

Guide for Developing a Construction Job Hazards Analysis (JHA)

LLNL is a safety-conscious workplace and work is highly regulated. As part of your contract to work at LLNL, you will need to provide documentation that you have broken your scope of work down into tasks and identified hazards and controls for each task. This document is called a Job-Hazards Analysis (JHA) and a LLNS approved version will be part of your contract.

The work you perform at LLNL may have two kinds of hazards – **area hazards** that come from the location in which the job is done, and **task hazards** that are the result of performing work tasks. LLNS will communicate the location hazards during solicitation in a document called a Subcontractor Area Hazard Control List (SAHCL, pronounced “satchel”). The SAHCL is also used to document interfaces between LLNS and your work, such as who will be responsible for de-energizing equipment or who will be responsible for disposing of waste. In addition, LLNS will provide a draft JHA as part of the solicitation package. This draft JHA is intended to help you understand the types of tasks and controls that may be required to perform the work. It is not intended to dictate means and methods but may be used as a starting point for the final JHA, which is to be submitted after subcontract award. You are required to partner with LLNS WP&C to appropriately document controls for the identified task-based hazards of your work, based on your means and methods, as well as any controls for area hazards that were assigned to you in the SAHCL, in your final project JHA.

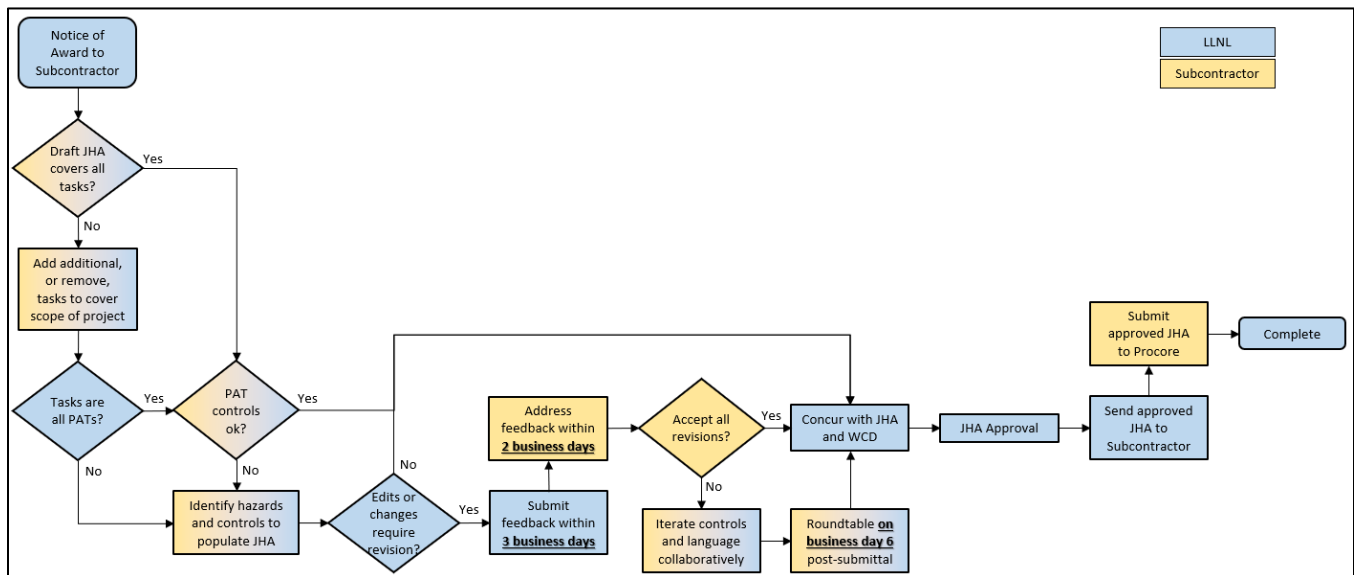


Figure 1: Construction Subcontractor JHA Development Process Map

The JHA for your work will vary in complexity depending upon the type of work. A JHA for a simple equipment installation job might be just a few tasks long, while the JHA for the construction of a new building may be 20 or more tasks long. Regardless of length of the JHA, the below provides a description of the steps illustrated in Figure 1, that will help you to develop a JHA for construction projects at LLNS:

1. Identify the work tasks that are required to complete the scope of work.
 - a) Break the scope of work into the tasks that will be performed.
 - Tasks are distinct activities with similar groupings of hazards (e.g., working at elevated heights, excavation and trenching, demolition of concrete or asphalt).
 - Do not include administrative tasks with either no hazards, or only common everyday hazards, such as driving a non-commercial vehicle, using a computer, or filling out paperwork.
 - b) Factors that should be considered in identifying tasks may include unique hazards, complexity and/or size of the work activity, tasks with discrete subsets of workers, specific training requirements, and duration or sequence of the work.
 - c) It helps to review the drawings as you are identifying tasks:
 - Start with mobilization – How will you get personnel, equipment, access to the work site?
 - Continue to ask “How” to figure out the remainder of tasks – How will you get the HVAC on the roof? How will you cut down the tree? How will you install the conduit?
 - What are the major steps in the process?
 - What utilities need to be connected/disconnected?
 - What testing needs to be done?
 - How will you return the work site to original condition?
 - d) At the end of the process, the collection of tasks must be sufficient to perform the scope of work. If you cannot get the job done by following the tasks, you have probably missed some tasks.
2. Work with the project assigned LLNS CM and a LLNS WP&C Work Planner to review the draft JHA provided as part of solicitation.
3. If additional tasks are required, review the PMO Pre-Analyzed Tasks (PATs) with the project assigned LLNS CM and LLNS WP&C Work Planner.
 - a) The purpose of this review is to determine if PATs can be used for the required tasks.
 - If PATs cover all tasks required, and there is not a need to change controls, then the JHA is approved.
 - If a task is not covered by a PAT, you can work with the project assigned LLNS CM and a LLNS WP&C Work Planner to either create a custom PAT (e.g., add or change controls, remove boundary conditions, modify task description) or create a Custom Task.
4. To create a Custom PAT, provide your required changes to the project assigned LLNS CM and LLNS WP&C Work Planner. They will make the changes requested in the LLNL WP&C Tool.
5. To create a Custom Task, start by utilizing the Blank JHA Template in [Attachment 1](#).
 - a) Input a task title and a task description into the JHA template.
 - The task description should be concise and identify those specific activities that are included in the task.
 - b) Thoroughly review the task to identify hazards, both personnel and environmental.
 - You may use the Hazard Identification Form provided in [Attachment 2](#) of this document to assist in brainstorming the potential hazards associated with a task.

- Hazard descriptions should be a concise summary for each hazard associated with the task, such as:
 - Falls from ladders can result in injury or death.
 - Extended use of hand tools may result in repetitive motion injuries, or strain/sprain injuries.
 - Carbon monoxide is a chemical asphyxiant.
 - Input the hazard descriptions into the “Hazards & Environments Aspects” section of the JHA template.
- c) Identify the controls you will implement for each identified task hazard.
- Controls should be written in a short and understandable manner.
 - Use specific controls.
 - For example, rather than stating that “workers will wear gloves” use “workers will wear disposable 5 mil nitrile gloves”.
 - Controls can be documented in the following sections:
 - Boundary Conditions – Activities that are explicitly prohibited from being performed (e.g., disturbance of asbestos containing material).
 - Prerequisites – Similar to Hold Points, these controls are required to be completed prior to commencing the task. Prerequisites can be a one-time control that is required to be completed prior to commencing a task (e.g., obtaining approval of a fall protection plan) or a daily control required to be completed before starting work (e.g., PIT daily pre-use inspection).
 - First-aid & Emergency Information – Emergency controls (e.g., eye wash station) or emergency information (e.g., emergency notification postings)
 - Engineering Controls – Examples include ventilation systems, guards or interlocks, guardrails
 - Administrative Controls – Examples include corporate procedures, and what workers will do or how the workers will do something (e.g., do not exceed ladder load rating, use water to suppress dust)
 - PPE Controls – Examples include safety glasses, gloves, respiratory protection. However, if the PPE is covered already in the PMO001 PAT, such as safety glasses with side shields, then it is not required to be repeated.
 - Environmental/Waste Controls – Examples may include things such as “do not feed wildlife”, “do not attempt to capture or handle wildlife”, or “characterize all materials prior to disturbance, disposal, or reuse”.
 - Make sure each hazard has at least one control identified to mitigate it.
- d) Identify and document any Pre-Job Talking Points that may be applicable to the task.
- While optional, this section of the JHA template can be helpful in identifying talking points and reminders that can be used by supervisors to address workers and their respective task(s) during the daily SPAs.
6. Provide any Custom Tasks developed in the PMO Blank JHA document to the project assigned LLNS CM and LLNS WP&C Work Planner. They will make the changes requested in the LLNL WP&C Tool.

7. LLNS, including ES&H and facility personnel, will review the Customized PATs and Custom Tasks and document/communicate requests for clarifications, revisions, and language/control changes.
 - a) Your LLNS contact will send you any requests for information or clarification as a list of comments.
8. Respond to any comments or requests for clarification from LLNS and work with the LLNS CM and WP&C Work Planner to revise Custom PATs and Custom Tasks, as necessary.
 - a) Each comment requires a response to show the issue was clearly addressed.
 - b) In some cases, a roundtable meeting may be required to facilitate/expedite resolution to comments. When necessary, your LLNS contact will set up the meeting and request your participation.
9. When the project JHA has been approved by LLNS, the project assigned CM, or delegate, will provide you a PDF of the approved project JHA. Submit the PDF of the project JHA to Procure. The final version will be incorporated into your contract.

Remember that your workers will be contractually obligated to comply with the controls you list in the approved project JHA, so it is best to involve the people who will actually do the job to ensure the controls reflect how they really work.

Attachment 1: Blank JHA Template

Define the Custom Task title here			
<p>Task Description:</p> <p>A concise description of the task, and those specific activities that are included in the task.</p>	<p>Prerequisites:</p> <ul style="list-style-type: none"> • Use this section to identify controls that are required to be completed prior to commencing the task. <ul style="list-style-type: none"> ○ Prerequisites can 	<p>Hazards & Environments Aspects:</p> <ul style="list-style-type: none"> • Use this section to provide a concise summary for each hazard associated with the task. 	<p>Engineering Controls:</p> <ul style="list-style-type: none"> • List engineering controls here <p>Administrative Controls:</p> <ul style="list-style-type: none"> • List administrative controls here
<p>Boundary Conditions, this task does <u>not</u> include:</p> <ul style="list-style-type: none"> • Use this section to exclude activities from the task description. 	<p>be a one-time control that is required to be completed prior to commencing a task (e.g., obtaining approval of a fall protection plan) or a daily control required to be completed before starting work (e.g., performing PFI daily pre-use inspection).</p>		<p>PPE Controls:</p> <ul style="list-style-type: none"> • List PPE controls here <p>Environmental / Waste Controls:</p> <ul style="list-style-type: none"> • List environmental/waste controls here
<p>Related PATs:</p> <p>The following hazards were not analyzed in this task, but may be commonly encountered when performing this work:</p> <ul style="list-style-type: none"> • Not applicable for Custom Tasks 	<p>First-Aid & Emergency Information:</p> <ul style="list-style-type: none"> • Use this section to identify task applicable first-aid controls (e.g., eye wash station) or emergency information (e.g., emergency notifications). 		<p>Training Controls:</p> <ul style="list-style-type: none"> • None • Do not enter anything in this section
<p>Task Notes:</p> <p><i>This is used to document assumptions made during analysis or other technical details.</i></p> <ul style="list-style-type: none"> • None • Do not enter anything in this section 			<p>Pre-Approval Actions:</p> <ul style="list-style-type: none"> • None • Do not enter anything in this section <p>Post-Approval Actions:</p> <ul style="list-style-type: none"> • None • Do not enter anything in this section <p>Ongoing Actions:</p> <ul style="list-style-type: none"> • None • Do not enter anything in this section
			<p>Pre-Job Talking Points:</p> <ul style="list-style-type: none"> • This section can be helpful in identifying talking points and reminders that can be used by supervisors to address workers and their respective task(s) during the daily SPAs. While it can be advantageous to use this section, it is optional.
			<p>RI Reminders:</p> <ul style="list-style-type: none"> • None • Do not enter anything in this section

Attachment 2: Hazard Identification Form

Aviation [INDSFTY]	
<input type="checkbox"/> Non-commercial airliner <input type="checkbox"/> Unmanned Aircraft Systems	
Biological Materials [BIOSFTY]	
Biological Material:	<input type="checkbox"/> RG1 <input type="checkbox"/> RG2, non-Select Agent <input type="checkbox"/> RG2, Select Agent <input type="checkbox"/> RG3, non-Select Agent <input type="checkbox"/> RG3, Select Agent <input type="checkbox"/> Biological Toxins
	<input type="checkbox"/> Human Source Materials <input type="checkbox"/> Regulated Soils/Vegetation <input type="checkbox"/> Insects <input type="checkbox"/> Research Animals
	<input type="checkbox"/> Recombinant/Synthetic Nucleic Acids <input type="checkbox"/> Other
Containment Level:	<input type="checkbox"/> BSL-1 <input type="checkbox"/> BSL-2, non-Select Agent <input type="checkbox"/> BSL-2, Select Agent <input type="checkbox"/> BSL-3 <input type="checkbox"/> ABSL-1 <input type="checkbox"/> ABSL-2 <input type="checkbox"/> ABSL-3
Chemicals [ENVIR,FIREPRO,INDHYG]	
Corrosives:	<input type="checkbox"/> Liquids <input type="checkbox"/> Solids <input type="checkbox"/> Gases <input type="checkbox"/> Powders
Flammables:	<input type="checkbox"/> Liquids <input type="checkbox"/> Solids <input type="checkbox"/> Gases <input type="checkbox"/> Powders
Reactives:	<input type="checkbox"/> Liquids <input type="checkbox"/> Solids <input type="checkbox"/> Gases <input type="checkbox"/> Powders
Specifically Regulated:	<input type="checkbox"/> Liquids <input type="checkbox"/> Solids <input type="checkbox"/> Gases <input type="checkbox"/> Powders
Irritants/Sensitizers:	<input type="checkbox"/> Liquids <input type="checkbox"/> Solids <input type="checkbox"/> Gases <input type="checkbox"/> Powders
Toxics:	<input type="checkbox"/> Liquids <input type="checkbox"/> Solids <input type="checkbox"/> Gases <input type="checkbox"/> Powders
Other:	<input type="checkbox"/> Liquids <input type="checkbox"/> Solids <input type="checkbox"/> Gases <input type="checkbox"/> Powders
<input type="checkbox"/> Materials synthesized 1st time or by novel techniques <input type="checkbox"/> Pesticides <input type="checkbox"/> Pyrophoric Materials	
Electrical	
<input type="checkbox"/> Electrical Equipment <input type="checkbox"/> Capacitors <input type="checkbox"/> Static Electricity	
Elevated Work [INDSFTY]	
<input type="checkbox"/> Aerial Lifts <input type="checkbox"/> Bucket Trucks <input type="checkbox"/> Scissor Lift <input type="checkbox"/> Ladder <input type="checkbox"/> Roof <input type="checkbox"/> Scaffolding <input type="checkbox"/> Towers <input type="checkbox"/> Falling Objects	
Energetic Materials [ENVIR,EXPLSFTY,INDHYG]	
Activity Category:	<input type="checkbox"/> Class 0 (Intentional Initiation) <input type="checkbox"/> Class I (High Accident Potential) <input type="checkbox"/> Class II (Moderate Accident Potential)
	<input type="checkbox"/> Class III (Low Accident Potential) <input type="checkbox"/> Class IV (Insensitive High Explosive Activities)
Bare Explosives	
Quantity:	<input type="checkbox"/> <10mg <input type="checkbox"/> >10mg - <25kg <input type="checkbox"/> Large Charge
Type:	<input type="checkbox"/> Primary <input type="checkbox"/> Secondary <input type="checkbox"/> Insensitive HE <input type="checkbox"/> Group L <input type="checkbox"/> Home Made Explosives
Form:	<input type="checkbox"/> Powder <input type="checkbox"/> Solid <input type="checkbox"/> Liquid <input type="checkbox"/> Slurry
Propellants:	<input type="checkbox"/> Powder <input type="checkbox"/> Solid <input type="checkbox"/> Liquid <input type="checkbox"/> Slurry

Mock / Simulants: Powder Solid Liquid Slurry

Assembly / Device / Article: High Energy Initiator Low Energy Initiator Large Charge Munitions Pyrotechnic Encased/Cased Explosives
 Other

Environmental [ENVIR]

Discharges: to Air to Ground, Soil, Storm Drain of Categorical Waste waters of Process Water to Sanitary Sewer

Disturbances: to Soil to Biological Resources to Cultural, Paleontological Resources

Waste: Hazardous Radiological LLW Radiological TRU Mixed Medical Biohazardous Pathology - Human
 Pathology - Animal Pharmaceutical Trace Chemotherapeutic Universal
 Waste - Non-Red Bagged Biological (NRB) Explosives

Recycling: Regulated Metals Non-Regulated Metals Electronic Equipment Non-Electronic Equipment

Storage ≥ 55 Gallons: Hazardous Materials Waste Equipment with Petroleum Reserves

Ergonomics [INDSFTY]

Awkward Positions Repetition Contact Stress Force (Lifting/Pushing/Pulling/Gripping) Vibration

Fire [FIREPRO]

Ignition Sources: Open Flames Sparks Heat Source Chemical Reaction Combustible Dusts/Powders/Fines

Combustible Loading Impairment of Building Fire Suppression/Alarm System

Firearms [EXPLSFTY,INDSFTY]

Hazardous Energy Source [INDSFTY]

Exposed Conductors: Class 1 Class 2 Class 3 Class 4

Hydraulic Mechanical Pneumatic Chemical Thermal Gravity

Control: De-energized, Cord/Plug De-energized, Simple LOTO De-energized, Complex LOTO Class 2,3,4, EEWP

Hazardous Environments [INDHYG]

Confined Space: NPRCS PRCS (C-5) PRCS (C-7) PRCS (Full Permit)

Oxygen Deficiency / Asphxiants

Hazardous Materials [ENVIR,INDHYG]

Asbestos Refractory Ceramic Fibers Nanomaterials Refrigerants Silica Welding Fumes

Hot/Cold Surfaces [INDSFTY]

Hot Surfaces Cold Surfaces

Mechanical [INDSFTY]

Crush Flying Objects/Debris Pinch Points Sharp Tools/Edges Rotating Equipment Powder-Actuated Tools

Metals [ENVIR,INDHYG]

Beryllium Cadmium Hexavalent Chromium Lead Mercury

Noise [INDHYG]

Non-Ionizing Radiation [LSO]

Lasers: Class 1 Class 2 Class 3a/3R Class 3B Class 4 Embedded Class 1

Static Magnetic Fields RF / Microwaves UV / Visible High Intensity UV/Visible/IR Illumination

Packaging & Transportation

Transport Materials Off-Site (includes transport of items between S200 and S300):

Method: Ground Transport Air Transport Vessel Transport Rail Transport Personal Transport

Material: Hazardous Materials Radioactive Materials Biological Materials Explosives Compressed Gases
 Hazardous/Radioactive Waste Large items requiring two individuals or mechanical methods to load

Transport Materials On-Site: Hazardous Materials Radioactive Materials Biological Materials Explosives Compressed Gases
 Haz/Rad Waste Large items requiring two individuals or mechanical methods to load

Pressure & Vacuum [INDSFTY]

Low Pressure Intermediate Pressure High Pressure Vacuum Compressed Air Other Pressure Systems

Radiation & Radioactive Materials [CRTSFTY,HLTHPHY]

Accessing Radiological Areas: RBA CA HCA ARA RA HRA VHRA

Radiation Generating Devices (RGDs): Class I, II Class III, IV

Radioactive Material

Sealed Radioactive Sources: Class 0, I, II Class III, IV

Nondispersible Radioactive Material: Fixed Contamination Encased/Cased Items (e.g. finished U parts, activated metal)

Dispersible Radioactive Material

Material Type: Weapons Grade Pu Fuels Grade Pu Pu-238 Enriched Uranium Uranium-233
 Depleted/Natural Uranium Tritium Spec Tritiated Comp Beta/Gamma Other TRU Other

Workplace Type: Type 0 (storage) Type I (benchtop) Type II (hood) Type III (glovebox) Other N/A

Operation: Breaching Containment/Structural Barrier Accessing Previously Inaccessible Areas

Expected Individual Dose: <100 mrem/y >100 mrem/y

Criticality Potential

Criticality Potential: Insignificant Fissionable Material Special Concern Significant Fissionable Material

Criticality Hazard Type: Type 1 Type 2 Type 3

Suspended Loads [INDSFTY]

Crane / Hoist Jacks PITs

Temperature Extremes [INDHYG]

Heat Stress - Normal Work Clothing Heat Stress - Encapsulating PPE Cold Stress

Trenching & Excavation [INDSFTY]

Work Area Hazards

Head Bump Poor Visibility / Lighting Slip / Trip / Fall Cramped Space Wall / Floor Openings Work Area Noise Overhead Utilities
 Unguarded Utilities Hidden Utilities Vehicular Traffic Driving off-road or on rough terrain Remote Location / Delayed Emergency Response
 Inclement Weather / Lightning Wildlife Encounters Bird / Rodent Feces Toxic Plants Nuisance Dust Mold / Spores Valley Fever
 Regional Endemic Infectious Diseases Beryllium Area Biological Lab Chemical Lab Explosives Area Mechanical Room
 Mechanical/Machine Shop Radiation Area Rad Contamination Area Environmental Cleanup Site TSDF WAA Work Over / In Water Other

Other Hazard