




Attachment B IH Activity/Task List

Contact the FMOC FESH Team or the Industrial Hygiene Program Manager for more information.

Activity	Task & Hazard	Controls
1a. Abrasive Blasting in enclosed cabinet	a) Loading blast media: <ul style="list-style-type: none"> • Inhalation hazard b) Blasting: <ul style="list-style-type: none"> • Excessive noise • Flying particles c) Cleaning Enclosures: Inhalation hazard if inward velocity not maintained	 Contact IH staff for assessment if media will become airborne. Engineering Controls: <ul style="list-style-type: none"> • Ensure control ventilation, if any, is working effectively. • Use enclosures (glove bags, etc) when cleaning or emptying the blast cabinet. Administrative Controls: <ul style="list-style-type: none"> • Work Practices that do not re-suspend blast media or blast residue in the air when loading abrasive blasting media Personal Protective Equipment (PPE): <ul style="list-style-type: none"> • Wear earplugs with earmuffs (NRR of 32).[†] • A face shield over safety glasses with side shields shall be worn when loading or cleaning the enclosed blasting cabinet. • If enclosures (gloves bags, etc) can not be used and media will become airborne when cleaning or emptying the enclosure, respiratory protection may be required. • Contractors will be required to have a written Respiratory Protection Plan when respirators are worn.
1b. Abrasive Blasting NOT in an enclosed cabinet	a) Loading blast media: <ul style="list-style-type: none"> • Inhalation hazard b) Blasting: <ul style="list-style-type: none"> • Excessive noise • Flying particles • Inhalation c) Clean up blast media and residue: <ul style="list-style-type: none"> • Inhalation 	 Contact IH staff for assessment of work if worker and blast are not physically separated from the operator in an exhaust ventilated enclosure. Some required controls may include: Engineering Controls: <ul style="list-style-type: none"> • Where possible, separate nozzle and blast by physical barrier. • Use water to control dust in open, non-enclosed blast environments. Administrative Controls: <ul style="list-style-type: none"> • Work Practices that do not re-suspend blast media or blast residue in the air. Personal Protective Equipment (PPE): <ul style="list-style-type: none"> • Full-face air purifying respirator (FF APR) with P100 filters or blasting hood supplied with compressed air (NIOSH-approved CE). • Contractors will be required to have a written Respiratory Protection Plan when respirators are worn. • Wear earplugs with earmuffs (NRR of 32).[†]




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<p>2. Asphalt Paving</p>	<p>a) Application of "Asphalt cement" at 112 to 162°C (235 to 325°C):</p> <ul style="list-style-type: none"> • Inhalation hazards • Contact burn hazards • Heat stress <p>b) Application of "Cutback asphalt" "Emulsified asphalt" [liquid asphalts – sprayed] at ambient to 150°C (300°F):</p> <ul style="list-style-type: none"> • Inhalation hazards • Splash or spray burn hazards from sprayer or cleaning of clogged nozzles on sprayers • Heat stress <p>c) Tamping with gasoline powered equipment</p> <ul style="list-style-type: none"> • Inhalation hazard - CO 	<p>Engineering Controls:</p> <ul style="list-style-type: none"> • Consider using fume-suppressing asphalts. • Long handled sprayers with flexible hoses should be used when emulsified asphalts are applied by hand. <p>Administrative Controls:</p> <ul style="list-style-type: none"> • Maintain proper asphalt equiviscous temperature (EVT) plus or minus 25° F, to reduce exposure to asphalt fumes [Hot mix asphalt begins to cool after leaving the plant. Small batches of emulsified asphalt may require supplemental heat.] • Reduce the number of times the lid is opened. • Monitor for early signs of the onset of heat stress while working. Any one sign of heat stress is: blurred vision, fainting, pale skin, profuse sweating, nausea, vomiting and headaches. • Ensure adequate breaks and fluids are taken. <p>Personal Protective Equipment (PPE):</p> <ul style="list-style-type: none"> • Safety glasses with side shields. • Wear face shield over splash goggles with side shields when working with liquid asphalts which may be splashed. • Loose long cotton sleeve and pant (no cuff) clothing. • Thermally insulated gloves with gauntlets when handling hot equipment and asphalt. • Obtain and review MSDS for all chemicals, including asphalt. •  Stop work and call 911 when signs and symptoms of heat stress are observed. Stop work and contact IH staff for an assessment if strong/irritating odors are observed in the work area.
<p>3. Asphalt crack repair (routing, sweeping, compressed air cleaning, mechanical sweeping)</p>	<ul style="list-style-type: none"> • Excessive noise. • Flying particles. • Exposure to re-occurring vibration. • Inhalation of dust containing silica 	<p>Engineering Controls:</p> <ul style="list-style-type: none"> • To the extent possible use wet methods to control dust levels. • Compressed air should be no higher than 30 psi • Use anti-vibration gloves or anti-vibration materials on equipment/tool handles to reduce vibration. • Use anti-vibration tools when available. <p>Administrative Controls:</p> <ul style="list-style-type: none"> • Increase frequency of breaks, as appropriate, to avoid vibration fatigue. • Use proper work practices that keep the worker's hands and remaining body warm and also minimize the vibration coupling between the worker and the vibration tool as necessary to minimize vibration exposure. <p>Personal Protective Equipment (PPE)</p> <ul style="list-style-type: none"> • Wear earplugs with earmuffs (NRR of 32).[†] • Respiratory protection may be required if dust control methods are absent or ineffective, such as, suspended dust in the workers breathing zone/face. • Contractors will be required to have a written Respiratory Protection Plan




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		<p>when respirators are worn.</p> <ul style="list-style-type: none"> •  Stop work and contact IH staff for an assessment if dust is visibly suspended in the air. <p>Anti-vibration work gloves to absorb vibration.</p>
<p>4. Beryllium Contamination Area Work</p> <p>a. Routine Repetitive Low Risk Activities as listed in Table 1 and the FMOCCBDPP Implementation Plan for all Controls</p> <p>(1) Project Management/Engineering/Planning/Scoping</p> <p>(2) Custodial tasks</p> <p>(3) Performing routine non-intrusive maintenance or service activities, such as corrective maintenance (troubleshooting, repair); preventive maintenance or equipment servicing (inspecting, lubricate, adjust</p>	<p>Contact with Beryllium surface contamination</p> <p>a. Routine Repetitive Low Risk</p> <p>(1) Inspect; scope; design; or perform walkthroughs.</p> <p>(2) Clean restroom facilities; clean up after roof leaks or plumbing failures in non-beryllium contaminated areas.</p> <p>(3) Fire Suppression system: inspect/test extinguishers; scoping on hot work permit requests; inspect/conduct walkthroughs.</p> <p>Electrical: install/repair equipment, conduit, wiring below 8 feet; "spotting"; perform infrared inspections; and re-lamping if fixtures are below 8 feet.</p> <p>Crane inspections: visually evaluate cranes while not disturbing dust.</p> <p>Structural: inspecting equipment, such as, overhead doors; perform locksmith activities; paint; and perform insulation installation/repair</p> <p>Mechanical: perform plumbing tasks; non-intrusive work on Heating Ventilation Air Conditioning (HVAC)/Local Exhaust Ventilation (LEV) equipment; sumps.</p> <p>Water treatment: Maintain water treatment systems, including cooling towers and scrubbers.</p>	<p>Refer to FMOCCBDPP Implementation Plan for additional applicable controls.</p> <p>a. For Routine Repetitive Low Risk activities, the minimum practices listed below shall be followed when PPE is used:</p> <ul style="list-style-type: none"> • Protective clothing and equipment shall be disposable when feasible. • The removal of beryllium from protective clothing and equipment by blowing, shaking, or other means that may disperse beryllium into the air is prohibited. • Workers shall not remove beryllium-contaminated protective clothing and equipment from areas that contain beryllium unless it is containerized/double bagged and labeled in accordance with the requirements under Procedures of the FMOCCBDPP IP. • PPE shall be donned and doffed (removed) in the following manner: <ul style="list-style-type: none"> ○ <u>Don</u> (put on) clean PPE prior to entering a beryllium-contaminated area. Tape leg and arm cuffs to gloves or boots if there is gross dust contamination in the work area. Some buildings may have donning areas. ○ <u>Doff</u> PPE before leaving beryllium-contaminated areas. Remove all PPE slowly and from the inside-out to contain any dust accumulated. ○ Place PPE in labeled designated waste container at doffing station, or place PPE in a labeled clean double plastic bag and hand the bag and any other bagged waste over to building personnel for proper waste disposal. ○ Proceed to the nearest washroom to wash hands and face. <p>Note: Follow "General Work Practices" in FMOCCBDPP Implementation Plan. In addition, training (BEA100; BEA101, HAZ101 & HAZ103) is required.</p>



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<p>4b. Beryllium Contamination Area Work; all activities other than those listed as Routine Repetitive Low Risk Activities in 3a</p>	<p>Contact with Beryllium surface contamination and potential for inhalation of beryllium particulate</p>	<p> Contact IH staff for an assessment of the work to be performed and identification of control measures/PPE.</p> <p>Note: Follow FMOCC CBDPP Implementation Plan. In addition, training (BEA100; BEA101, HAZ101 & HAZ103) is required.</p>
<p>5. Confined Space Entry</p>	<p>All work requiring entry into a Permit-Required Confined Space</p> <ul style="list-style-type: none"> • Atmospheric hazards • Engulfment hazards • Converging walls • Other serious physical hazards 	<p> Contact IH staff, as needed, to support the identification of hazards and necessary control measures for entries into confined spaces.</p> <p>Engineering and Administrative Controls</p> <ul style="list-style-type: none"> • Members of the Workforce follow the ES&H Manual Chapter 6I, Entry into Confined Spaces for Permitted spaces. • Permit conditions (all hazards identified and acceptable controls for safe entry). • Introducing hazards into a Non-Permit Confined Space creates a Permit-Required Confined Space <p>Contractors follow 01065 ES&H Specifications for requirements on Confined Space Entry Programs. A written Confined Space Permit Program is required.</p>
<p>6. Cutting or Jackhammering Asphalt</p>	<p>All work requiring cutting or jackhammering asphalt</p> <ul style="list-style-type: none"> • Excessive noise. • Flying particles. • Exposure to re-occurring vibration. • Inhalation of dust from underlying soils 	<p>Engineering Controls:</p> <ul style="list-style-type: none"> • Use wet methods to control dust levels created from disturbing underlying soil. • Use anti-vibration gloves or anti-vibration materials on equipment/tool handles to reduce vibration. • Use anti-vibration tools when available. <p>Administrative Controls:</p> <ul style="list-style-type: none"> • Increase frequency of breaks, as appropriate, to avoid vibration fatigue. • Use proper work practices that keep the worker's hands and remaining body warm and also minimize the vibration coupling between the worker and the vibration tool as necessary to minimize vibration exposure. <p>Personal Protective Equipment (PPE)</p> <ul style="list-style-type: none"> • Wear earplugs with earmuffs (NRR of 32).[†] • A face shield over safety glasses with side shields shall be worn. • Anti-vibration work gloves to absorb vibration.
<p>7. Cutting or Jackhammer concrete sidewalks, manholes, or any outdoor ground level or below grade fixture.</p>	<p>All work requiring cutting or jackhammering concrete.</p> <ul style="list-style-type: none"> • Exposure to re-occurring vibration • Noise hazard • Inhalation of silica-containing dust • Flying particles. 	<p> Contact IH staff for an:</p> <ul style="list-style-type: none"> • Assessment of work if work must be done in a confined or enclosed space which will increase noise level, example: concrete manhole; • Assessment of work if work must be done dry without HEPA vacuum or wet methods resulting in large amounts of dust or if being done in confined space (potential to inhale particulates). <p>Engineering Controls:</p> <ul style="list-style-type: none"> • Use HEPA Vacuum or wet methods to control dust levels. Avoid inhaling dust. • Use anti-vibration gloves or anti-vibration materials on equipment/tool handles



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		<p>to reduce vibration.</p> <ul style="list-style-type: none"> • Use anti-vibration tools when available. <p>Administrative Controls:</p> <ul style="list-style-type: none"> • Increase frequency of breaks, as appropriate, to avoid vibration fatigue. • Use proper work practices that keep the worker's hands and remaining body warm and also minimize the vibration coupling between the worker and the vibration tool as necessary to minimize vibration exposure <p>Personal Protection Equipment (PPE):</p> <ul style="list-style-type: none"> • Wear earplugs with ear muffs (NRR of 32). If concrete cutting or jackhammering is performed for greater than 60 minutes, dual hearing protection may be required. † • A face shield over safety glasses with side shields shall be worn. • Respiratory protection may be required if dust control methods are absent or ineffective, such as, suspended dust in the workers breathing zone/face. • Contractors will be required to have a written Respiratory Protection Plan when respirators are worn. •  Stop work and contact IH staff for an assessment if dust is visibly suspended in the air.
<p>8. (a) Concrete cutting, core drilling, or jackhammer demolition of concrete walls or interior floors.</p>	<p>All work requiring cutting or jackhammering concrete.</p> <ul style="list-style-type: none"> • Exposure to re-occurring vibration • Noise hazard • Inhalation of silica-containing dust • Flying particles. 	<p> Contact IH staff for an assessment of the appropriate controls measures.</p> <p>Engineering Controls:</p> <ul style="list-style-type: none"> • Use HEPA vacuum, wet saws, or other wet methods to minimize airborne dust. • Use a wet/dry vacuum or other methods to immediately remove wetting cuttings from area to avoid drying and re-suspension of dust. • Use anti-vibration gloves or anti-vibration materials on equipment/tool handles to reduce vibration. • Use anti-vibration tools when available. <p>Administrative Controls:</p> <ul style="list-style-type: none"> • Increase frequency of breaks, as appropriate, to avoid vibration fatigue. • Use proper work practices that keep the worker's hands and remaining body warm and also minimize the vibration coupling between the worker and the vibration tool as necessary to minimize vibration exposure • Plan the work to minimize cutting, coring, or jackhammering time to reduce exposure time <p>Personal Protection Equipment (PPE):</p> <ul style="list-style-type: none"> • Wear earplugs with ear muffs (NRR of 32). If concrete cutting or jackhammering is performed for greater than 60 minutes dual hearing protection may be required. † • A face shield over safety glasses with side shields shall be worn. • Respiratory protection is required to control inhalation of respirable silica dust to acceptable airborne concentrations (< the ACGIH TLV). This is based on





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		<p>compliance oversight air monitoring results that demonstrate that wet methods and cleaning has not been effective in control airborne silica concentrations.</p> <ul style="list-style-type: none"> Contractors may not use respiratory protection if they can provide quantitative data that engineering control measures are effective. This must be provided to the SNL FMOC IH well in advance of beginning the activity. Contractors will be required to have a written Respiratory Protection Plan when respirators are worn. <p> Stop work and contact IH staff for an assessment if dust is visibly suspended in the air.</p>
<p>9. (a) D & D Removing Gypsum Board (small or large)</p>	<ul style="list-style-type: none"> Inhalation hazard due to the Silica containing dust found in Gypsum board Potential for asbestos containing material Flying particles during destruction 	<p>Engineering Controls:</p> <ul style="list-style-type: none"> Use wet methods or HEPA vacuum to control dust generation. Do not use mechanical means such as a RotoZip™ unless wet methods (water mist or shaving cream) can be used to reduce airborne dust. Use hand tools when practical to cut and break board instead of mechanical cutting. <p>Administrative Controls:</p> <ul style="list-style-type: none"> Contact FAIT for evaluation of potential asbestos containing material prior to any intrusive activities on gypsum board. Do not make large quantities of dust. Perform housekeeping with HEPA vacuum and/ <p>Personal Protection Equipment (PPE):</p> <ul style="list-style-type: none"> Dust goggles shall be worn. Respiratory protection will be required if dust is not controlled. Contractors will be required to have a written Respiratory Protection Plan when respirators are worn. <p> Stop work and contact IH staff for assessment of work if controls are not adequate at controlling dust (e.g., suspended dust visible in work area).</p>
<p>9. (b) Fume Hood Removal</p>	<p>Refer to JHSA for specific site hazards. Disconnection of ventilation and other lines may lead to dermal exposure (skin contact) to residue chemical contamination.</p>	<p>Engineering Controls</p> <ul style="list-style-type: none"> Maintain airflow through the exhaust system to prevent residues from settling back in the hood. <p>Administrative controls</p> <ul style="list-style-type: none"> All chemicals should be removed or secured in tightly-closed containers in LEV system (hood) by the owner. When breaching an LEV system, it should run for 12 hours without introduction of chemicals before opening (Coordinate with lab/shop LEV owners). After performing work and doffing PPE, wash hands before eating or smoking. <p>Personal Protection Equipment</p> <ul style="list-style-type: none"> Wear nitrile gloves under leather gloves. Wear safety glasses with side shields.




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		<ul style="list-style-type: none"> Wear splash goggles if a potential exists for liquid to be splashed from duct during breach. Wear lab coat or Tyvek™ top with long sleeves.
9. (c) D & D Demo concrete/Asphalt	<p>Refer to cutting or jack-hammering concrete listing</p> <p>Refer to cutting or jack-hammering asphalt listing</p>	<ul style="list-style-type: none"> Refer to cutting or jack-hammering concrete listing Refer to cutting or jack-hammering asphalt listing
9. (d) D & D Entire building	Varied	 Contact IH staff for assessment of work.
10. Descaling (cleaning using chemicals) of Pipes	<p>(a) Mixing chemicals (acid)</p> <ul style="list-style-type: none"> Inhalation Skin exposure <p>(b) Pumping acid mixture</p> <ul style="list-style-type: none"> Inhalation Skin exposure 	 Contact IH staff for hazard assessment and specification of control measures. Engineering Controls for Mixing <ul style="list-style-type: none"> Provide additional ventilation (opening doors, fans). Administrative controls <ul style="list-style-type: none"> Obtain and review MSDS for all chemicals Personal Protection Equipment (PPE) <ul style="list-style-type: none"> Full face Respiratory protection with acid gas cartridges required when mixing/pumping the acid (HCl) mixture. Contractors will be required to have a written Respiratory Protection Plan when respirators are worn. Saranex™ or rubber coveralls (acid resistant) with hood and booties when mixing the acid mixture Acid resistant gloves (butyl, neoprene) over nitrile with taped openings when handling acid mixture.
11. Descaling (Wire brush or other mechanical means) of Pipes	<p>Mechanical removal of scale</p> <ul style="list-style-type: none"> Inhalation of dust 	 Contact IH staff for assessment to determine whether respiratory protection is required when performing large scale mechanical descaling and/or if uncertain when an assessment would be necessary. Engineering Controls <ul style="list-style-type: none"> Use wet methods or local ventilation exhaust to reduce dust levels. Administrative controls <p>After performing work and doffing PPE, wash hands before eating or smoking.</p> Personal Protection Equipment (PPE) <ul style="list-style-type: none"> Nitrile gloves under leather gloves Respirators with P100 filters may be required if large scale brush descaling. Contractors will be required to have a written Respiratory Protection Plan when respirators are worn.  Stop work and contact IH staff for assessment to determine whether respiratory protection is required if controls are not adequate at controlling dust





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		(e.g., suspended dust visible in work area).
<p>12. Drains –</p> <p>a. Sawcutting</p> <p>b. torch cutting</p> <p>c. opening with wrench</p>	<p>(a) Sawcutting, torch cutting and opening with wrench</p> <p>- Residual chemicals found in pipes</p> <ul style="list-style-type: none"> • Inhalation • Skin Exposure <p>(b) Torch cutting</p> <ul style="list-style-type: none"> • Inhalation <p>(c) Opening with wrench</p> <ul style="list-style-type: none"> • No additional hazards <p>Refer to JHSA for specific site hazards.</p>	<p> If torch cutting, complete Welding, Cutting and Brazing (WCB) Permit, which requires an assessment by IH staff – See Welding, Thermal Cutting or Brazing for additional information.</p> <p>Engineering Controls</p> <ul style="list-style-type: none"> • Run cold water through pipe for 15 minutes before opening if possible. • If using mechanical tools and dust will be generated, use wet methods or HEPA vacuum to contain dust. • When possible use hand tools to reduce dust generation. • For torch cutting refer to WCB Permit. <p>Administrative controls</p> <ul style="list-style-type: none"> • After performing work and doffing PPE, wash hands before eating or smoking. <p>Personal Protection Equipment (PPE)</p> <ul style="list-style-type: none"> • For torch cutting refer to WCB Permit. • Wear nitrile gloves under leather gloves. • Wear safety glasses with side shields. • Wear splash goggles if liquid may splash from the drain during breach. • Wear lab coat or Tyvek™ top with long sleeves.
<p>13. Drains – PVC Work</p>	<p>Connecting sections of PVC pipe by first treating with acidic primer and then applying the glue</p> <ul style="list-style-type: none"> • Inhalation of vapors • Skin exposure to acid and solvent • Flammable 	<p> Contact IH for assessment prior to performing work if you are not sure if you have adequate ventilation to control exposure.</p> <p>Engineering Controls</p> <ul style="list-style-type: none"> • Maintain a 35' minimum distance from any ignition source. • Ensure adequate ventilation – Use additional LEV (pedestal or axial fans) when working in a trench or in a small room. <p>Administrative Controls</p> <ul style="list-style-type: none"> • Obtain and review MSDS for all products/materials. • After performing work and doffing PPE, wash hands before eating or smoking. <p>Personal Protection Equipment (PPE)</p> <ul style="list-style-type: none"> • Wear butyl, neoprene, or nitrile gloves. Avoid other than incidental gloved contact with chemicals. Remove and replace glove when glove contacts chemicals (acid/solvent containing products). • Wear safety glasses with side shields. <p> Stop work if you notice strong/irritating odors. Contact IH staff to assess the activity.</p>
<p>14. Maintenance (changing filters on Bldg HVAC systems</p>	<p>Changing filters</p> <ul style="list-style-type: none"> • Nuisance dust – Not considered a hazard 	<p>No additional controls required</p>



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<p>15. Exhaust Ventilation Systems – Maintenance of Bldg LEV*systems (Lab chemical exhaust)</p>	<p>Entry into fan housing/plenum. Skin/eye contact with residual chemical on surfaces.</p> <p>Refer to JSHE for site-specific hazards.</p>	<p> Contaminant LEV systems are Permit-Required Confined Spaces. Refer to Confined Space Entry for additional information.</p> <p>Administrative Controls</p> <ul style="list-style-type: none"> • When breaching an LEV system, it should run for 8 hours without introduction of chemicals before opening (Coordinate with lab/shop LEV owners). <p>Personal Protective Equipment</p> <ul style="list-style-type: none"> • Wear nitrile gloves under leather gloves. • Wear lab coat or Tyvek™ top with long sleeves • After performing work and doffing PPE, wash hands before eating or smoking.
<p>16. (a) Floor Work – Laying tile, linoleum, or carpet or Removing tile or linoleum</p>	<ul style="list-style-type: none"> • Skin/eye contact and/or inhalation of epoxy glue during application to substrate • Potential asbestos containing material may be disturbed when removing existing tile, linoleum, and mastics 	<p> Contact IH for assessment of hazards and controls if unfamiliar with hazards or adequacy of controls (e.g., sufficient ventilation).</p> <p>Engineering Controls</p> <ul style="list-style-type: none"> • Ensure adequate ventilation by: <ul style="list-style-type: none"> ➢ HVAC recirculation of vapors during curing process – reduce/ shutdown, go to 100% exhaust. ➢ Use additional LEV (pedestal or axial fans) when working in a small room (<1000 sq feet) or when natural cross ventilation can not be created. ➢ Ensure vapors are not being blown to occupied areas when using fans. <p>Administrative Controls</p> <ul style="list-style-type: none"> • Contact FAIT for evaluation of potential asbestos containing material prior to any intrusive activities on tile or linoleum floors. • Obtain and review MSDSs for all chemicals • Perform work off-hours when feasible. <p>Personal Protective Equipment</p> <ul style="list-style-type: none"> • Wear nitrile gloves under leather gloves. • Wear safety glasses with side shields. • Wash hands after doffing gloves. <p> Stop work and contact IH staff for assessment of work if controls are not adequate at controlling vapors (e.g., strong/irritating odors in work area).</p>
<p>16. (b) Floor work – Sealing floor with isocyanate sealer or epoxy sealer</p>	<p>Skin/eye contact and inhalation of isocyanate sealant during application to floor surface</p>	<p> Contact IH staff for assessment of hazards and controls if unfamiliar with hazards or adequacy of controls (e.g., sufficient ventilation); respiratory protection may be required.</p> <p>Administrative Controls</p> <ul style="list-style-type: none"> • Substitute an isocyanate-free sealant when possible. • Obtain and review MSDS for all chemicals. <p>Engineering Controls</p> <ul style="list-style-type: none"> • Ensure adequate ventilation: <ul style="list-style-type: none"> ➢ Isocyanate vapors must not be re-circulated through occupied areas. HVAC must be shutdown or areas vacated. ➢ Use additional LEV (pedestal or axial fans) when working in a small room


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		<p>(<1000 sq feet) or when natural cross ventilation can not be created.</p> <ul style="list-style-type: none"> ➤ Ensure vapors are not being blown to occupied areas when using fans. <p>Personal Protective Equipment</p> <ul style="list-style-type: none"> • Wear SilverShield™ or gloves with similar copolymer laminate material when working directly with sealer. Use leather work glove or canvas work gloves when handling flooring material; Tyvek™ and safety glasses with side shields. Avoid other than incidental gloved contact with chemicals. Remove and replace gloves when gloves contact chemical products. • After performing work and doffing PPE, wash hands before eating or smoking. • Personal monitoring may be required to ensure engineering controls are adequate to prevent exposure over the occupational exposure limit. • Respiratory Protection may be required if adequate ventilation can not be achieved. • Contractors will be required to have a written Respiratory Protection Plan when respirators are worn. <p> Stop work and contact IH staff for assessment to determine whether respiratory protection is required if controls are not adequate at controlling vapors (e.g., strong or irritating odors in work area).</p>
<p>16. (c)_Prepping concrete floors by hand grinding for isocyanate or epoxy sealants</p>	<p>Hand Grinding and vacuum emptying and maintenance</p> <ul style="list-style-type: none"> • Exposure to re-occurring vibration • Noise hazard • Inhalation of silica-containing dust <p>Flying particles</p>	<p> Contact IH staff for an assessment of the appropriate controls measures.</p> <p>Engineering Controls:</p> <ul style="list-style-type: none"> • Use a vacuum with HEPA filters or a HEPA vacuum minimize airborne dust. • Change filters at routine intervals to not overload filters. Do not shake filters out and reuse. Immediately and carefully bag filters. Replace with new filters. • Use a vacuum with HEPA filters or HEPA vacuum or wet methods to immediately remove debris from the area to avoid re-suspension of dust. • Use anti-vibration gloves or anti-vibration materials on equipment/tool handles to reduce vibration. • Use anti-vibration tools when available. <p>Administrative Controls:</p> <ul style="list-style-type: none"> • Increase frequency of breaks, as appropriate, to avoid vibration fatigue. • Use proper work practices that keep the worker's hands and remaining body warm and also minimize the vibration coupling between the worker and the vibration tool as necessary to minimize vibration exposure • Plan the work to minimize hand grinding to reduce exposure time <p>Personal Protection Equipment (PPE):</p> <ul style="list-style-type: none"> • Wear earplugs with ear muffs (NRR of 32). † • A face shield over safety glasses with side shields shall be worn. • Respiratory protection is required to control inhalation of respirable silica dust to acceptable airborne concentrations (< the ACGIH TLV) when excessive hand grinding is required. This is based on compliance oversight air monitoring results that demonstrate that the vacuum system has not been


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		<p>effective in control airborne silica concentrations for prolonged hand grinding activities.</p> <ul style="list-style-type: none"> Contractors may not use respiratory protection if they can provide quantitative data that engineering control measures are effective. This must be provided to the SNL FMOC IH well in advance of beginning the activity. Contractors will be required to have a written Respiratory Protection Plan when respirators are worn.  Stop work and contact IH staff for an assessment if dust is visibly suspended in the air.
<p>16. (d) Floor work – Positive mold identity (small and midsized areas)</p>	<p>Inhalation of mold spores and/or mold bodies during: Removal of old or damaged flooring with visible indication of viable/unviable mold</p>	<p>Small isolated areas 10 ft² or less:</p> <ul style="list-style-type: none"> Minimum half face respirator with P100 cartridge filters. Contractors will be required to have a written Respiratory Protection Plan when respirators are worn. Work gloves and safety glasses with side shields. Work area must be unoccupied. Dust suppression methods – misting, not soaking surfaces prior to removal Use dilute chlorine solution (1 part bleach, 10 parts water) or other antimicrobial solution on mold to clean contaminated surfaces that will not be removed. Contaminated materials that can not be cleaned – remove from building in a sealed plastic bag. Work area and worker egress areas cleaned with damp cloth and/or mop and detergent solution. Allow areas to thoroughly dry. <p>Mid-sized isolated areas >10 to 30 ft²:</p> <ul style="list-style-type: none"> Minimum half face respirator with P100 cartridge filters. Contractors will be required to have a written Respiratory Protection Plan when respirators are worn. Work gloves and safety glasses with side shields. Work area must be unoccupied, or work performed after hours if possible. Work area contained with poly and sealed with tape before work begins. Dust suppression methods – misting, not soaking surfaces prior to removal. Use diluted chlorine solution (1 part bleach, 10 parts water) or other antimicrobial solution on mold to clean contaminated surfaces that will not be removed. Contaminated materials that can not be cleaned – remove from building in a sealed plastic bag. Work area and egress areas cleaned with HEPA vacuum and damp cloth and/or mop and detergent solution. <p>Allow areas to thoroughly dry.</p>



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<p>16. (e) Floor work – Positive mold identity (Large areas)</p>	<p>Inhalation of mold spores and mold bodies during: Removal of old or damaged flooring with visible indication of viable/unviable mold</p>	<p> Contact IH for an assessment. Large isolated areas >30 ft²:</p> <ul style="list-style-type: none"> • Requires a written Mold Remediation Plan reviewed by IH staff • Minimum half face respirator with P100 cartridge filters. • Contractors are required to have a written Respiratory Protection Plan when respirators are worn. • Work gloves and safety glasses with side shields. • Work area must be unoccupied, or work performed after hours if possible. • Use diluted chlorine solution (1 part bleach, 10 parts water) or other antimicrobial solution on mold to clean contaminated surfaces that will not be removed. • Work area contained with poly and sealed with tape before work begins. • Cover all air vent openings with plastic to eliminate the spread of the mold spores to other areas of the building. • Dust suppression methods – misting surfaces prior to removal. • Contaminated materials that can not be cleaned – remove from building in a sealed plastic bag. • Work area and egress areas cleaned with HEPA vacuum and damp cloth and/or mop and detergent solution. • Allow areas to thoroughly dry.
<p>17. (a) Gypsum board – patching</p>	<p>Patching</p> <ul style="list-style-type: none"> • Silica containing coatings and joint compounds • Potential for asbestos containing material 	<p>No additional IH Controls</p> <ul style="list-style-type: none"> • Contact FAIT for evaluation of potential asbestos containing material prior to any intrusive activities on gypsum board • Minimize dry sanding and use wet clean up methods
<p>17. (b) Gypsum board - hanging/installing dry wall</p>	<p>(a) Cut drywall</p> <ul style="list-style-type: none"> • Inhalation hazard due to the Silica containing dust found in Gypsum board • Noise <p>(b) Install drywall, tape, skim and texture drywall.</p> <ul style="list-style-type: none"> • Skin exposure • Inhalation hazard: Silica containing dust found in mud and texture <p>(c) Sand joints to smooth mud and tape area.</p> <ul style="list-style-type: none"> • Inhalation hazard: Silica containing dust found in mud and texture coats 	<p>Engineering Controls</p> <ul style="list-style-type: none"> • Do not use mechanical means such as a RotoZip™ unless wet methods (water mist or shaving cream) can be used • Use hand cutting tools when practical. • Use vacuum sanding or pole sanding on mud. <p>Administrative Controls</p> <ul style="list-style-type: none"> • Do not make large quantities of dust. • Use gypsum board/mud with the lowest available percent silica. <p>Personal Protection Equipment (PPE)</p> <ul style="list-style-type: none"> • Use hearing protection (ear plugs with NRR ≥28) when cutting dry wall using mechanical means.[†] • Respiratory protection is not required during taping, mudding, and finishing activities if the following controls are effective to minimize airborne dust. <ol style="list-style-type: none"> 1. Keep the jobsite as clean as possible <ol style="list-style-type: none"> a. No Dry Swiping b. Use a Dry/Wet Vacuum with HEPA filtration, wet methods, or




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	<ul style="list-style-type: none"> Noise 	<p>effective libel use of dust suppressants</p> <p>c. When emptying Vacuum do not shake HEPA filter</p> <ol style="list-style-type: none"> Cutting drywall <ol style="list-style-type: none"> Use handsaws and/or utility knives – Best Practice If using a router or rotozip use a vacuum attachment or place shaving cream on the cutline When applying joint compound be as neat as possible <ol style="list-style-type: none"> Apply only what is needed Clean-up excess joint compound when wet Keep it off clothing – once it dries, it could become airborne Sanding drywall mudded joints <ol style="list-style-type: none"> Wet sand joint compound layers when applying next layer of joint compound – Best Practice If dry sanding is required, use long handled (4') drywall sanders Ensure housekeeping activities are effective to prevent re-entrainment of dust from sheetrock mud. Dry sweeping, compressed air, and shop vacuums are not viable options for cleaning. Wet methods, certified HEPA vacuums, or effective use of dust suppressants must be used to clean. Workers must be encouraged to maintain good personal hygiene habits to prevent re-entrainment of dust from sheetrock mud on their clothing or bodies. <ul style="list-style-type: none"> Contractors are required to have a written Respiratory Protection Plan when respirators are worn. If dust is not controlled, personal monitoring will be required to ensure exposure to silica is not over the occupational exposure limit. <p> Stop work and contact IH staff for assessment of work if controls are not adequate at controlling dust (e.g., suspended dust visible in work area).</p>
<p>18. (a) Insulation – Epoxy foam insulation material</p>	<p>(a) Opening containers of epoxy foam insulating material</p> <ul style="list-style-type: none"> Skin exposure Inhalation <p>(b) Spraying Epoxy foam insulation</p> <ul style="list-style-type: none"> Flammable Skin exposure Inhalation 	<p> Contact IH for assessment if installing in a confined or enclosed area with very limited ventilation or, based on experience, you are not sure if you have adequate ventilation to control exposure.</p> <p>Engineering Controls:</p> <ul style="list-style-type: none"> Maintain a 35' minimum distance from any ignition source. Ensure adequate cross ventilation – Use additional LEV (pedestal or axial fans) to create cross ventilation when working indoors. <p>Administrative Controls</p> <ul style="list-style-type: none"> Obtain and review MSDS for all products/materials. After performing work and doffing PPE, wash hands before eating or smoking. <p>Personal Protection Equipment (PPE)</p> <ul style="list-style-type: none"> Wear butyl, neoprene, or nitrile gloves under leather/heavy gloves Wear long sleeve shirt. Wear splash goggles. Respiratory Protection may be required if adequate ventilation can not be




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		<p>achieved.</p> <ul style="list-style-type: none"> Contractors are required to have a written Respiratory Protection Plan when respirators are worn. <p> Stop work and contact IH staff for assessment of work if controls are not adequate at controlling vapors or dust/fibers (e.g., suspended dust visible in work area or strong/irritating odors).</p>
<p>18. (b) Insulation - FOAMGLAS[®] Insulation.</p>	<p>(a) Cutting, abrading, grinding, crushing or drilling FOAMGLAS[®] insulation:</p> <ul style="list-style-type: none"> Inhalation hazard of silica Skin abrasion <p>(b) Adhering insulation using an adhesive</p> <ul style="list-style-type: none"> Inhalation hazard of vapors Skin exposure to chemical 	<p> Contact IH for assessment if installing in a confined or enclosed area with very limited ventilation or, based on experience, you are not sure if you have adequate ventilation to control exposure.</p> <p>Engineering Controls for handling - FOAMGLAS[®]:</p> <ul style="list-style-type: none"> Ensure adequate general or local ventilation (HEPA vacuum, pedestal or axial fans). Local vacuum collection is the preferred method to control dust. Ensure dust/fibers are not being blown to occupied areas when using fans. Wet methods, additional ventilation or enclosures may also be used (e.g., applying mist and water to the air in areas where suspended fibers are released). Provide adequate cross ventilation when applying adhesive – Work space should be $\geq 1,000 \text{ ft}^3$. <p>Administrative Controls</p> <ul style="list-style-type: none"> Substitute type of insulation to one that doesn't create a particle/fiber hazard. After performing work and doffing PPE, wash hands before eating or smoking. Obtain and review MSDS for all products/materials. <p>Personal Protection Equipment (PPE) for handling FOAMGLAS[®]</p> <ul style="list-style-type: none"> Wear leather/heavy gloves or rubber impregnated canvas gloves for abrasion protection when handling insulation. Wear nitrile gloves under leather gloves when handling adhesive. Avoid other than incidental gloved contact with chemicals. Wear long sleeve shirt. Wear dust goggles which comply with ANSI Z87.1. Respiratory Protection may be required if adequate ventilation can not be achieved. Contractors are required to have a written Respiratory Protection Program when respirators are worn. <p> Stop work and contact IH staff for assessment of work if controls are not adequate at controlling particulates (e.g., suspended dust visible in work area) and respiratory protection is not being worn.</p>





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<p>18. (c) Insulation - Encapsulated fiberglass insulation</p>	<p>(a) Cutting and Installing Encapsulated fiberglass insulation</p> <ul style="list-style-type: none"> • Skin exposure • Inhalation - Uncontrolled release of airborne fibers 	<p> Contact IH for assessment if installing in a confined or enclosed area with very limited ventilation or, based on experience, you are not sure if you have adequate ventilation to control exposure.</p> <p>Engineering Controls:</p> <ul style="list-style-type: none"> • During cutting or abrading ensure that there is adequate general or local ventilation (HEPA vacuum, pedestal or axial fans). • Local vacuum collection is the preferred method to control dust. • Ensure dust/fibers are not being blown to occupied areas when using fans. • Wet methods, additional ventilation or enclosures may also be used (e.g., applying mist and water to the air in areas where suspended fibers are released). <p>Administrative Controls</p> <ul style="list-style-type: none"> • Substitute type of insulation that doesn't create a particle/fiber hazard. • Ensure encapsulated wrap is not punctured or torn during installation process. • After performing work and doffing PPE, wash hands before eating or smoking. • Minimize time of exposure and skin contact when working with fiberglass. • Obtain and review MSDS for all products/chemicals. <p>Personal Protection Equipment (PPE)</p> <ul style="list-style-type: none"> • Wear leather/heavy gloves or rubber impregnated canvas gloves for abrasion protection. • Wear long sleeve shirt. • Wear safety glasses with side shields when cutting, grinding, crushing or drilling or goggles when performing these tasks in windy/dusty conditions. • Respiratory Protection may be required if adequate ventilation can not be achieved. • Contractors are required to have a written Respiratory Protection Program when respirators are worn. <p> Stop work and contact IH staff for assessment of work if controls are not adequate at controlling particulates (e.g., suspended dust/fibers visible in work area) and respiratory protection is not being worn.</p>
<p>18. (d) Insulation - Man-made fiber, fiberglass (MMF).</p>	<p>(a) Cutting and installing Man-made fiber, fiberglass (MMF)</p> <ul style="list-style-type: none"> • Inhalation (Uncontrolled release of airborne fibers) • Skin exposure 	<p> Contact IH for assessment if installing in a confined or enclosed area with very limited ventilation or, based on experience, you are not sure if you have adequate ventilation to control exposure.</p> <p>Engineering Controls:</p> <ul style="list-style-type: none"> • Ensure that there is adequate general or local ventilation (HEPA vacuum, pedestal or axial fans). • Local vacuum collection is the preferred method to control dust. • Ensure dust/fibers are not being blown to occupied areas when using fans. • Wet methods, additional ventilation or enclosures may also be used (e.g., applying mist and water to the air in areas where suspended fibers are released).



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		<p>Administrative Controls.</p> <ul style="list-style-type: none"> • Substitute type of insulation that doesn't create a particle/fiber hazard • After performing work and doffing PPE, wash hands before eating or smoking. • Obtain and review MSDS for all products/materials. <p>Personal Protection Equipment (PPE)</p> <ul style="list-style-type: none"> • Wear leather/heavy gloves or rubber impregnated canvas gloves for abrasion protection. • Wear dust goggles which comply with ANSI Z87.1. • Wear long sleeve shirt. <p> Stop work and contact IH staff for assessment of work if controls are not adequate at controlling particulates (e.g., suspended dust/fibers visible in work area) and respiratory protection is not being worn.</p>
<p>18. (e) Insulation - Mineral fiber batts.</p>	<p>(a) Installing Mineral fiber batts:</p> <ul style="list-style-type: none"> • Skin exposure • Inhalation 	<p> Contact IH for assessment if installing in a confined or enclosed area with very limited ventilation or, based on experience, you are not sure if you have adequate ventilation to control exposure.</p> <p>Engineering Controls:</p> <ul style="list-style-type: none"> • Ensure that there is adequate general or local ventilation (HEPA vacuum, pedestal or axial fans). • Local vacuum collection is the preferred method to control dust. • Ensure dust/fibers are not being blown to occupied areas when using fans. • Wet methods, additional ventilation or enclosures may also be used (e.g., applying mist and water to the air in areas where suspended fibers are released). <p>Administrative Controls.</p> <ul style="list-style-type: none"> • Substitute type of insulation that doesn't create a particle/fiber hazard • After performing work and doffing PPE, wash hands before eating or smoking. • Obtain and review MSDS for all products/materials. <p>Personal Protection Equipment (PPE)</p> <ul style="list-style-type: none"> • Wear leather/heavy gloves or rubber impregnated canvas gloves for abrasion protection. • Wear dust goggles which comply with ANSI Z87.1. • Wear long sleeve shirt. <p> Stop work and contact IH staff for assessment of work if controls are not adequate at controlling particulates (e.g., suspended dust/fibers visible in work area) and respiratory protection is not being worn.</p>
<p>18. (f) Insulation – Placing MDI insulation on pipe</p>	<p>(a) Mixing 2-part solution</p> <ul style="list-style-type: none"> • Skin exposure to MDI – may cause sensitization • Inhalation of vapors <p>(b) Spraying</p> <ul style="list-style-type: none"> • Skin exposure to MDI – may 	<p> Contact IH for assessment if installing in a confined or enclosed area with very limited ventilation or, based on experience, you are not sure if you have adequate ventilation to control exposure.</p> <p>Engineering Controls for mixing and spraying:</p> <ul style="list-style-type: none"> • Use engineering controls (distance or mixing in hose) to isolate worker from


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	<p>cause sensitization</p> <ul style="list-style-type: none"> Inhalation of vapors 	<p>the separate components prior to mixing.</p> <ul style="list-style-type: none"> When hand mixing solution, do so in a well ventilated area – preferable outside in an open area (not in a trench). <p>Administrative Controls.</p> <ul style="list-style-type: none"> Personal monitoring may be required to ensure engineering controls are adequate to prevent exposure over the occupational exposure limit. After performing work and doffing PPE, wash hands before eating or smoking. Obtain and review MSDS for all products/materials. <p>Personal Protection Equipment (PPE) for mixing and spraying:</p> <ul style="list-style-type: none"> Wear butyl, neoprene, nitrile or PVC gloves. Avoid other than incidental gloved contact with chemicals. Remove and replace gloves when gloves contact chemicals. Wear long sleeve shirt and long pants. Protect skin from contact. Wear chemical splash goggles; in addition to splash goggles use a face shield when there is a splash hazard (e.g., pouring). Respiratory Protection may be required if adequate ventilation can not be achieved. Contractors are required to have a written Respiratory Protection Program when respirators are worn. <p> Stop work and contact IH staff for assessment of work if controls are not adequate at controlling particulates or vapors (e.g., suspended dust/fibers visible in work area or strong/irritating odors) and respiratory protection is not being worn.</p>
<p>18. (g) Insulation - Excessive demo of distressed non-asbestos containing insulation</p>	<p>(a) Demo of insulation</p> <ul style="list-style-type: none"> Inhalation (Uncontrolled release of airborne fibers) Skin exposure 	<p> Contact IH for assessment if installing in a confined or enclosed area with very limited ventilation or, based on experience, you are not sure if you have adequate ventilation to control exposure.</p> <p>Use the Facilities Asbestos (Lead) Implementation Plan (FAIT) to perform the following activities:</p> <ul style="list-style-type: none"> Identification of known or suspect Asbestos Containing Material (ACM) Assessment of condition of known or suspect ACM Asbestos abatement Disposal of asbestos waste <p>Engineering Controls:</p> <ul style="list-style-type: none"> Ensure that there is adequate general or local ventilation (HEPA vacuum, pedestal or axial fans). Local vacuum collection is the preferred method to control dust. Ensure dust/fibers are not being blown to occupied areas when using fans. Wet methods, additional ventilation or enclosures may also be used (e.g., applying mist and water to the air in areas where suspended fibers are released). <p>Administrative Controls.</p> <ul style="list-style-type: none"> Substitute type of insulation that doesn't create a particle/fiber hazard


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		<ul style="list-style-type: none"> • After performing work and doffing PPE, wash hands before eating or smoking. • Obtain and review MSDS for all products/materials. <p>Personal Protection Equipment (PPE)</p> <ul style="list-style-type: none"> • Wear leather/heavy gloves or rubber impregnated canvas gloves for abrasion protection. • Wear dust goggles which comply with ANSI Z87.1. • Wear long sleeve shirt. <p> Stop work and contact IH staff for assessment of work if controls are not adequate at controlling particulates (e.g., suspended dust/fibers visible in work area) and respiratory protection is not being worn.</p>
19. Laser Leveling activities (Class 1, 2, 3A Lasers)	Interference with aircraft operations.	<ul style="list-style-type: none"> • Lasers must be correctly labeled. • Do not direct into navigable airspace or towards airport ground activities (e.g., runways, taxiways).
20. (a) Operating Heavy equipment – backhoes, forklifts, truck - outdoors	Operating heavy equipment outdoors – excessive noise, and dust when operating in dusty environments	<p>Engineering Controls</p> <ul style="list-style-type: none"> • Use adequate dust suppression methods (application of water) during travel or excavation. <p>Administrative Controls</p> <ul style="list-style-type: none"> • Curtail work when too dry and windy to control the dust. <p>Personal Protective Equipment (PPE)</p> <ul style="list-style-type: none"> • Wear earplugs or muffs with NRR \geq 25dBA.[†]
20. (b) Operating Heavy equipment – backhoes, forklifts, truck - indoors	Operating heavy equipment indoors - excessive noise and build up of high concentrations of carbon monoxide gas [CO] and/or other by-products of combustion.	<p><input type="checkbox"/> Contact IH for initial CO area monitoring support.</p> <p>Engineering Controls</p> <ul style="list-style-type: none"> • Ensure adequate ventilation (e.g., open doors, general ventilation). • Use direct-reading instrument monitoring for CO to determine whether ventilation is adequate. <p>Administrative Controls</p> <ul style="list-style-type: none"> • Use of electric forklifts, trucks, etc when working indoors will eliminate CO and possibly eliminate excessive noise exposure. • Obtain and review MSDS for carbon monoxide. <p>Personal Protective Equipment</p> <ul style="list-style-type: none"> • Wear earplugs or muffs with NRR of \geq 25 dBA[†]
21. (a) Paint Prep using scraping or sanding – Paint does not contain lead, cadmium, chromate or other toxic metals.	Nuisance dust – Minimal IH hazard	No additional IH Controls





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<p>21. (b) Painting – Paint preparation (scraping, sanding, etc...) lead, cadmium, chromate or other toxic metal containing paint.</p>	<p>Inhalation of lead, chromate, etc. dust from:</p> <ul style="list-style-type: none"> • Manual sanding or scraping • Mechanical sanding or scraping 	<p>Administrative Controls</p> <p> Facilities Asbestos (Lead) Implementation Plan (FAIT) shall be contacted to abate the paint unless a non-abrasive low hazard chemical paint remover (e.g., Peel Away) can be used. FAIT provides the following services:</p> <ul style="list-style-type: none"> • Assessment of condition of known or suspect lead/chromate/cadmium containing paint. • Abatement hazardous paints. • Disposal of hazardous containing waste.
<p>21. (c) Painting – lead, cadmium, chromate or other toxic metal containing paint.</p>	<p>Inhalation of lead, chromate, cadmium ,etc. containing aerosol:</p> <ul style="list-style-type: none"> • Brush or roller application • Spray application 	<p>Brush or roller:</p> <ul style="list-style-type: none"> • Utilize spray booth when feasible. • Minimum PPE – nitrile gloves, safety glasses with side shields, coveralls (cloth or Tyvek™). <p>Spray:</p> <ul style="list-style-type: none"> • Use brush or roller instead of spraying when feasible. • Utilize spray booth when feasible. • Minimum PPE – half face respirator with HEPA/Organic vapor cartridge and mist prefilter, nitrile gloves, splash goggles, coveralls (cloth or Tyvek™), cap/hood. • Contractors are required to have a written Respiratory Protection Program when respirators are worn. • Initial personal monitoring may be required to ensure engineering controls are adequate to prevent exposure over the occupational exposure limit and to meet OSHA expanded health standard requirements. <p>Administrative Controls</p> <ul style="list-style-type: none"> • Substitute with a toxic metal free paint. • Obtain and review MSDS for all paint products used.
<p>21. (d) Painting – Brush and/or roller with latex, alkyd, oil or gloss paint</p>	<p>Skin/eye contact and inhalation due to brushing or rolling paint containing:</p> <p>Latex (propylene glycol, ethylene glycol, texanols, butoxyethoxyethanol, butyl propionate, alcohols, and aldehydes)</p> <p>Alkyd, Oil, Gloss (benzenes, xylenes, naphthalene, heavy alkanes)</p>	<p><input type="checkbox"/> Contact IH for assessment if performing in a confined or enclosed area with very limited ventilation or, based on experience, you are not sure if you have adequate ventilation to control exposure.</p> <p>Engineering Controls</p> <ul style="list-style-type: none"> • Ensure adequate cross ventilation – Open doors/windows and/or use additional LEV (pedestal or axial fans) to create cross ventilation when working indoors. • Ensure vapors are not being blown to occupied areas when using fans. • Prevent HVAC recirculation of vapors during curing process – reduce/shutdown system or use 100% exhaust. <p>Administrative Controls</p> <ul style="list-style-type: none"> • Substitute low VOC paints when possible. • Work during off-hours when feasible. • Obtain and review MSDS for all paint products





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		<p>Personal Protective Equipment</p> <ul style="list-style-type: none"> • Safety glasses with side shields, nitrile gloves, and coveralls (cloth or Tyvek™); splash goggles when there is a potential for splashing (e.g., pouring paints). • Half face respirator with organic vapor cartridges and mist pre-filter may be required for alkyd, oil or gloss paint applications if ventilation is not adequate. • Contractors are required to have a written Respiratory Protection Program when respirators are worn. <p> Stop work and contact IH staff for assessment of work if controls are not adequate at controlling vapors (e.g., strong/irritating odors in work area).</p>
<p>21. (e) Spray painting Epoxy or polyurethanes - outside</p>	<p>Skin/eye contact due to liquid splash Inhalation due to paint aerosols and/or vapors</p>	<p> Contact IH for assessment if based on experience, you are not sure if you have adequate ventilation to control exposure.</p> <p>Engineering Controls</p> <ul style="list-style-type: none"> ○ Ensure adequate natural ventilation. If performing in a trench, electrical vault, manhole, etc., supplement ventilation with mechanical supply or exhaust as appropriate. Other outside work may require fans, etc. in addition to natural ventilation depending on local wind. <p>Administrative Controls</p> <ul style="list-style-type: none"> • Substitute low VOC paints when possible. • Obtain and review MSDS for all paint products <p>Personal Protective Equipment</p> <ul style="list-style-type: none"> • Safety glasses with side shields, nitrile gloves, and coveralls (cloth or Tyvek™). • Wear splash goggles when there is a potential for splashing (e.g., pouring paints). • Half face respirator with Organic vapor cartridges and mist pre-filter may be required if ventilation is not adequate. • Contractors are required to have a written Respiratory Protection Program when respirators are worn. <p> Stop work and contact IH staff for assessment of work if controls are not adequate at controlling vapors (e.g., strong/irritating odors in work area).</p>
<p>21. (f) Spray painting Epoxy or polyurethanes - indoors</p>	<p>Skin/eye contact due to liquid splash Inhalation due to paint aerosols and/or vapors</p>	<p> Contact IH for assessment if performing in a confined or enclosed area with very limited ventilation or, based on experience, you are not sure if you have adequate ventilation to control exposure.</p> <p>Engineering Controls</p> <ul style="list-style-type: none"> • Ensure adequate cross ventilation – Open doors/windows and/or use additional LEV (pedestal or axial fans) to create cross ventilation when working indoors. • Ensure vapors are not being blown to occupied areas when using fans. • Prevent HVAC recirculation of vapors during curing process –


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		<p>reduce/shutdown system or use 100% exhaust.</p> <p>Administrative Controls</p> <ul style="list-style-type: none"> • Substitute low VOC paints when possible. • Use paint booth whenever feasible. • Work during off-hours when feasible. • Obtain and review MSDS for all paint products <p>Personal Protective Equipment</p> <ul style="list-style-type: none"> • Safety glasses with side shields, nitrile gloves, and coveralls (cloth or Tyvek™). • Wear splash goggles when there is a potential for splashing (e.g., pouring paints). • Half face respirator with Organic vapor cartridges and mist pre-filter may be required for alkyd, oil or gloss paint applications if ventilation is not adequate. • Contractors are required to have a written Respiratory Protection Program when respirators are worn. <p> Stop work and contact IH staff for assessment of work if controls are not adequate at controlling vapors (e.g., strong/irritating odors in work area).</p>
<p>21. (g) Spray painting latex</p>	<p>Skin/eye contact due to liquid splash Inhalation due to paint aerosols and/or vapors</p>	<p> Contact IH for assessment if performing in a confined or enclosed area with very limited ventilation.</p> <p>Engineering Controls</p> <ul style="list-style-type: none"> • Ensure adequate cross ventilation – Open doors/windows and/or use additional LEV (pedestal or axial fans) to create cross ventilation when working indoors. • Ensure vapors are not being blown to occupied areas when using fans. • Prevent HVAC recirculation of vapors during curing process – reduce/shutdown system or use 100% exhaust. <p>Administrative Controls</p> <ul style="list-style-type: none"> • Work during off-hours when feasible. • Obtain and review MSDS for all paint products. <p>Personal Protective Equipment</p> <ul style="list-style-type: none"> • Safety glasses with side shields, nitrile gloves, and coveralls (cloth or Tyvek™). • Wear splash goggles when there is a potential for splashing (e.g., pouring paints). <p> Stop work and contact IH staff for assessment of work if controls are not adequate at controlling vapors (e.g., strong/irritating odors in work area).</p>
<p>22. Pesticide/fertilizer Application</p>	<p>Splash or spray to eyes/skin, or inhalation of chemicals from pesticides or fertilizers during:</p> <ul style="list-style-type: none"> • Mixing and loading • Application 	<p> Coordinate all pesticide applications with the SNL Ecology Contact. Contact IH staff or supervisor for specific glove material.</p> <p>Administrative Control</p> <ul style="list-style-type: none"> • EPA Certified Applicators license, or be under direct supervision of one, is



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		<p>required.</p> <ul style="list-style-type: none"> • Obtain and review MSDSs for all products/materials. • ALL containers must be properly labeled. <p>Personal Protective Equipment</p> <ul style="list-style-type: none"> • Closed mixing systems or enclosed cabs on application vehicles do not require coveralls. • Mixing and loading: full-length pants, long-sleeved shirt, rubber apron or coveralls (cloth or disposable), rubber boots (no leather shoes), goggles & face shield, appropriate unlined gloves (i.e., Round Up® use 4H™; Guthion use nitrile or neoprene). • Applying pesticide or fertilizer by spraying: coveralls (cloth or disposable), rubber boots (no leather shoes), splash goggles & face shield, appropriate unlined gloves (i.e., for Round Up® use 4H™; Guthion use nitrile or neoprene).
23. Potholing	<p>(a) Mechanical Potholing with Vacuum truck</p> <ul style="list-style-type: none"> • Excessive noise <p>(b) Hand Potholing</p> <ul style="list-style-type: none"> • Minimal IH related hazards 	<p>Personal Protection Equipment:</p> <ul style="list-style-type: none"> • Wear earplugs or muffs with NRR ≥ 30 dBA[†] when performing mechanical potholing with a vacuum truck.
24. Powder actuated tools	<p>Operating Power Actuated Tools</p> <ul style="list-style-type: none"> • Excessive noise 	<p>Administrative Controls:</p> <ul style="list-style-type: none"> • Do not leave power actuated tools unattended (> 25 feet) <p>Personal Protection Equipment:</p> <ul style="list-style-type: none"> • Wear earplugs or muffs with NRR ≥ 30 dBA[†]
25. Refrigerant work - Replacing refrigerant with chloro, fluoro hydrocarbons or Preventative Maintenance (PM)	<p>Skin/eye contact and inhalation of refrigerant gases during:</p> <ul style="list-style-type: none"> • Draining and recharging of refrigerant systems. • Preventative Maintenance check for proper operation, absence of leaks and pressure readings of refrigerant systems. 	<p> Work on refrigerant systems must be performed by Refrigerant Technicians with EPA Certifications and trained in the use of leak and portable gas detection equipment.</p> <p>Administrative Controls:</p> <ul style="list-style-type: none"> • Obtain and review MSDS for all refrigerant gases • Monitor for leakage in area with permanent monitoring or portable instruments for oxygen displacement or for the specific refrigerant. <p>Personal Protection Equipment:</p> <ul style="list-style-type: none"> • Minimum PPE: Safety glasses with side shields and a face shield; and gloves (Viton™ or other co-polymer laminate material under thermal protection gloves). Use splash goggles and face shield when a splash or spray hazard exists.
26. (a) Roofing – Hot Petroleum asphalt	<p>a) Application (mopped or mechanically spread) asphalt at 112 to 162°C (235 to 325°C):</p> <ul style="list-style-type: none"> • Inhalation hazards • Contact burn hazards • Heat stress <p>b) Operating the asphalt kettle</p>	<p>Engineering Controls:</p> <ul style="list-style-type: none"> • Use fume-suppressing asphalts when feasible. • Use mechanical felt-laying machines which have insulated lid covers. • Use pedestal or axial fans to reduce exposures. • Make sure the fan blows air away from workers. • Ensure fumes are not being blown to occupied areas when using fans.





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	<ul style="list-style-type: none"> • Inhalation hazards • Contact burn hazards • Heat stress 	<ul style="list-style-type: none"> • Keep all cords and fans out of the workers' walking paths. • Make sure that electrical connections for fans are grounded. <p>Administrative Controls:</p> <ul style="list-style-type: none"> • Maintain proper asphalt equiviscous temperature (EVT) plus or minus 25° F to reduce exposure to asphalt fumes. • Reduce the number of times the lid is opened. • Monitor for early signs of the onset of heat stress while working. Any one sign of heat stress is: blurred vision, fainting, pale skin, profuse sweating, nausea, vomiting and headaches. • Ensure adequate breaks and fluids are taken, and shade provided as needed. • Place kettle away from air intakes, doors and windows. • Place kettle where the operator and workers will be least exposed to the fumes. • If buckets are used, take the following precautions: <ul style="list-style-type: none"> • Use buckets with half lids. • Fill buckets only ¾ full. • Obtain hot work permit if open flame is used. • Obtain and review MSDS for products/materials. <p>Personal Protective Equipment (PPE):</p> <ul style="list-style-type: none"> • Wear splash goggles and face shield when working near kettle or at risk of a splash hazard. • Wear safety glasses or splash goggles when risk of splash is minimal (e.g., away from kettle, mechanically spreading asphalt). • Loose long cotton sleeve and pant (no cuff) clothing. • Thermally insulated gloves with gauntlets. <p> Stop work and contact IH staff for assessment of work if controls are not adequate at controlling vapors (e.g., strong/irritating odors in work area).</p>
<p>26. (b) Roofing – Spray epoxy (MDI/TDI)</p>	<p>Spraying epoxy roofing material:</p> <ul style="list-style-type: none"> • Inhalation • Skin/eye exposure 	<p> Contact IH for assessment if, based on experience, you are not sure if you have adequate ventilation.</p> <p>Engineering Controls for mixing and spraying:</p> <ul style="list-style-type: none"> • Use engineering controls (distance or mix in hose) to isolate worker from the separate components prior to mixing. • Hand mixing solution is not recommended and if it is used then it must be done in a well ventilated area – preferable outside in an open area (not in a trench) or using local exhaust. • Personal monitoring may be required to ensure engineering controls are adequate to prevent exposure over the occupational exposure limit. <p>Administrative Controls.</p> <ul style="list-style-type: none"> • Wash hands and face after doffing PPE. • Obtain and review MSDS for products/materials. <p>Personal Protection Equipment (PPE) for mixing and spraying:</p>




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		<ul style="list-style-type: none"> • Wear butyl, nitrile, and neoprene or PVC gloves. • Avoid other than incidental gloved contact with chemicals. Remove and replace gloves when gloves contacts chemicals. • Wear long sleeve shirt and long pants. Tyvek coveralls are preferred. Protect skin from contact. • Wear splash goggles with a face shield.  Stop work and contact IH staff for assessment of work if controls are not adequate at controlling vapors (e.g., strong/irritating odors in work area).
27. Sewer Work – Includes sump	<ul style="list-style-type: none"> • Entry into confined spaces • Physical contact with space and/or equipment that is or was in contact with sewage 	 Sewer systems are Permit-Required Confined Spaces. Refer to Confined Space Entry for additional information. Administrative Controls: <ul style="list-style-type: none"> • Follow all permit-required confined space entry procedures (e.g. atmospheric monitoring; ventilation) as required. • Wash exposed after doffing PPE. Personal Protective Equipment: <ul style="list-style-type: none"> • Minimum PPE: Splash goggles; and a face shield in addition to the goggles when splash hazard exists; double nitrile gloves (work gloves can be used over nitrile and then disposed of as waste); booties or rubber boots; and a Saranex suit; hood on coveralls when entering sewer. • Rinse reusable PPE with potable water, then wash with warm water and detergent, allowed to air dry.  If skin contact with sewage does occur, immediately wash affected area with soap and water.
28. Soldering – copper pipe or Electrical components	Dermal contact with solder containing lead or silver; solder fluxes (may be corrosive)	Administrative Controls: <ul style="list-style-type: none"> • Wash hands after removing gloves. • Obtain and review MSDS for all chemicals. Personal Protection Equipment (PPE): <ul style="list-style-type: none"> • Wear nitrile gloves. • Wear safety glasses with side shields.
29. Vacuum systems	(a) Breaching Lines Residual chemicals found in pipes <ul style="list-style-type: none"> • Inhalation • Skin Exposure (b) Maintain or replace pumps Residual chemicals found in pump and working with lubricants/solvents <ul style="list-style-type: none"> • Inhalation • Skin Exposure 	 Refer to JHSA for specific site hazards. Engineering Controls: <ul style="list-style-type: none"> • When breaching a vacuum system, it should run for 8 hours (disconnected from labs) without introduction of chemicals before opening. • If using mechanical tools and dust will be generated, use wet methods or HEPA vacuum to contain dust. • When possible use hand tools instead of mechanical tools to reduce dust generation. Administrative controls: <ul style="list-style-type: none"> • Wash hands after doffing gloves. Personal Protection Equipment (PPE):

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		<ul style="list-style-type: none"> • Wear nitrile gloves under leather gloves. • Wear safety glasses with side shields; • Wear splash goggles, if liquid may be splashed from drain during breach. • Wear lab coat or Tyvek top with long sleeves.  Stop work and contact IH staff for assessment of work if controls are not adequate at controlling vapors (e.g., strong/irritating odors in work area).
30. (a) Water treatment systems – Test water	Taking sample of water and adding test reagents: <ul style="list-style-type: none"> • Dermal exposure 	Administrative controls: <ul style="list-style-type: none"> • Wash hands after doffing gloves. • Obtain and review MSDS for all chemicals/reagents. Personal Protection Equipment (PPE): <ul style="list-style-type: none"> • Wear nitrile gloves. • Wear safety glasses with side shields; or goggles if there is a splash hazard.
30. (b) Water treatment systems – Adding chemical to water treatment systems	Manually adding chemical to water system: <ul style="list-style-type: none"> • Skin/Eye Exposure • Inhalation 	Engineering Controls: <ul style="list-style-type: none"> • Only add chemicals by hand in a well ventilation area. Administrative controls: <ul style="list-style-type: none"> • Wash hands after doffing gloves. • Obtain and review MSDS for all chemicals/reagents. Personal Protection Equipment (PPE): <ul style="list-style-type: none"> • Wear nitrile gloves. • Wear safety glasses with side shields; or goggles if there is a splash hazard. • Wear a face shield of splash goggles if it is not a closed system or any other splash hazard exists.  Stop work and contact IH staff for assessment of work if controls are not adequate at controlling vapors (e.g., strong/irritating odors in work area).
30. (c) Water treatment systems – Preventive maintenance on pumps (oils)	Minimal IH related hazards	No Additional IH Controls
31. Working outdoors	Stepping into heavy brush or placing hands/feet into unseen areas (e.g., meter boxes, gloves or shoes, caps to gas cylinders): <ul style="list-style-type: none"> • Insect bites • Snake bites 	Administrative Controls: <ul style="list-style-type: none"> • Be aware of your surroundings. • If you observe a snake, remain calm, back away slowly and contact Telecom 844-4571 for removal. Personal Protection Equipment (PPE): <ul style="list-style-type: none"> • Wear long pants/leather chaps and long sleeves. • Wear ankle high hiking type boots when working in areas of high brush. • Wear insect repellent, if working in an area with a large insect population.
32. Welding, Thermal Cutting or Brazing	Welding, thermal cutting, or brazing outside, inside, or confined space: <ul style="list-style-type: none"> • Electrical shock • Thermal burns 	 A Welding, Cutting and Brazing Control (WCBC) Permit must be obtained from an IH staff prior to conducting work. <ul style="list-style-type: none"> • Welding, cutting or brazing with any of these metals in or on (coatings) the base metal, in the filler metal or consumables (e.g., electrodes or wire)

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	<ul style="list-style-type: none">• UV/visible light exposure to eyes/skin• Inhalation of metal fumes and gasses	<p>requires local exhaust ventilation.</p> <ul style="list-style-type: none">➤ Lead coatings/plating.➤ Cadmium coatings/plating.➤ Stainless steel or chromium steel coatings or alloys, electrodes in 300 series. <ul style="list-style-type: none">• Local exhaust ventilation (welding fume exhauster or ducted fan) shall be used when welding indoors for major structural or piping projects. Ducted fans must exhaust to an outside location. Suction end must be within 6 inches or the burn area.• Respiratory Protection may be required if adequate ventilation can not be achieved.• Contractors are required to have a written Respiratory Protection Program when respirators are worn.• Personal monitoring may be required to ensure engineering controls are adequate to prevent exposure over the occupational exposure limit.
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* Local Exhaust Ventilation

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