



# INDIANA UNIVERSITY

OFFICE OF THE EXECUTIVE VICE PRESIDENT  
FOR UNIVERSITY ACADEMIC AFFAIRS

University Environmental Health and Safety

## Contractor Safety Procedures Manual

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### 1. INTRODUCTION

Contractors have become a significant population at many Indiana University (IU) sites, even working side by side with IU employees. Contractors may be exposed to hazardous conditions in IU locations and may also expose IU employees and the community to hazards. IU desires to see that all aspects of its operations are performed in a safe and healthy work environment.

The following information is supplementary to the safety program each employer is required by Occupational Safety and Health Administration (OSHA) to develop. Each contractor is required to implement, monitor and enforce a written safety program providing for the safety of its agents, employees, and for the compliance of its subcontractors. The contractor at all times maintains full responsibility and liability for these matters, and this document should not be construed in any way as an assumption of those responsibilities by Indiana University. Each contractor shall take prompt action on safety concerns expressed by IU personnel.

The primary IU contact for field safety concerns (involving other prime contractors or IU operations) should be the IU Project Manager assigned to the project. The IU Project Manager is responsible for contacting the contractor or area supervisor in order to resolve the safety concern.

### 2. CONTRACTOR HEALTH AND SAFETY RESPONSIBILITIES

Each contractor is responsible for designating an onsite safety person. This individual will be responsible for correcting safety deficiencies noted by IUEHS for the respective campus and/or the IU Project Manager.

At the discretion of IU, all primary contractors are responsible for performing safety audits for their employees and subcontractors work practices that may impact Indiana University faculty, staff, students, visitors, or property.

It is the goal of Indiana University to provide a safe and healthy work environment for all personnel on any IU property. The following procedures prepared by IU play a vital role in maintaining such an environment and must be followed by all contractors.

In the event of an emergency such as a chemical release, or severe injury, the IU Police Department must be notified immediately along with the IU Project Manager. The contractor is required to keep emergency phone numbers for the respective campus available at the worksite. Contractors' employees must be familiar with the emergency procedures for the respective campus and buildings they are working in.

This Manual is intended to establish minimum standards to protect IU employees from construction and maintenance-related work and activities. Compliance with these safe work procedures in no way guarantees the fulfillment of the contractor's obligations as may be required by any local, state or federal laws. This Manual does not cover the full spectrum of published safety and health standards which are mandated by law, and the contractors shall not assume that they are responsible only for those which are referenced in this Manual nor that they are current and quoted as published. In the event of a conflict between the provisions of this Manual and applicable local, state or federal safety and health laws, regulations and/or standards, or the contract documents, the more stringent shall apply. No liability is assumed by IU by reason of this Manual.

### 3. GENERAL INFORMATION

#### 3.1. Indoor Air Quality Issues

The Contractor shall limit dissemination of airborne contaminants produced by construction-related activities in order to provide protection of personnel, operations and equipment from possible effects of exposure to such contaminants.

Measures shall be taken to ensure that dusts, fumes, mists, gases and vapors of these materials are eliminated, isolated, or captured. Primary methods of control include the following:

**Isolation of construction areas in occupied buildings.** This can be accomplished utilizing plastic sheeting materials or drywall to contain the work areas or by the use of negative pressure in relation to adjacent areas.

**Ventilation of construction areas to create negative pressure.** The use of fans and negative pressure machines can contain airborne materials to the construction zone. Exhaust of airborne materials to the outside of the building must be done carefully so that it doesn't affect employees in the same building or in adjacent buildings. Exhaust fumes shall not be discharged near fresh air intakes of any building. Dusts and fumes shall be captured with filters before being exhausted.

**Scheduling the use of hazardous and irritating materials such as sealants, paints, and solvents.** For those materials that cannot be controlled by other means such as ventilation, work planning must include the scheduling of material use that creates hazardous or irritating conditions during times when buildings are less occupied (evenings, nights, holidays, and weekends). This includes the use of external building materials also that are capable of entering the building.

**Notification for use of solvent-based materials.** Notification must be made prior to the use of solvent-based paints (including electrostatic painting), cleaning materials, and other solvent-based products.

**Use low hazard, low-emitting (low odor/VOC) materials.** Many paints and other building materials are available with low hazard or non-solvent formulations.

#### **Air Quality Control during Renovation Projects in Occupied Buildings at IU**

##### **General Air Quality Specifications**

- Identify the specific air quality measures needed for the renovation project, including appropriate performance metrics as needed.
- Require each prime contractor to designate a safety representative to manage air quality issues.
- Specify conditions that would require an emergency response, such as asbestos release or any water loss affecting building materials.

##### **Air Quality Considerations**

The contractor shall take appropriate steps throughout the course of the project to prevent airborne dust due to the work performed. Water shall be applied whenever practical to settle and hold dust, particularly during demolition and removal of materials. Care shall be exercised to prevent the accumulation of standing water or saturation of building materials. No chemical palliative shall be utilized without the written consent of IUEHS.

- Schedule renovation work during periods of low building occupancy whenever possible.
- Isolate work areas from occupied areas using critical barriers, air pressure control and high-efficiency particulate air (HEPA) filtration.
- Ventilate construction areas to create effective negative pressure.
- Minimize the number of building penetrations necessary for entry into the renovation area. Choose the penetration sites carefully to minimize the potential for personnel exposure.

- Modify HVAC operations according to specifications (consult with the IU Project Managers prior to and during renovation activities to ensure isolation of renovation areas from occupied spaces. Modification of the HVAC may need to be considered to eliminate the exposure potential to occupied spaces.
- Maintain an adequate unoccupied buffer zone around renovation areas according to design specifications. This may require temporarily relocating building occupants in the immediate vicinity of renovation areas.
- Ensure adequate housekeeping activities in adjacent occupied areas during renovation activities that create dust.

#### **Work Practice Measures for Air Quality Assurance**

- Employ local exhaust ventilation when dust, hazardous vapors, fumes, or gases are generated. If local exhaust ventilation is not feasible, portable air cleaning devices (such as the use of HEPA-filtration) should be utilized to control the hazard.
- Minimize dust generation by using wet methods for cutting or sanding.
- Locate dumpsters for debris away from operating HVAC outdoor air intakes and exterior doors to occupied areas when possible.

#### **Specific Control Measures for HVAC Protection**

- Ventilation shall be provided in order to maintain a negative pressure in all areas of occupied buildings where there is potential for dust contaminant generation from a construction project. The contained area shall be kept under negative pressure relative to the surrounding areas.
- Construction documents shall specify modifications required to existing mechanical systems or temporary equipment to be installed to properly ventilate the affected building areas.
- Construction documents shall include temporary ductwork layouts (as necessary) as well as sizing and specifications of fans.
- Contractors shall not make design decisions for temporary ventilation of occupied areas of buildings. Contact the IU Project Manager for ventilation requirements.
- Isolate portions of the HVAC system that have the potential to become contaminated from renovation activities as specified by the design consultant and IU staff engineers.
- Seal return and supply air grilles in renovation areas that have the potential to reintroduce contaminants back into the building air stream.
- Upgrade filtration efficiency in the HVAC systems that continue to be used during renovation (if possible) as directed by specifications.

#### **Specific Housekeeping Measures for Air Quality Assurance**

- Identify the route(s) for removing construction debris from the building.
- Identify traffic routes for renovation workers within the building, using pathways away from occupied spaces if possible.
- Identify specific locations within buildings that contractors may use, including restrooms (if appropriate).
- Eliminate demolition/renovation debris by bagging on site and/or the use of covered wheelbarrows or cart to transport debris to containers outside of the building.
- Contractors shall clean areas inside of construction exits to minimize dirt and debris from entering occupied spaces in the building.
- Contractors shall clean occupied areas adjacent to renovation site (such as hallways) if construction debris or soil has caused an area to be notably dirtier than other similarly occupied areas.
- Place walk-off mats at all entrances and exits from the renovation area. These mats must be regularly cleaned or replaced to minimize migration of dust from the project site.

#### **Specific Control Measures for Painting Occupied Areas**

- Schedule work during evening hours or periods of low building occupancy.
- Use low odor/low VOC products.
- Provide the IU Project Manager with copies of Safety Data Sheets for all hazardous products being used on the work site.
- Provide proper ventilation in all work areas. If necessary, maintain a negative pressure in all areas being painted.

### **Roof Leaks, Pipe Breaks and other Water Losses Caused by Renovation Contractors**

- Contractors are responsible for all costs associated with water losses inside buildings that happen as a result of their activity.
- Contractors shall immediately inform the IU Project Manager of all water losses that occur due to activities.
- Campus Facilities Services/Physical Plant will manage the water remediation process and be reimbursed by contractor for all expenses involved with the remediation.
- Only university-approved contractors will be employed for water remediation.
- Water must be removed and damaged building materials must be replaced or dried effectively.

### **Outdoor Work with Hazardous or Odorous Materials near Air Intakes**

- Locate portable toilets away from air intakes.
- Use or application of chemical/odorous materials shall be located at least 25 feet away from all outside air intakes (if feasible).
- When work including chemical/odorous materials must be done at or near air intakes, outside air intake should be minimized, turned off or rerouted or the task should be performed when the building is not occupied or low occupancy (such as evenings or weekends).
- For long-term projects that use chemicals or produce combustion exhaust near air intakes, install charcoal filters in the air handling units serving the occupied space of the building.
- Combustion exhaust shall not be entrained into air intakes.

### **Measures for Maintaining Good Air Quality**

- Discuss air quality issues at regularly-scheduled construction meetings. The contractor indoor air quality representative needs to be included in these meetings.
- Monitor renovation activities carefully to ensure that all work conforms to the stated air quality control measures.
- Monitor pressurization at renovation areas, using a pressure monitoring device, to ensure that proper isolation and ventilation is in effect.
- Monitor for visible or odorous airborne contaminants in adjacent occupied areas.
- Promptly respond to occupant complaints in order to resolve issues that involve renovation areas.

### **Measures for Enforcement of Air Quality Assurance**

- Contractors are responsible for meeting all specifications involving maintaining acceptable air quality for building occupants.
- Contractors shall coordinate with IU Project Manager and IUEHS for any variations to the specifications or circumstances outside of their control involving air quality in occupied buildings.
- If an acceptable air quality condition is not maintained by contractors, appropriate University officials may halt construction operations until suitable measures have been taken to restore acceptable air quality for building occupants.

### **References**

- IAQ Guidelines for Occupied Buildings Under Construction, Sheet Metal and Air Conditioning Contractors' National Association, Inc., First Edition, 1995.
- Good Practice Guidelines for Maintaining Acceptable Indoor Environmental Quality during Construction and Renovation Projects, National Institute for Occupational Safety and Health, 1997.
- Guidelines on Assessment and Remediation of Fungi in Indoor Environments,
- New York City Department of Health, 1993.
- Mold Remediation in Schools and Commercial Buildings, United States Environmental Protection Agency, 2001.

### 3.2. Asbestos

IUEHS is responsible for the management of asbestos including: surveying; monitoring; and abatement for IU property. An asbestos survey shall be completed by IUEHS prior to any work involving alteration, renovation or demolition in campus buildings constructed before January 1, 1981. The asbestos survey will identify asbestos containing materials (ACM) and indicate if it is to be abated or remain undisturbed during the course of the project. Building materials not identified on the report shall be presumed to contain asbestos and shall not be disturbed.

The primary contractor is responsible in ensuring that all workers, including sub-contractors on the jobsite, have received asbestos awareness training prior to working in buildings constructed before 1981. Under no circumstances shall construction work commence until an asbestos survey has been completed by IUEHS and a copy of the same is given to the contractor scheduled to perform the work.

The completed asbestos survey can be obtained from the IU Project Manager. Asbestos may be found in lab counter tops, doors, floor tile/sheeting, mastics, ceiling tile, plaster, chase covers, cooling towers, air handlers, electrical wiring insulation, spray-on fire proofing, and pipe and tank insulation. The contractor is to stop work immediately at said locations and notify the IU Project Manager or IUEHS representative, if a suspect material not previously identified (as non-asbestos), is discovered during the course of the project.

#### General Ceiling Access:

- Contractor shall notify IUEHS of work requiring access to the ceiling outside the containment area a minimum of three (3) working days prior to commencement of work.
- Spray top of ceiling panels to be removed, and surrounding affected panels with fine detergent/water mist to settle dust prior to removal.
- Owner's representative shall be contacted for all ceiling access problems.

### 3.3. Barricades

Signs, barricades or other means shall be used including beneath any overhead work where there is a potential hazard from falling objects, in order to isolate the general construction area. The contractor is responsible for providing all barrier materials to include appropriate street closing barricades and signage that meet DOT requirements. The following methods shall be used to warn individuals of hazardous areas:

- Both red and yellow safety tape is used to identify areas that contain hazards. When encountering safety tape OSHA Standards shall be followed. Yellow tape indicates "CAUTION" and may be crossed after assessing hazards. Red tape indicates "DANGER" and may not be crossed. Standard guardrails capable of withstanding two-hundred pounds of force (cables, chains, wooden rails, etc.) are required when workers are subjected to a fall exposure.
- All crane radii, with counter weights that present an exposure, must be barricaded to isolate the work area before operations commence.
- All openings in floors, roofs or decking must be covered, labeled and secured in place or a guardrail system must be placed around them.

### 3.4. Biohazards/Infectious Materials

Contractors may need to access areas or come in contact with biological materials that are potentially hazardous. Examples of these include: work on sewer lines, sumps, drain traps, or areas containing infectious waste. Any contractor working on equipment or building systems that are known or suspected of being contaminated with human blood or other biological materials, must complete an OSHA required bloodborne pathogens training program for the recognition and control of these hazards.

Other contractors who are not directly working with biological materials, but may encounter these materials, shall train employees to be aware of any potential biological hazard appropriate for the work being performed.

### 3.5. Chemical Hazard Communication (HAZCOM)

IU can provide Safety Data Sheets (SDSs) for chemicals it uses or produces that are readily accessible to contract personnel who are working in, on, or around the chemicals upon request. The SDS's can be obtained by request to the IU Project Manager (This information is not for general distribution outside of the IU site.). Both the Hazardous Material Information System (HMIS) and National Fire Protection System (NFPA) are used on IU property.

SDSs for hazardous materials must be accessible for reference on the job site **prior** to the material being brought on site. These must be provided upon request and may be reviewed by the IUEHS as well as the IU Project Manager, to determine if the materials are safe for the campus community if used as intended. If IUEHS determines that the use of a product may cause adverse health effects or safety problems, the materials may have conditions placed upon their use, or may be prohibited from being used on IU property.

Whenever chemicals are transferred from a labeled manufacturer's container to a secondary container, the secondary container must be labeled properly and be compatible with the transferred material. Proper labeling includes listing the chemical name and the hazard information. All containers must be closed, except when in use.

### 3.6. Construction Lighting

During construction operations, all general construction areas shall be supplied, by contractors, with a minimum of five (5) foot-candle lighting.

### 3.7. Compressed Gas Cylinders

Compressed gas cylinders are to be stored in an area approved by the IU Project Manager. They shall be clearly marked for the type of gas contained. Oxygen and acetylene cylinders are to be stored at least twenty feet apart or separated by a 5 ft., 1 hour minimum firewall, unless they are located on a welding cart. All cylinders are to be stored and transported in a secured, upright position, with their caps secured in place. Tie wire shall not be used as a securing material. Never load or unload cylinder without caps secured in place. Flashback arrestors are required on oxygen and acetylene lines.

### 3.8. Cranes

During crane operation the following shall be practiced:

- The safe design capacity of any crane must never be exceeded.
- All cranes, contractor owned, leased or rented, must be in a safe mechanical working conditions. Proper guards must be provided for exposed gears, belts, couplings, fans, etc.
- All operators must be familiar, trained and qualified to operate the equipment they are assigned to operate.
- A crane must be visually inspected on a daily basis. A documented annual inspection must be kept with the crane at all times. Boom cable installation documentation shall also be available.
- All personnel shall be excluded from the area under any load being lifted.
- To avoid tipping, all outriggers must be fully extended and all outriggers must remain firmly on the ground. Cribbing is required when the ground cannot support the concentrated load of the outriggers. Boom angle indicators, load charts and a standard hand signal chart, shall be visibly posted on the crane.
- Cranes and other equipment shall be operated with a minimum clearance of ten (10) feet between power lines and any part of the machinery.
- Questions regarding this requirement should be addressed to your IU Project Manager.

### 3.9. Demolition

During demolition, the following items will pertain:

- The contractor shall request utility shutdowns through proper procedures, to make certain that all lines, services and equipment have been cleared or purged and properly cleared for safe removal. All lines, including water and steam, are to be considered "hot" until a check has been made to verify that they are not in service.
- Underground or otherwise hidden lines, cables and sewers shall be physically located; (See Section 3.26, Underground Installations).
- Combustible materials shall be separated prior to operations involving welding, cutting, and other flame or spark producing operations. Follow the requirements of the IU Hot Work and Welding Management Procedures.
- Special attention shall be given to the marking of hazards and the barricading of hazardous areas for the protection of all personnel, including those not directly involved in the demolition work.

### 3.10. Drilling

It is the contractor's responsibility to be aware of rebar, conduits or other objects that may impede the progress of a rotary tool and cause it to bind.

### 3.11. Electrical Safety

When using temporary power, ground fault circuit interrupters (GFCI's) are required. Only extension cords meeting ANSI standards may be used. Poorly ventilated areas containing flammable materials and other hazardous areas shall require explosion proof equipment and equipment connections. The control of hazardous energy sources shall comply with the OSHA standards and IUEHS Control of Hazardous Energy Sources Safety Program. (See Section 3.36, Lockout/Tagout Procedures).

### 3.12. Emergency Procedures

In the event of an emergency such as a chemical release, or severe injury, the IU Police Department dispatch must be notified immediately along with the IU Project Manager. The contractor is required to keep emergency phone numbers for the respective campus available at the worksite. Contractors' employees must be familiar with the emergency procedures for the respective campus and buildings they are working in.

In the event of severe weather, all contractors should move to the nearest shelter area. This information can be found on the building evacuation maps located in the IU buildings.

### 3.13. Enforcement Policy

Each contractor is responsible for correcting safety violations and/or unsafe conditions present in their operation and/or work area.

### 3.14. Environmental Concerns - Including the Removal and Disposal of Environmentally-Hazardous Materials

#### **IU Responsibility**

An IUEHS checklist is to be completed for each project and signed by an appropriate representative of the successful contractor.

IU has the responsibility of notifying prospective contractors of the existence of any known environmental compliance concern at a job site.

IU retains the right to review all transportation and disposal facilities that are proposed to be utilized for the disposal of environmentally-hazardous materials generated at IU, and retains the right to approve or deny all interim and/or final disposal sites proposed to be used in conjunction with the project.

IU retains the right to request complete documentation of the proper disposal of environmentally-hazardous materials originating at IU.

### **Contractor Responsibility**

The Contractor has the responsibility of informing its employees of the potential existence of environmentally-hazardous materials on their sites.

The Contractor has the responsibility of notifying the IUEHS representative upon the discovery or suspected discovery of environmentally-hazardous materials at any IU property whether the existence was known or not, prior to the commencement of activity.

Unless agreed upon by contract or other binding agreement, the Contractor will be responsible for:

- Acquiring all necessary permits and/or licenses required for the packaging, transportation and disposal of environmentally-hazardous materials.
- Completing all arrangements necessary for the packaging, transportation and disposal of environmentally-hazardous materials.
- All costs incurred in the permitting, licensing, packaging, transportation and disposal of environmentally-hazardous materials.

The Contractor has the responsibility of providing the IU Project Manager and IUEHS for the respective campus with complete documentation of the proper disposal of environmentally-hazardous materials originating at IU. Such documentation may include but is not limited to:

- Copies of all manifests or chain-of-custody records.
- Copies of all bills of lading.
- Copies of all disposal receipts.
- Copies of any "certificates of disposal or destruction."

The following (sections 3.15 through 3.24) are common environmental concerns which have been encountered in past construction or renovation projects. The University does not warrant that other, unanticipated, environmental concerns will not arise during the project.

University dumpsters, refuse containers, and sewer lines are to be kept free of these items. Only containers that have been rinsed, dried and are considered empty of hazardous materials may be discarded in University waste receptacles with the approval of the IU Project Manager.

### **3.15. Lead-Containing Materials**

Elemental lead and lead alloys have been utilized as construction materials on IU properties.

- Battery back-up power supplies in emergency lighting systems (Nickel cadmium batteries may also be encountered and must also be collected for disposal.).
- Lead-shielding on high voltage electrical cables.
- Lead-shielded drywall, doors, doorframes and window frames in clinic or research areas utilizing x-ray devices or other radioactive sources.
- Lead-based plumbing fixtures – including sinks and drain lines in clinic, educational, and research laboratories.
- Lead-based paint products.

Lead may be present in many construction materials including lead based paint, wire insulation, solder, and welding materials. Exposure to lead is a potential health hazard. Prior to grinding, demolition, sand blasting, or scraping of painted surfaces, contractors shall determine if lead is present. OSHA regulations require that special procedures be followed when removing lead containing materials.

The IU Project Manager shall be notified if the contractor will be working with or near suspected lead containing materials.

### 3.16. **Mercury-Containing Materials**

Elemental mercury and mercury-based materials can frequently be found in three primary sources:

- **Fluorescent Light Bulbs** - Unless otherwise informed or instructed, all fluorescent lamps or bulbs are to be regarded as containing mercury. All fluorescent lamps are to be collected and retained for special disposal.
- **Temperature and pressure** control devices including thermostats and thermocouplers.
- **Drain lines and plumbing traps** which have collected mercury.

### 3.17. **Paint Operations - Degreasing, Surface Preparation, Stripping, and Surface Finishing Activities**

Materials associated with painting operations are to be regarded as potentially hazardous materials. This includes but is not limited to the following:

- Leftover, off-spec waste latex and oil-based paints.
- Paint solvents including but not limited to: xylene; toluene, acetone, mineral spirits, lacquer thinner, and turpentine.
- Chemical-based paint strippers or removal agents.
- Water-based or solvent-based surface degreasers.
- Solvent-based surface deglossers.

### 3.18. **Polychlorinated Biphenyl (PCB) - Containing Materials**

Polychlorinated Biphenyls (PCBs) have been found in two primary sources on IU properties:

- **Pre-1979 fluorescent lamp ballasts:** Unless otherwise instructed or unless a fluorescent lamp ballast is clearly labeled as being "non PCB," all fluorescent light ballasts are to be regarded as PCB - contaminated. As such, these ballasts are to be collected and retained for special disposal.
- **Electrical transformers and capacitors:** Smaller transformers and capacitors (e.g., x-ray transformers) are frequently encountered that have not been analyzed for PCB content. Unless otherwise instructed, all electrical transformers or capacitors are to be sampled by IUEHS and analyzed for PCB content prior to being taken out of service and removed from the site.

### 3.19. **Refrigerant-Containing (Freon) Appliances**

Ozone-depleting refrigerants (freons) may be encountered with the following types of devices or appliances:

- Window air conditioners
- Walk-in refrigerators and freezers
- Domestic refrigerators and freezers
- Refrigerated water fountains and coolers
- Room or area dehumidifiers
- Mechanical ice baths

Refrigerants must be removed and recovered according to federal standards by a licensed refrigeration technician. All refrigerant-containing appliances must be secured from damage and the potential inadvertent release of the refrigerant until proper recovery of the refrigerant can take place.

### 3.20. **Sanitary Sewer Discharges – Special Permit Discharges**

Special discharge permits from the local city may be required for the discharges of project-related waste waters to the university's sanitary sewer system.

Examples of past projects where special discharge permits were required have included:

- Draining swimming and diving pools.
- Treatment and flushing of chilled-water circulation lines.

- Large-scale, aqueous degreasing procedures in preparation of painting operations.

### 3.21. Storm Sewer Discharges Including Erosion Control

All discharges to University storm sewer lines during the course of construction or renovation projects are to be made in accordance with the [IU Stormwater Program](#). Additional guidance on these requirements will be provided during the project design/bidding process.

*Discharges are to be* closely monitored. Only clean, non-chemically contaminated water may be discharged to university storm sewers.

Erosion-control plans are to be developed, submitted for review and approval and implemented for all projects that involve the disturbance or excavation of soil(s) on property of .5 acres or more. A National Pollutant Discharge Elimination System Rule 5 Permit is required for all projects that involve the disturbance or excavation of soil(s) on property of 1 acre or more.

### 3.22. Stock Chemicals

It is the university's responsibility to ensure that stock chemicals and chemical-based materials are removed prior to renovation or construction. In the event these types of materials are encountered, they are to be left in their original location.

The IU Project Manager shall be notified immediately of their discovery and existence. Staff from IUEHS for the respective campus will assume responsibility of assuring that all stock chemicals are promptly removed from the construction site.

### 3.23. Special Wastes

Wastes may be generated during renovation or construction projects that require special disposal approval by the Indiana Department of Environmental Management. Examples of special wastes generated in past university projects include:

- Contaminated soil
- Water treatment and filtration media
- Sludges

### 3.24. Underground Storage Tanks

Underground storage tank(s), not known to exist, have been encountered in past University construction projects. In the event that a tank(s) or associated piping are discovered during the project, all work is to be halted in areas immediately adjacent to the tank or piping. The IU Project Manager shall be contacted immediately to ensure implementation of the proper procedures.

**Under no circumstance is the tank and/or associated piping to be excavated or removed without the expressed written approval of IUEHS for the respective campus or its designee.**

### 3.25. Excavations

Before opening any excavation, efforts shall be made to determine if there are underground utilities in the area. The contractor is responsible for all underground utility locating requirements. Excavation work shall not proceed until the utility locate request has been placed seventy-two (72) hours prior to the start of the actual excavation.

All excavations greater than five (5) feet in depth must be evaluated and constructed under the supervision of a competent person as identified in OSHA standards. Excavations greater than five (5) feet must be sloped or shored. All excavations shall be isolated by using barricades.

If the proper shoring or sloping is not present, a trench box is required to provide protection from cave-ins and worker injury. Working in an unprotected trench is not tolerated by IU and is a violation of OSHA standards.

Stairway, ladder, ramp, or other safe means are required for access into all excavations greater than five (5) feet in depth and must be within twenty-five (25) feet of the work area.

### 3.26. **Underground Installations**

The estimated locations of utility installations, such as sewer, telephone, fuel, electric, water, steam, irrigation or any other underground installations that may be expected to be encountered during excavation work, shall be determined prior to starting any excavation.

#### 3.26.1. **Identification of Underground Installation:**

The IU Project Manager shall be notified of the proposed work. The contractor is responsible for all underground utility locating requirements. Work on any utility underground installation shall not proceed until the utility locate request has been placed seventy-two (72) hours prior to the start of the actual excavation.

#### 3.26.2. **Excavations near Underground Installations:**

When excavation operations are expected to cross an existing underground installation, the IU Project Manager shall be notified of the proposed work. A utility representative may need to be present until the underground installation has been exposed.

When excavation operations approach within three (3) feet of the estimated location of the underground installation, the exact location of the installation shall be determined by safe and acceptable means. Safe and acceptable means shall include one or all of the following items: fiberglass shovel, pneumatic shovel and line location device (Note: When excavating around direct buried cables, rubber boots and gloves shall be worn). **DO NOT USE MECHANICAL EQUIPMENT WITHIN THREE (3) FEET OF THE UNDERGROUND INSTALLATION.**

#### 3.26.3. **Underground Excavation Protection:**

While the excavation is open, underground installations shall be protected, or supported as necessary to safeguard employees.

### 3.27. **Fire Reporting**

Contractors shall provide their own fire extinguishers. Pull the building fire alarm and report all fires to the IU Police dispatch. State the emergency and the location of the fire.

### 3.28. **Flammable Material Storage**

Only UL listed or Factory Mutual approved containers and portable tanks shall be used for storage of flammable material. Flammable materials shall not be stored in areas used for exits, stairways or normally used for the safe passage of personnel. No more than ten (10) gallons of flammable materials shall be stored indoors without an approved storage cabinet. Not more than sixty (60) gallons shall be stored in one approved cabinet. Outdoor storage tanks shall be grounded and placed in dikes for spill containment. Gasoline, paint, solvents, thinners or other flammable materials are to be stored in proper containers and in areas designated by the IU Project Manager. All gasoline cans are to meet ANSI standards, having a self-closing lid, flame arrestor and prominent markings.

Warning signs must be posted in storage areas for flammable materials.

Proper fire extinguishers must be kept within twenty-five (25) feet of the storage area for flammable materials.

### 3.29. **Hazard Reporting**

The IU Project Manager must investigate and abate hazards to the campus community that are reported by construction workers. Workers have the right to stop working and report the hazard immediately if there is imminent danger to life or health. IU EHS will work with the IU Project Manager to resolve hazardous issues. OSHA prohibits retribution toward employees who report hazardous situations or equipment.

### 3.30. **Hazardous Material Storage**

All materials shall be stored and handled in a manner to minimize the potential for spills that have the potential to enter into the storm or sanitary sewers. Secondary containment shall be provided for hazardous materials for all containers with a volume greater than forty (40) gallons or if deemed necessary by IUEHS for the respective campus. Secondary containment shall be constructed of materials compatible with the hazardous material and have a volume capacity equal to 110% of the largest container to be contained, and designed to prevent rainwater accumulation.

Hazardous materials that are required to be stored outside shall be protected from precipitation.

### 3.31. **Heavy Equipment**

Heavy equipment, such as backhoes, dump trucks, dozers and cranes, shall be operated by individuals who are trained and qualified. Back up signals are required in heavy equipment with a restricted rear view. All vehicles shall have a service brake system, an emergency brake system, and a parking brake system. All cracked or broken glass shall be replaced expeditiously. All heavy equipment shall be in safe operating condition.

### 3.32. **Housekeeping**

Housekeeping is important in every job assignment. It is important that the work area is kept clean at all times. Special attention must be given in maintaining clear walkways and roadways, removing or identifying slipping and tripping hazards and stacking of materials. Contractors must make every effort to keep mud, slush or other slippery substances off roads. Compressed air shall not be used for cleaning surfaces.

### 3.33. **Lab Safety**

IU has a set of written policies and procedures that are capable of providing protection from the health hazards associated with hazardous materials in laboratories. Contractor personnel who may be required to enter a lab where potential exposures could occur, shall be trained in the potential hazards present. IU utilizes a laboratory hazard warning sign system (HALS) that provides information about specific hazards related to the lab at the entry of the laboratories. Prescribed personal protective equipment must be worn by anyone who enters the lab or when the hazards are present. The IU Project Manager will arrange training for contractor personnel affected by this plan by request. Contractor personnel must obtain permission from the laboratory supervisor or principal investigator prior to entering a laboratory.

### 3.34. **Lifts and Platforms**

Articulating boom lifts and other lift types are to only be operated by trained and qualified personnel.

### 3.35. **Liquefied Petroleum Gases (LPG)**

LPG is not allowed on IU property without specific approval from the IU Insurance, Loss Control and Claims (INLOCC). Requests for use of LPG shall be through the IU Project Manager who will consult with INLOCC. LPG cannot be stored inside any building. Only cylinders actually in use will be allowed in any building. Cylinders on LPG powered trucks may be left on the trucks at night and on weekends with the cylinder valve closed.

### 3.36. **Lockout/Tagout Procedures**

Before working on a process, all energies (electrical, mechanical, thermal pneumatic, chemical, hydraulic, etc.) shall be purged, dissipated and locked out. Work may need to be performed that affects university personnel or IU employees will be working along with the contractor. Training on the recognition and proper control of energy sources must be completed as required by the OSHA standards. Appropriate Lockout/Tagout procedures shall be followed to ensure the safety of IU property and personnel. A copy of IU's Control of Hazardous Energy Program may be obtained by contacting IUEHS or the IU Project Manager. Each contractor and/or IU personnel shall always place their own lock and tag to ensure their safety.

Lockout tags are used to provide information about the lockout, and shall accompany the personal lock. A lockout tag shall have the person's name, company, date, and work being performed.

After placing the lock and tag, the switches shall be checked to determine that the equipment has

been locked out. All lockout operations are to be conducted in coordination with the IU Project Manager.

Once the work is complete, the personnel who placed the tag and lock must remove them and notify the IU Project Manager that the job is complete.

### 3.37. **Material Storage**

All materials stored in tiers shall be stacked, racked, blocked, interlocked or otherwise secured to prevent sliding, falling or collapse.

### 3.38. **Mold**

If mold or evidence of mold is found on building materials or furnishings, The IU Project Manager shall be consulted prior to demolition or removal of materials that have suspected mold contamination. If more than 10 square feet of mold contaminated wall materials or more than 25 square feet of mold contaminated ceiling tiles are found, the contractor is responsible for developing a Mold Remediation Plan. The Plan shall be developed by a health and safety professional with experience in mold remediation projects. The Remediation Plan(s) shall be submitted to IUEHS for review and approval prior to commencing work. Once an area is determined to have mold contamination, no new building materials shall be installed until authorized by IUEHS and the IU Project Manager.

#### ***Mold Remediation Plan***

The Mold Remediation Plan shall meet the following minimum requirements:

- Personnel shall be trained in the remediation of mold.
- Containment of the affected area:
  - The work area shall be completely isolated from occupied spaces using 6-mil, fire-retardant polyethylene sheeting. All supply and air vents, doors, chases, and risers within the containment area must be sealed with polyethylene sheeting to minimize the migration of contaminants to other parts of the building. For small areas, the polyethylene sheeting can be affixed to floors and ceilings with duct tape. For larger areas, a steel or wooden stud frame may need to be erected and polyethylene sheeting attached to it.
  - The contained area shall be kept under negative pressure relative to the surrounding areas.
- Dust suppression methods, such as misting (not soaking) or HEPA vacuuming surfaces prior to remediation, are recommended.
- Contaminated materials that cannot be cleaned shall be removed from the building in sealed plastic bags or other like containers.
- There are no special requirements for the disposal of mold contaminated materials. However, any dumpsters with contaminated material shall be covered at all times, except when material is being placed in the dumpster.
- After all visible mold is removed from the work area, the work area and surrounding areas shall be HEPA vacuumed and cleaned with a damp cloth and/or mop using a detergent or disinfectant solution. Before a disinfectant material is used, approval for its use shall be obtained from IUEHS for the respective campus.
- All areas shall be left dry and visibly free from mold contamination and debris.
- IU reserves the right to conduct air sampling to determine that the mold remediation was completed successfully and the areas have equal to or less than background (outdoor) levels of species specific mold spores. Failure to achieve this level may require the area to be re-cleaned.
- Mold Contaminated HVAC Systems: A variety of biocides are recommended by HVAC manufacturers for use with HVAC components, such as cooling coils and condensation pans. HVAC manufacturers need to be consulted for the products they recommend for use in their systems.

### 3.39. **Permit-Required Confined Space Entry Permit**

There are a wide variety of areas on IU property that may be considered a permit-required confined space. A confined space has limited or restricted means for entry and exit, and is limited

enough for a worker to enter and perform assigned work, and is a space which is not intended for continuous worker occupancy. Examples of confined spaces include, but are not limited to: tanks, boilers, pits, ventilation and exhaust ducts, false ceilings, crawl spaces, sewers, vats, manholes, steam and electrical vaults, pipelines, tunnels, and ditches. Identification and information related to permit-required confined spaces on IU property may be obtained through the IU Project Manager.

IU personnel shall communicate all known hazards of the confined space area to contractor personnel involved in the entry upon request. Contractors shall use their own permit system when conducting work in a permit-required confined space on IU property.

The contractor shall assure that the necessary equipment to comply with the permit-required confined space (atmospheric monitoring devices, fall protection, rescue equipment, respiratory protection, etc.) is available for each worker involved in the confined space entry. The permit shall only be viable for one day. If the permit-required confined space entry will lapse into a second day, another permit shall be completed for each day the entry occurs. Permits shall be displayed prominently at the job location, and a copy shall be given to the IU Project Manager after completion of the entry. All contractor personnel required to perform a permit-required confined space entry on IU property **must be trained by their employer according to the applicable OSHA regulation (general industry and/or construction) and, if applicable, the IU Permit Required Confined Space Entry Procedures.** The training shall be provided and documented by the contractor. Documentation of training shall include the date of the training, name of trainee, and signature of the trainer and trainee. Documentation of training may be subject to auditing by the IU Project Manager and IUEHS.

#### 3.40. Hot Work Permit

A Hot Work Permit must be issued before anyone conducts any procedure on IU property utilizing heat or spark producing devices, including but not limited to welding, cutting, grinding, soldering, brazing or open flame. For additional information refer to the [IU Hot Work and Welding Management Program](#).

#### 3.41. Personal Protective Equipment

The contractor shall require the use of personal protective equipment when furnished by IU for hazards **unique** to IU's facilities.

#### 3.42. Powder Actuated Tool

It is the contractor's responsibility to see that anyone using a powder actuated tool understands and follows the appropriate safety instructions. It is the contractor's responsibility that the operators of such tools be trained and certified. A shutdown request is not required when using a Powder Actuated Tool if it is a low velocity silenced tool. If there is a question of safety, contact the IU Project Manager for a further check of the area.

#### 3.43. Radiation

Radioactive materials and other sources of ionizing radiation are used in research and development, and production areas throughout IU. The use of these radioactive materials and sources of ionizing radiation is regulated by numerous governmental agencies.

A radiation sign stating "Caution, Radioactive Materials" will be posted on the doors of labs, doors of refrigerators containing radioactive materials, containers of radioactive material, and particular areas within a lab where radioactive materials are used or stored. These signs and labels are posted to alert all personnel of the presence of radioactive materials.

Areas where measurable levels of radiation are present will be posted with a sign stating "Caution Radiation Area" or "Caution High Radiation Area". Entry into these areas could result in significant radiation exposure.

Contractor personnel shall not enter any of these restricted areas without specific permission of authorized personnel within the areas or IUEHS. Questions regarding these areas should be addressed to the IUEHS Radiation Safety Office for the respective campus through the IU Project Manager.

#### **3.44. Safety Orientation**

Each general contractor performing construction or maintenance activities on IU property is required to appoint a representative to complete the appropriate Contractor Safety Training program through the IUEHS online training module and to inform other contractors and sub-contractors of the requirements detailed in the training module.

The contractor representative is required acquaint their employees and any sub-contractor under their control with IU's site rule requirements and any contractor specific rules. The contractor representative shall have all informed employees sign a form attesting to receiving the information.

#### **3.45. Scaffolding**

Scaffolding shall be erected on a solid footing rigid and capable of carrying the maximum intended load without settling or displacement. No scaffold shall be erected except under the supervision of a competent person (as defined by OSHA). No scaffold shall be moved, dismantled or altered except by the contractor who designed and erected the scaffold. All planking shall be scaffold grade as recognized by grading rules for the species of wood used. Scaffold planks shall extend over their end support not less than six (6) inches no more than twelve (12) inches.

Employers shall not permit employees to ride manually propelled scaffolds unless the floor is level and free from holes or obstruction, the platform height does not exceed twice the minimum base dimension, the wheels are rubber or similar material and all tools and materials are secured or removed.

#### **3.46. Tools and Equipment**

Hand tools, such as shovels, rakes, picks, axes and sledge hammers shall be inspected before use. Broken or splintered handles must be repaired immediately or removed from the job site. Cold chisels and wedges shall be inspected for mushroomed heads. Defective chisels and wedges shall be removed from the job site. Portable electric power tools shall be inspected before use.

Defective or damaged tools shall not be used. Personnel shall not drop or throw tools, materials or equipment from one level to another. A hoisting line shall be used to raise and lower equipment and tools.

## **APPENDIX A - GLOSSARY**

### **Contractor:**

Anyone contracted to perform services on IU Property.

### **IU Project Manager:**

The IU representative designated to oversee and coordinate construction, maintenance, and safety requirements work for any IU property. This includes representatives from UAO, Facilities Services/Physical Plant, and other Maintenance Groups who manage contractors.

### **IU Property:**

The confines or boundaries of all IU owned properties. These confines or boundaries are also referred to as “premises”, “IU campus”, “university”, “property”, and “building” throughout this document.

### **University Environmental Health and Safety (IUEHS):**

The department charged with the responsibility for overseeing environmental health and safety compliances on the IU campuses.