



# HARVARD

## Campus Services

ENVIRONMENTAL HEALTH & SAFETY

### REQUEST FOR PROPOSAL HAZARDOUS MATERIALS INVENTORY SERVICES

**BUILDING**  
HARVARD UNIVERSITY  
**ADDRESS**  
CAMBRIDGE, MA

#### INTRODUCTION

Harvard University is seeking Hazardous Materials Inventory Support Services from a qualified Industrial Hygienist (Consultant) to support an upcoming construction project at **XXXXXXXX**. The selected Consultant will work with the Design Team (architects, engineers and **SCHOOL**).

The Consultant shall submit a draft proposal to the President and Fellows of Harvard College, through its **SCHOOL** and Environmental Health & Safety (EHS) departments, hereinafter collectively referred to as “Harvard”, to identify and quantify hazardous materials associated with the proposed project at the above-referenced site.

The Consultant shall review the proposed project scope, identify potential areas that may be impacted by the project, collect and analyze representative samples of building materials, identify materials that may be problematic (i.e., mercury in fluorescent light bulbs), and assess the effect of these materials on the proposed project scope, schedule, and budget.

Hazardous materials to be assessed under this scope of services will include, but not be limited to asbestos-containing materials, mercury, lead-based paint, refrigerants, containerized wastes and raw products storage (i.e. bulk cleaning products that may require disposal).

#### BACKGROUND

Harvard is seeking Proposals for the completion of the following to aid in the design and construction of a proposed renovation at **BUILDING**:

- Hazardous Materials Inventory,
- Hazardous Material Summary Report,
- Abatement Monitoring Services (include separate Rate Sheet), and
- Closeout Report

This scope specifically excludes evaluation of PCB containing building material as a separate PCB-Consultant has been hired for that scope.

The **BUILDING** is located at **ADDRESS**, Cambridge, MA. The existing building footprint is approximately **XXX,XXX** square feet. The proposed renovation project includes:

- **PROJECT SUMMARY**

Construction is currently anticipated to begin in **DATE**. Exploratory assessment work will begin in **DATE** and is expected to occur, as needed, through **DATE**.

#### AVAILABLE DOCUMENTS



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The pre-existing building surveys as well as design documents will be provided for the selected Consultant's use.

Any provided documents are for informational purposes and as such, details of the project may be modified during development of schematic-level options. Any supplied information is considered **confidential** and conceptual in nature and is not to be shared or discussed with others without Harvard's written permission.

### **BID WALKTHROUGH (IF NEEDED)**

A Bid Walkthrough will be held on **DATE at TIME**. Participants must confirm attendance with **XXX** - EH&S Environmental Project Manager by **DATE**.

### **COORDINATION**

The Design Team will be responsible for developing design and construction specifications and plans for the proposed project. However, assessment and quantification of potential hazardous materials may have significant impact on the potential costs, schedule, specifications, and qualifications of the construction workforce. Therefore, close coordination between the Design Team and the Consultant is critical for the success of this project. EHS will facilitate the interaction of the parties but is requiring regular communication from the Consultant Design team to minimize miscommunication and to create prompt responsiveness.

Harvard is anticipating retaining the services of a separate Consultant specifically to aid the project in the identification and management of PCBs in Building materials (caulking, sealants, etc.) (referred to herein as the PCB-Consultant). The selected Consultant will coordinate with the PCB-Consultant on all inventory/assessment actions as well as coordinate all reports and associated documentation so that an integrated abatement/remedial approach can be developed by the Project Team.

### **SCOPE OF WORK**

The Consultant will perform an evaluation of the project scope to identify the presence of hazardous materials that may impact the construction, quantify the volumes and locations, provide options for addressing the hazardous materials, and provide permitting obligations, cost estimates, coordination issues and abatement timelines. Specified details regarding the proposed scope of services are presented below. The Consultant shall identify in their response any other tasks that should be included and shall identify the scope and costs associated with these additional tasks. The name(s), title(s), and license numbers of the individuals who will be performing the work shall be included.

#### **Task 1: Background Review**

The Consultant shall evaluate the existing proposed project information provided by the Design Team. This information includes programmatic data for the proposed rehabilitation and/or demolition. The Design Team shall supply information on areas of proposed work as well as information on the mechanical systems and materials to be addressed. The Design Team shall provide floor plans for the building that are clearly marked as to room type, numbers, uses of the various rooms, and anticipated work in these areas. The floor plans shall be provided in an electronic format.

The previous reports on assessment and abatement, if available, shall be reviewed as to potential



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impact on the proposed construction.

### **Task 2: Phase I Site Reconnaissance**

The Consultant shall implement a two-phase approach. The initial phase will consist of developing an inventory of materials and their locations within the area to be impacted. The second phase, described in Task 4, consists of sampling and laboratory analysis of suspect hazardous and contaminated materials. Dependent on the scope of the project Tasks 2 and 4 may be combined.

During the initial phase, the Consultant shall contact and interview the facility manager with regard to storage of cleaning supplies, raw products, and waste materials. The Consultant shall inquire about locations, quantities, and work practices regarding the aforementioned information. The Consultant shall field verify the provided information during the site reconnaissance.

Additionally, the initial phase will include a room-by-room walk through visual observation and documentation of the contents of the room together with the type of building materials present. The Consultant shall use floor plans provided by the Design Team. The initial phase will concentrate on inventorying visibly accessible building materials and indicating this information on the building drawings, particularly the type of walls, floors and ceilings, the presence of encapsulating materials, the condition of the material, (good, fair or poor) and the material's potential to become disturbed. Pipe insulation and window caulking (interior/exterior – in conjunction with EHS) will also be noted and assessed.

As part of the initial phase, potentially hazardous or contaminated materials or systems will be identified and quantified within the project limits. These materials and/or systems include, but are not limited to: drums; PCB-containing transformers; capacitors; switchgear; light ballasts; and refrigeration equipment, including air conditions and freezers.

The Consultant shall compare conditions reported in the previous documents with existing conditions to verify the accuracy of the previous documents.

The Consultant will document all Phase I findings on a Room Data Inventory Sheet (the RDIS format must be approved, in advance, by EHS). During the field survey, digital photographs will be taken of significant building features for physical documentation purposes.

In the event that the roof systems may be impacted by the proposed construction, the Consultant shall examine the roof systems and identify construction materials and the likelihood of these materials being ACM. The Consultant shall coordinate with the roofing subcontractor to conduct intrusive sampling during Phase II.

### **Task 3: Coordination Meetings (Assume **X** meetings)**

The Consultant shall attend coordination workshop/meetings to be held at the project locations with the Design Team and the PCB-Consultant. The Design Team will present the basic thinking and the decisions made to date (in the overview).

The Consultant will provide a brief summary of the efforts taken to date, identify data gaps and suggest methods to address these gaps, discuss impacts associated with the anticipated hazardous materials, propose conceptual methods to mitigate these impacts, and establish “what if” scenarios.



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The objectives of the discussion will be to resolve and/or clarify issues and to stimulate thought-provoking considerations that may require further design development study. The meetings will be an opportunity for the Design Team to understand data gaps and implications of the conceptual design components.

### **Task 4: Phase II Field Sampling and Analyses**

The second phase of the site evaluation will include a survey of identified individual building materials and the contents of certain containers and equipment.

#### **A. Media Potentially Hazardous and/or Contaminated Containers or Systems**

Hazardous and/or contaminated materials may be sampled during this aspect of the scope of services. The Consultant shall make every effort to obtain as much information on the materials present within containers, heating and cooling systems, and electrical and mechanical systems. The minimum information expected is an estimate of the potential quantity, any indications of the contents, and potential sampling locations.

Sampling is not envisioned for containerized wastes, aboveground storage tanks, transformers, capacitors, switchgear, and refrigeration units (including air conditioners and freezers), and light ballasts. Equipment or containers associated with the preceding systems will be examined to obtain and record manufacturer data on fluorescent light ballasts, transformers, HVAC equipment and other systems suspected of containing potential hazardous materials.

##### **1. Asbestos Containing Material (ACM)**

Based on the material inventories developed under Task 2 and the results of the meetings in Task 3, the Consultant will develop a work plan that clearly identifies the number of representative potential ACM samples that need to be collected in accordance with the sample frequency presented in the Asbestos Hazard Emergency Response Act (AHERA) regulations and described later in this Plan. Coordination must be performed between the Design Team and the consultant to ensure that all aspects of the work are covered with respect to ACM (i.e., electrical and plumbing penetrations).

The Consultant will collect representative samples of all accessible building materials with additional samples of materials suspected to be ACM. Suspected ACM will be quantified and classified according to:

- Type (e.g. surfacing, thermal system insulation and/or miscellaneous);
- Encapsulated material, condition (good, fair or poor), and
- Potential to become disturbed.

The Consultant will document all findings in a Potential ACM Inventory Sheet (the PAIS format must be approved, in advance, by EHS).

All building materials, including those believed to be non-ACM, will be sampled and analyzed using standard procedures and methodologies. Sample locations, conditions, and accessibility will be documented in bound field books and Chain-of-Custody form(s) will accompany each sample package.

During this phase of the survey, the Consultant will collect bulk samples of building



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materials that have the potential to become disturbed during the subsequent phases of the survey (e.g. acoustical ceiling tiles, gypsum wallboard or plaster surrounding access panels etc.). Analysis of these samples will be used to determine the methods to be used in accessing areas above suspended ceiling tiles and inside plumbing / mechanical chases.

The types of materials to be assessed include, but are not limited to:

- Interior window caulking/door caulking;
- Thermal insulation associated with mechanical systems;
- Expansion joint material;
- Gypsum wallboard;
- Joint compound for gypsum wallboard;
- Paint and various interior wall and ceiling finish materials;
- Smooth and textured wall and ceiling plasters;
- Various types of flooring materials;
- Mastic/adhesive associated with flooring materials;
- Baseboards and associated mastics;
- Ceiling tiles;
- Fireproofing on structural steel;
- Damproofing;
- Concrete and concrete patching material; and
- All caulking material.

In the event that the roof systems may be impacted by the proposed construction, the Consultant shall examine the roof systems and identify construction materials and the likelihood of these materials being ACM. The Consultant shall coordinate with the roofing subcontractor to conduct intrusive sampling.

A more expansive description of the components of the Phase II activities is provided in the following subsections, together with sampling procedures, sample frequency, analysis, schedule quality assessment/quality control procedures, and documentation.

#### **ACM Sample Strategy/Frequency**

- Surfacing materials - In a randomly distributed manner, collect bulk samples of surfacing materials, representative of each homogeneous area.
  - Collect at least three bulk samples from each homogeneous area that is less than or equal to 1,000 ft<sup>2</sup>.
  - Collect at least five bulk samples from each homogeneous area that is greater than 1,000 ft<sup>2</sup>, but less than or equal to 5,000 ft<sup>2</sup>.
  - Collect at least seven bulk samples from each homogeneous area that is greater than 5,000 ft<sup>2</sup>.
- Thermal systems insulation.
  - In a randomly distributed manner, collect at a minimum, three (3) bulk samples of thermal systems insulation material, representative of each homogeneous area.



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- Collect, at a minimum, one (1) bulk sample of patched thermal systems insulation, representative of each homogenous area, providing the section of patch is less than 6 linear or square feet.
  - Collect, at a minimum, three (3) representative bulk samples of each insulated mechanical system, including, but not limited to cementitious material used on pipefittings such as tees, elbows, or valves. Representative sampling will be conducted in a manner sufficient to identify whether each homogenous area is either asbestos or non-asbestos containing.
  - Bulk samples are not required to be collected from any homogeneous area where the accredited asbestos inspector has determined that the thermal systems insulation is a non-suspect material (i.e., fiberglass, foam glass, rubber, or any other non-ACM).
- Miscellaneous materials - Collect, at a minimum, one (1) representative bulk sample of each miscellaneous material, including, but not limited to ceiling tiles, floor tiles, associated floor tile mastic, etc. Representative sampling will be conducted in a manner sufficient to identify whether each homogenous area is either asbestos or non-asbestos containing.

It is the intention that all suspect materials be sampled and analyzed for asbestos content to the extent that suspect materials can be classified as ACM or non-ACM, and that minimum materials will have to be assumed ACM.

#### **ACM Sampling Procedures**

The asbestos survey will be performed by EPA-accredited and Massachusetts licensed Asbestos Inspectors. The Consultant's inspectors will conduct a thorough inspection of all accessible areas within the designated survey area. The Consultant will attempt to identify multiple layers of flooring systems. Suspect asbestos-containing materials located within wall chases, plenum chases, and plumbing chases will be bulk sampled wherever access can be made without damaging wall and ceiling finishes. Bulk samples, representing individual homogenous areas of suspect materials, will be collected in a randomly distributed manner, in accordance with those methods outlined below.

#### **ACM Analysis**

The majority of the bulk samples will be collected and analyzed for asbestos content in accordance with the AHERA Method (40 CFR Part 763, Appendix A to Subpart E). The analysis will be performed using Polarized Light Microscopy (PLM) With Dispersion Staining. Samples that indicate an asbestos content between 1 and 10 percent asbestos will be re-examined using point count techniques.

Transmission Electron Microscopy (TEM) analysis will be used in conjunction with PLM analysis when analyzing non-organically bound materials. TEM analysis will be performed on non-organically bound materials when PLM analysis indicates the asbestos content to be less than 1 percent.

All bulk samples will be submitted to the laboratory for the necessary turn-around based on the Project's needs.



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All laboratories performing asbestos content analysis shall be an USEPA-accredited laboratory and shall participate in USEPA's "Interim Asbestos Bulk Sample Analysis Assurance Program". The laboratory shall also be accredited by the National Voluntary Laboratory Accreditation Program (NVLAP).

### 2. **Lead Paint**

All painted surfaces within the area to be impacted by the proposed construction will be screened using a XRF detector. The XRF detector is described in a subsequent subsection. Coordination must be performed between the Design Team and the consultant to ensure that all aspects of the work are covered with respect to ACM (i.e., electrical and plumbing penetrations).

### **Lead Sample Strategy / Frequency**

The Consultant will analyze the walls at a minimum frequency of one analysis every 1000 square feet for each painted surface. In addition, a minimum of one door and one window casement will be screened per room. The data will be recorded together with the approximate sample locations.

### **Lead Sampling Procedures**

The Consultant will perform field screening of painted surfaces to identify the potential presence of lead (for residential properties, the inspection shall be performed by a licensed inspector). Testing for the lead-based paint will be conducted using a portable X-Ray fluorescence analyzer (XRF) which uses a radioactive source to excite the electrons of lead atoms (if present) in the paint. The XRF measures the x-rays emitted by the atoms as they return to their normal state. The measurement data is processed and the results converted to milligrams of lead per square centimeter of sampled surface area.

### **Lead Analysis**

Samples of painted surfaces will not normally be collected during this phase. Based on the type of proposed construction, EHS may consider Toxicity Characteristic Leaching Procedure (TCLP) analysis of composite materials. Costs associated with these sample collections and analyzes will be considered as a separate reimbursable.

## **Task 5: Quality Assurance/Quality Control**

The draft floor plans provided by the Design Team will be field verified by the Consultant during the Phase 1 component of this project. Any modifications of the floor plans will be provided to the Design Team for revision.

Field logs will be used to maintain field documentation. At a minimum, the following information will be recorded during the daily screening and collection of samples:

- Sample identification, location, and description;
- Sampling area sketch showing the sample location;
- Sampler's name(s);
- Date and time of sample collection;
- Type of sample (discrete or composite sample);
- Type of sampling equipment used;



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- Field observations and details related to analyses or integrity of the sample (e.g. interior contractor placing carpet in the adjacent room); and
- Sample identification numbers.

In addition to the sampling information, the following specific information will also be recorded in the field log each day of sampling:

- Team members and their responsibilities;
- Time of arrival and time of departure;
- Other personnel on-site;
- Summary of any meetings or discussions with other parties; and
- Deviations from written procedures.

Digital photographs will be taken at every sample location to document conditions at the completion of sample collection. Photographs will also be taken at every entry above the ceiling. These photographs will be taken in a panoramic manner showing all directions, where possible.

A Chain-of-Custody form (COC) will be provided with every sampling set sent to a laboratory for analysis. The COC will be kept to provide documentation linking the collection of the sample to the performance of the analytical method. The COC will include the location of the sampling, the date and time of the sampling, and the names of the individuals who transported the sample from the field to the laboratory. The completed COC will be shipped inside the sample-transporting container with the samples. The final COC will be attached to the laboratory report providing the analyses to Harvard.

#### **Task 6: Report Preparation**

The information and data generated from the above-noted tasks will be reviewed, compiled, and presented in a Hazardous Material Summary Report (the Report). The Report will include, at a minimum, the following sections in this specified order:

- *Introduction*
- *Personnel* - The name(s), title(s), and license numbers of the Massachusetts Licensed Asbestos Inspector(s) who completed the inspection.
- *Project Description* - A summary of the proposed project identifying the scope, location, and systems to be impacted by the proposed construction/rehabilitation;
- *Background* - A summary of previous assessments and/or removal and abatement activities;
- *Sampling and Analysis* - Procedures used in collecting and analyzing samples;
- *Asbestos Results*
  - ACM information shall be provided in tabular form including sample results, type, sample locations, integrity, friability, and quantity of all ACM identified;
  - A potential exposure assessment of ACM to building occupants and the public;
  - Recommendations concerning additional sampling, if necessary;
  - Copies of completed Tables 1 and 2;
  - Estimated costs for removal and/or abatement;
- *Lead Results*
  - Lead information shall be provided in tabular form including sample results, type, sample locations, integrity, and quantity of all Lead identified;
  - Recommendations concerning additional sampling, if necessary;
  - Estimated costs for removal and/or abatement;
- *Miscellaneous Hazardous Materials* - Summary of information regarding ASTs,





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containers, transformers, mercury lights, and potential PCB light ballast. The summary shall include, in tabular form, locations by room number, media, type of contamination, and estimated quantity;

- *Figures*
  - Figures (Plan and Elevation) showing all sample locations;
  - Figures showing approximate locations of all materials identified as ACM/Lead/Miscellaneous Hazardous Materials;
- *Photo Log* – Photo Log with all associated sample photos and associated sample IDs;
- *Field Logs* – All Field Logs generated during Task 5;
- *Mitigation* - Provide conceptual recommendations for mitigating adverse impacts; and
- *Limitations* - Include a description of building areas, systems, surfaces or structural components that were not sampled due to inaccessibility and/or safety concerns.
- *Project Specifications* - Prepare contract specifications and drawings that address asbestos abatement requirements, incorporating the Harvard EHS template specification for asbestos abatement. These documents must be prepared under the direction of Massachusetts licensed Asbestos Project Designer.

Copies of the draft document shall be provided to Harvard for internal review and comment. The Consultant will include in the Report, all plans and photographs collected or taken during Tasks 2 and 4. The final deliverable will consist of the Report, and including all text, tables, figures, appendices, and attachments, plans, and photographs.

### **Task 7: Asbestos Abatement Monitoring Services and Report**

- Provide construction phase services, including air sampling and signing/management of Harvard Asbestos Waste Shipment Records (AWSRs). These services must be performed by Massachusetts licensed Asbestos Project Monitor. Include a separate Rate Sheet for these services.
- The selected asbestos abatement consultant will prepare and submit an Asbestos Close-out Report that includes, but is not limited to, the following information:
  1. Summary of Abatement Work: provide a table that identifies the actual ACMs that were removed by the abatement contractor, including the quantity removed and the date of removal.
  2. Work Practices and Engineering Controls
  3. Air Sample Collection and Analysis: provide information on methodology, equipment and sampling personnel. Include copies of all daily/weekly monitoring reports as an appendix.
  4. Additional Bulk Sample Collection and Analysis: as necessary, provide a description of the sampling and analysis that was conducted during construction phase services to identify any ACMs that were not included in the original survey due to inaccessibility.
  5. Asbestos Waste Disposal Management: provide a table that summarizes the Harvard AWSRs that were used on the project (AWSR #, waste volume, transporter, landfill, etc). Note that the original Generator copy of the AWSR that is retained by the asbestos consultant at the time of signing must be e-mailed to the EHS Project Manager.



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## **INSURANCE**

The minimum insurance requirements are as follows:

- Professional Liability: \$1,000,000
- General Commercial Liability: \$1,000,000
- Business Automobile Liability: \$1,000,000 (per occurrence)
- Worker's Compensation: Minimum Statutory Limits

## **PROJECT PERSONNEL**

The Consultant shall identify the personnel assigned to the project. The Consultant will ensure that only personnel with the appropriate experience will be assigned to the project. Any change in personnel assigned to the project will be identified to and approved by EHS prior to any work commencing.

## **SCHEDULE**

Following written authorization to proceed, the Consultant will commence work. This schedule has assumed timely completions of certain tasks and EHS realizes actual conditions and/or project constraints may vary the schedule.

The site reconnaissance process may [NOT] be conducted during normal business hours such that all rooms can be accessed. The sampling of suspect building materials may [NOT] be conducted during normal business hours to minimize inconvenience to the occupants. Sampling in each room will be completed on the same day it commences.

## **COST OF SERVICES AND CONDITIONS OF ENGAGEMENT**

### **Proposal**

All consultants responding to this Request for Proposal are required to submit a Lump Sum Proposal for Services that incorporates all of the tasks outlined in this document and includes the following:

- A Scope of Work, including a clear breakdown and explanation of tasks;
- The name(s), title(s), and license numbers of the individuals who will be performing the work.
- Proposed cost associated with each task (Task 1 through 6);
- Fee Schedule for staff who will be working on the tasks, including a breakdown of all subcontractor costs and analytical costs (Task 7);
- Schedule for performance of services.