

In accordance with subcontract general provisions, non-construction subcontractors are required to develop task-specific Activity Hazard Analysis(s) (AHA) which address the hazards specified in the Environmental Safety and Health Clauses defined within Section H, Special Provisions of the agreement and are associated with the project scope of work. AHAs are developed using Subcontractor Activity Hazard Analysis (AHA) form and after completion, are submitted to the UT-Battelle Technical Project Officer (TPO) for review and approval prior to commencement of work. The AHAs must include the following information:

- Description of the activities/tasks to be performed for the entire project scope of work
- Identification of potential hazards and subcontract requirements associated with the activity/task
- A list of the subcontractor's planned controls to eliminate or mitigate the identified hazards

### Recommendations for Conducting an AHA

NOTE: See [Example Subcontractor Activity Hazard Analysis](#)

1. Break down scope of activities/tasks into steps.
  - List each step in the order it is performed starting with mobilization on-site
  - Begin each step with a verb
  - Do not make the steps too broad or too detailed
  - Whenever possible, review the steps with the workers who have performed the same or similar job to ensure job steps are not left out
2. Identify the hazards of each step. For each step, ask the following questions to identify, analyze and categorize potential hazards for the purpose of development of appropriate controls to prevent/mitigate hazards:
  - What can go wrong?
  - What are the consequences?
  - How could it happen?
  - What are other contributing factors?
  - How likely is it that the hazard will occur?
  - What contractual and regulatory requirements are associated with the hazard?
  - Whenever possible, review the list of hazards with the workers who have performed the same or similar job to ensure all potential hazards are identified.
3. Specify the control methods that will be used to eliminate or reduce the hazards and comply with subcontract requirements.
  - The hierarchy of hazard control must be considered when developing controls. The hazard controls in the hierarchy are, in order of decreasing effectiveness: Elimination, substitution, engineering controls, administrative controls and personal protective equipment.
  - Ensure administrative controls include required work permits, inspections, training and medical surveillance, where applicable.
  - Be specific when identifying the type of required personal protective equipment. Examples include: Wear hearing protection device with minimum NRR of 20 dBA, wear Ansell Nitrile SOL-VEX gloves, etc.
  - Whenever possible, review the hazard controls with the workers who have performed the same or similar step to ensure all hazards methods of control have been identified.

# EXAMPLE

Subcontractor Name: XXXXXXXXXXXXXXXXXXXXX

Project Title and Subcontract Number: Example

Description of planned activities/tasks for the scope-of-work for the entire project:  
 Replace floor in glovebox contamination with unbound engineered nanoparticles.

Hazard / Regulatory Requirements	ES&H Clause	Worker Information and Requirements
Unbound Engineered Nanoparticles  DOE Order 456.1A	Seller's employees, lower-tier subcontractors, and agents identified as Nanoparticle Workers must comply with all UNP requirements as provided in the Company-provided training and work control documents including appropriate controls to minimize the potential for exposure to unbound engineered nanoparticles. Seller, its employees, lower-tier subcontractors, and agents, who may be exposed through inhalation or dermal exposure to unbound engineered nanoparticles (UNP) will be considered as Nanoparticle Workers. Prior to performing exposure-potential activities, Nanoparticle Workers and their on-site supervisor must complete ORNL training "Nanoscale ES&H for R&D Operations and Support Services." Seller must offer their employees, who are identified as Nanoparticle Workers, a baseline medical examination in accordance with DOE Order 456.1 The Safe Handling of Unbound Engineered Nanoparticles, Attachment 1 Company will provide UNP exposure monitoring for all Nanoparticle Workers, including Seller's employees, lower-tier subcontractors, and agents. Results of exposure monitoring will be provided to the Seller upon request. Company will inform any identified Nanoparticle Worker of the requirements of the Medical Surveillance portion of this Order but it is the sole responsibility of the Seller to provide adequate Medical Surveillance.	<ol style="list-style-type: none"> <li>1. Worker shall have completed the ORNL Nanoscale ES&amp;H training prior to starting work.</li> <li>2. Worker shall ensure an Exposure Assessment has been performed and proper work control is in place. If ORNL is not dictating the work control, then the SME shall review proposed work control before work is conducted.</li> <li>3. Worker shall ensure their employer has enrolled them in their companies' medical surveillance program.</li> <li>4. Worker shall post areas where UNP are handled and post PPE requirements.</li> <li>5. Worker shall place UNP in a container closure that prevents leakage; package and label container with UNP.</li> <li>6. Worker shall contact ORNL's Technical Project Officer to have Waste Representative present to ensure waste is managed in accordance with ORNL's Waste Management procedures.</li> </ol>

# EXAMPLE

## Subcontractor Activity Hazard Analysis (AHA)

Activity	Hazard	Controls
<p>Repair glovebox used for nanomaterial research.</p>	<p>Unbound engineered nanoparticles</p>	<p><b>Elimination, substitution, engineering controls:</b>  <input checked="" type="checkbox"/> HEPA-Filtered vacuum cleaner    <input checked="" type="checkbox"/> Laboratory hood or glove box    <input type="checkbox"/> Air Handler, HEPA filtered  <input type="checkbox"/> Shrouded tool with HEPA filter    <input type="checkbox"/> Continuous wetting (dust control)    <input type="checkbox"/> Containment  <input type="checkbox"/> Isolation    <input type="checkbox"/> General Ventilation    <input type="checkbox"/> Other Local Exhaust System:            Other: Specify below</p> <hr/> <p><b>Administrative controls</b> (work methods, training, medical, etc.):            Training: Project supervisor(s) and workers shall complete ORNL web-based course Nanoscale ES&amp;H prior to performing any activity with the potential for exposure or contact with unbound engineered nanoparticles (UNPs).             Medical Surveillance: Project workers with the potential for contact or exposure to UNP shall receive a baseline medical examination which includes:  <ul style="list-style-type: none"> <li>• An occupational and medical history update</li> <li>• A physical examination with emphasis on the respiratory system</li> <li>• Specific medical tests (e.g., spirometry, chest X-ray) deemed appropriate by the Subcontractor’s Occupational Physician.</li> </ul>           Posting and Labeling: Post signs on all doors that enter the laboratory during the repair which indicate the hazard, personal protective equipment requirements and administrative control requirements. All containers of waste (e.g. disposal PPE, wet cleaning wipes, etc.), bagged used respirators, the HEPA filtered vacuum cleaner and any other equipment with potential UNP contamination shall be labeled with "Caution" label that states: "Caution Contains Dispersible Nanomaterials Avoid Breathing Dust, Injection and Skin Contact".             Decontamination of equipment and glovebox, shall be conducted in a HEPA-filtered vacuum cleaner and wet Swiffer wipes.</p>

# EXAMPLE

Activity	Hazard	Controls
		<p>Set up work area around glove box using herculite or equivalent to cover floor. Ensure floor covering extends a minimum of 6 feet from glove box. Establish a doffing area at the boundary work area.</p> <p>Prior to demobilization, the exterior of the glovebox, all non-disposable tools/equipment and the floor covering will be decontaminated.</p> <p>No eating, drinking, chewing or applying makeup shall be performed in the work area</p> <p><b>Personal protective equipment</b> - specify the exact type of PPE (e.g. hearing protection device with minimum NRR of 20 dBA, Ansell Nitrile SOL-VEX gloves, etc.): Disposable DuPont™ Tyvek® 600 coverall with hood and feet, shoe covers and two pairs of nitrile exam glove. Full Face APR with P-100 or N-100 cartridges.</p>

AHA Author: John Q Public

Date: 08/02/2018

ES&H/QHSP Representative Concurrence signature: \_\_\_\_\_ Date: \_\_\_\_\_

Technical Procurement Officer (TPO) signature indicates approval of activity-specific hazard controls identified in the subcontractor AHA.

Printed Name/Signature: \_\_\_\_\_ Date \_\_\_\_\_