Flashing

Exposure Assessments

Contractors are responsible for providing exposure assessment monitoring or historical data. The analytical results or historical data used in the initial assessment will determine the extent of required work practices, engineering controls, and PPE.

Dust Control

Barriers will be established to control dust and debris from migrating beyond the work area. Dartmouth may choose to monitor airborne concentrations in occupied spaces to ensure that work practices are effective in controlling dust levels outside the work area.

Waste Characterization

Laboratory analysis of waste samples by TCLP has been or will be done by Dartmouth College to determine appropriate waste classification and disposal methods. Contact EHS with information on the project prior to disposal of any debris or waste from lead containing materials. A consultant may be hired to

conduct this testing; samples will need to be sent to an approved laboratory for TCLP analysis unless good historical data is available.

Lead in Residences

Wipe samples or air monitoring may be desirable following renovations in residences to ensure the absence of lead dust in the home. Contact EHS for further guidance.

Note: It is in the best interest of Dartmouth College that contractors hired to conduct work impacting lead materials have a Lead in Construction program. To have a program meeting the OSHA requirements the contractor will also have a respiratory protection program.

SILICA (quartz)

Silica is known to cause silicosis; the ACGIH lists silica as a suspected human carcinogen. NIOSH and NTP have designated crystalline silica as a potential occupational carcinogen. NIOSH, OSHA and the ACGIH have all set exposure limits for exposure to respirable dusts containing crystalline silica. Occupational exposures are set based on the amount of silica in a sample. Some examples of silica containing materials include:

- Concrete
- Masonry
- Rock/ sand and other natural products
- Spackle/Mud used in drywall installation
- Certain composite or aggregate man made building materials

MOLD

Remediation guidelines for mold contamination have been made available by OSHA, EPA, ACGIH, AIHA, NY City Dept. of Health & Mental Hygiene, Guidelines on Assessment and Remediation of Fungi in Indoor Environments. Prudent practices at this time are as follows:

- If building materials have gotten wet determine where the moisture is coming from prior to any renovation work.
- Dehumidifiers should be used to help dry the affected spaces.
- Prior to replacing building materials make certain the moisture source has been removed to avoid reoccurrence.
- Install physical barriers to control and contain the migration of dust and spores for more than ~10 sq.ft. of material.
- The immediate work area should be empty except for maintenance workers.
- Determine if there are any factors suggesting occupants be removed from adjacent spaces (i.e.: infants, asthmatics)
- Prior to removing or coming in contact with the building materials supporting mold growth or believed to be supporting mold growth don PPE.
- PPE will include: N95 respirator for amounts over ~10 sq. ft., eye protection, green nitrile gloves. Protective clothing is optional. Contact EHS prior to respirator use if

you are not already in the respiratory protection program. See attached appendix “D” prior to wearing a respirator when not required.

- Use dust suppression methods like misting or HEPA vacuum units when removing the affected materials.
- Place materials in airtight containers, wrap in plastic sheeting or plastic bags and dispose of as regular building material waste.
- Building materials that must be left in place or that are not porous should be cleaned thoroughly with a detergent and water solution and left to dry completely. A 10:1 detergent to water solution is recommended.
- In some instances additional treatment may be necessary for materials left in place. Contact EHS for suggestions.
- Ensure that the work area and the route used to get the waste materials out of the building are left clean. This can be done using a HEPA vacuum or wiping down with a detergent and water solution.
- Discard disposable PPE with other waste materials and thoroughly wash non-disposable PPE in soap and water prior to reuse.

Environmental Protection and Hazardous Waste on Projects:

Many materials and products found in our facilities or used on our job sites require specialized storage and waste disposal to protect the environment and population from harm. Some examples include lead contaminated paint chips, paints, solvents, adhesives and even soil or dirt contaminated with fuel or oil. The EPA and State of New Hampshire are responsible for environmental protection and regulate the generation, storage and disposal or recycle of hazardous waste (The Resource Conservation and Recovery Act, 40 CFR and NH State Rule ENV-WM 100-1100). The key elements to compliance can be broken into 4 major categories: training, product storage, waste collection/storage and waste disposal.

Training: All project managers are required to attend the annual EHS Hazardous Waste/Asbestos awareness training as a minimum competency. Contractors and sub-contractors that will be involved in the use of hazardous products or generation of waste via demolition or work must also be trained per any required EPA and State requirements.

Product Storage: All oils, fuels, paints and solvents and any liquid regulated as a DOT hazardous material on project sites and in facilities under renovation must be stored within liquid impervious secondary containment areas. This can take the form of containment pallets or rooms with impervious flooring and no drains, provided the capacity for containment equals 10% of the aggregate volume stored or 90% of single largest container (whichever is larger).

Waste Collection and Storage: All hazardous waste must be managed and collected by trained individuals in established satellite accumulation areas (SAA's). Waste collection containers must be sturdy, non leaking and in good condition. Containers must be stored

in secondary containment areas and must be labeled with EHS approved labels (labels must include the words “Hazardous Waste”, the date accumulation began and the contents of the container). Containers must be sealed except when adding or removing waste and must be kept clean and free of contamination.

Waste Disposal: Waste containers must be removed from SAA’s promptly when full (within 3 days). They can be picked up by disposal contractors or moved to an EHS managed 90-day storage area. All hazardous waste disposal must be coordinated through Dartmouth College EHS using only approved transporters and disposal sites. Project managers are responsible for keeping documentation on training and waste generation activities on their jobs, including the training of any involved contractors. Contractors may not remove waste generated on Dartmouth College for disposal, nor can they or project managers contract directly with disposal vendors.

Some Examples of Hazardous Waste on Job Sites:

MERCURY

Thermostats

Thermometers

Fluorescent Bulbs

Barometers/ Manometers

Gauges

Switches

Free Mercury from spills of these devices or use in research

BATTERIES – for power storage or back up, or just laying around

Lead Acid

Nickel Cadmium

Mercury dry and wet cell

Lithium and Nickel Metal Hydride

PAINT/SOLVENTS

Oil based paints

Latex paints with lead, chromium or mercury

Paint solvents/strippers or removers

Cleaning/degreasing solvents/parts washers

PCB’s

Fluorescent Light Ballasts

Capacitors

Motors

Hydraulic fluid

Casting wax

Vacuum pumps

Compressors

Heat transfer systems

Site Contamination by a Contractor: All releases of hazardous materials to the environment must be promptly reported to EHS (646-1762). This includes fuels, oils or lubricants beyond de-minimus quantities (drops and mists) and any amount that reaches a waterway or drain.

In addition, contractors that bring hazardous materials (including fuels/lubricants contained in equipment) on to College property must be capable of safely responding to releases of that material. Response actions include containment and absorbents to control and minimize risks to human health, the environment and property. All hazardous materials brought on site must be pre-approved by DC project management and EHS (standard fuels, oils, paints and lubricants are exempt from pre-approval but not from spill response standards).

At a minimum contractors must have trained staff capable of performing defensive spill response activities onsite during hours of operation. In the event that soil removal is possible, contaminated soil can be placed on polyethylene sheeting (water tight) and covered until appropriate disposal can be arranged. EHS must be contacted after spills are cleaned up and EHS or its designee will conduct clearance monitoring of contaminated sites as required.

If spills or contaminated soils can not or are not contained and containerized within 24 hours EHS must be notified immediately (NH DES will require notification). All spills over 25 gallons will be referred to the College's emergency response vendor for remediation and disposal.

Remediation and clean up costs are the responsibility of the contractor.

RADIOACTIVE MATERIALS

Smoke Detectors

Exit Signs

Laboratory materials

Activities involving radioactive materials are regulated by New Hampshire Bureau of Radiological Health Parts HE-P 4019 through HE-P 4023.

Determining the presence of Radioactive Materials: Dartmouth College project managers, architects, engineers and supervisors will determine if radioactive materials are likely to be present in the building. EHS will sample for potential radioactive material contamination upon request, offer guidance on engineering controls, proper personal protective equipment (PPE) and/or work practices.

Exposure Assessments: Contractors are responsible for contacting EHS for exposure assessment monitoring. The analytical results or historical data used in the initial

assessment will determine the extent of required work practices, engineering controls, and PPE.

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