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## 1.0 PURPOSE AND SCOPE

(7.1.1, 7.1.2, 7.1.3)

This procedure describes the Job Hazard Analysis (JHA) process for identifying, evaluating, controlling, and communicating potential hazards associated with work performed by the Tank Operations Contractor (TOC).

This procedure applies to all TOC work activities involving general plant maintenance, building maintenance, construction, facility operations, environmental remediation, subcontractors, and service organizations. JHAs within the work scope and responsibility of a prime contractor service organization (e.g., Fire Systems Maintenance, Refrigerated Equipment Service) are exempt from this process as they are prepared in accordance with the prime contractor's work processes as outlined by the TOC contract and statements of work.

Everyone is required to work safely and to maintain a safe work environment. A detailed general hazard analysis, "WRPS General Hazards Analysis" (Attachment A), has been performed and training reviewed to ensure that workers are trained to the general hazards associated with routine work at Washington River Protection Solutions LLC (WRPS) facilities. Visitors should be briefed on the general hazards they may be exposed to and controls expected of them as part of their orientation.

This procedure does not apply to Emergency Response Procedures (ERPs). Emergency response is performed by trained and qualified emergency responders under the Emergency Management System (EMS). Hazards and controls associated with emergency actions are evaluated and implemented as part of the EMS process.

## 2.0 IMPLEMENTATION

This procedure is effective on the date shown in the header.

Existing JHA checklists remain valid and do not require re-generation when the JHA checklist is revised. However, new controls introduced in the most recent revision must be incorporated into procedures and work documents via change control when determined applicable.

JHA checklists are updated to the current revision when performing periodic procedure reviews, annual reviews of Standing JHAs, and when refreshing suspended or aged work packages prior to release.

## 3.0 RESPONSIBILITIES

Responsibilities are contained within process steps with Section 4.0.

## 4.0 PROCEDURE

Hazard analysis is performed for all TOC work activities. The General Hazards Analysis (GHA) (Attachment A) and workers training and qualifications provide the worker with the proper skills and abilities to perform routine work activities. If the activity evaluation determines work hazards are covered by the GHA, no additional specific hazard analysis is required. For radiological work, radiological activity hazards are addressed using a Radiological Work Permit (RWP). Section 4.1 outlines expectations relating to work covered by the GHA. Sections 4.2 and 4.3 define the hazard analysis process when work being performed involves hazards beyond those covered by the GHA.

See Figure 1 for process flowchart.

#### **4.1 General Hazards Analysis (applicable to all personnel)** (7.1.2)

The GHA covers the majority of work place hazards associated with routine work activities. A copy of the Tank Farms GHA is posted on the Safety Website.

1. Information contained in the Tank Farms GHA (Attachment A) should be used as appropriate by supervisors and managers to discuss applicable hazards and controls with their staff or workers.
2. Proper housekeeping is required in all work spaces with emphasis on:
  - Keeping tripping hazards cleared
  - Keeping litter or debris picked up
  - Keeping excess materials and tools properly stored.

#### **4.2 Conducting a Job Hazard Analysis**

A job hazard analysis evaluates all aspects of task performance. This includes analysis of hazards associated with performing the activity, and also an evaluation of hazards currently present in the work area (confined space, radiation areas, beryllium controlled areas, etc.).

Workplace hazards that may be introduced in the work area following development of the JHA (co-located work activities, radiological conditions, weather conditions, etc.) are evaluated prior to work execution, and appropriate controls implemented per Section 4.2.3.

General hazards and controls covered by the GHA do not need to be specified on the JHA checklist or in work documents. Specifying general hazard controls in work documents could result in diluting the importance of controls implemented for analyzed hazards specific to the work task or environment.

##### **4.2.1 Initial Job Hazard Analysis** (7.1.1, 7.1.2, 7.1.3)

This section applies to work activities not covered by GHA or an existing Standing JHA Checklist. For activities covered by a Standing JHA Checklist, proceed to Section 4.2.2.

Planner/Procedure  
Writer/Supervisor

1. Prepare a list of work activities or a draft/outline of the work document containing tasks to be accomplished as an aid during the preliminary planning and hazard analysis process.
2. Obtain supervisor, worker, and SME input on the approach or activities to be completed.

NOTE: Depending on the complexity of the job or the number of work groups involved, it may be necessary to conduct an initial scoping meeting with representatives of the various work groups to obtain information to allow for scope development/refinement.

3. Coordinate the performance of a walkdown of the job site to identify potential hazards relating to tasks to be performed for the following:

Document Type	Required Walkdown Participants
Level 1 Work Package	Supervisor*
Level 3 Work Package	Procedure Writer/Planner*
New Technical Procedure	Worker(s)
Major Revision To a Technical Procedure	Industrial Safety Other SME Representative by the work scope.
Planning Required and Routine Simple Tasks with minimal steps for administrative building maintenance	

\*For Level 3 work packages and Routine Simple Tasks with minimal steps, either the Supervisor or the Planner may participate.

NOTE 1: Other walkdown members may include additional SMEs as the determined by the planner/procedure writer and supervisor, including the following.

- Industrial Hygiene
- Health Physics Technician (HPT)
- Environmental Representative
- Operations, Fire Protection Engineer
- Subcontractor Safety Representative.

NOTE 2: A table-top discussion performed in lieu of a required field walkdown requires approval by the responsible Level 2 manager and documented justification.

4. Finalize the list of activities to be performed, and identify critical tasks.

NOTE 1: Not all work activities have critical tasks.

NOTE 2: Caution shall be used when identifying steps as critical tasks as confusion occurs when the definition of critical task is too broadly defined.

NOTE 3: A “WARNING” is used in the body of the procedure or work package instruction to clearly flag critical tasks with a potential to impact personnel safety or the environment.

NOTE 4: A “CAUTION” is used if there is a potential to impact systems, structures, or components.

NOTE 5: Key elements to focus on during the analysis include:

- The tools or equipment are to be used

- How the tools or equipment are to be used
- The location of the work.

NOTE 6: When defining the controls for critical tasks, all possible controls must be considered. Controls such as peer review, independent review, alternate monitoring, and checklists can serve as good controls for critical tasks.

- |                               |  |
|-------------------------------|--|
| Planner/Procedure Writer      | 5. Use existing radiological information to determine the radiological risk and obtain radiological surveys as necessary.  |
| Planner/Procedure Writer      | 6. Conduct a “what if” hazard analysis of critical tasks and possible difficulties or problems with the workers, SMEs, and the Supervisor to determine if there are situations requiring specific direction such as would be needed for spills, fires, exposures, failures, changing conditions, interferences, alarms, and unexpected equipment actuations.   |
| Planning/Hazard Analysis Team | 7. Based on the walkdown or table top discussion, use the JHA checklist (A-6004-101) to identify the hazards associated with each task.  |
| Planning/Hazard Analysis Team | 8. Analyze hazards identified and summarize the specific task(s) associated with the hazard identified.  |
|                               | NOTE: Form A-6004-101 may be copied and used by Subcontractors when unable to access the Hanford Local Area Network (HLAN) to retrieve site forms.   |
| Planning/Hazard Analysis Team | 9. Select the method of implementation of the controls as described in Section 4.3.  |
|                               | NOTE: If incorporation of controls will be accomplished through the establishment of specific steps listed in the technical document or through WARNING or CAUTION statements, then work is required to be controlled by a technical procedure developed and approved in accordance with <a href="#">TFC-OPS-OPER-C-13</a> or <a href="#">ATS-310, Section 11.16</a> , or a work package developed and approved in accordance with <a href="#">TFC-OPS-MAINT-C-01</a> or <a href="#">TFC-BSM-FPM PR-C-03</a> . |
| Planning/Hazard Analysis Team | 10. Review to ensure additional hazards are not created due to selected controls (e.g., excessive Personal Protection Equipment causing heat exhaustion or heat stress) and conflicts do not exist between the controls established for hazards identified (i.e., PPE requirements for radiological hazards don’t conflict with PPE requirements for Industrial Hygiene hazards).  |
| Planning/Hazard Analysis Team | 11. Record participation in the walkdown/JHA review on the JHA checklist signature sheet.  |
| Planner/Supervisor            | 12. If work requires a permit, form, plan, or PPE determination (e.g., Radiological Work Permit, Electrical Hazard Analysis, Chemical Exposure Hazard Analysis), ensure the appropriate organizations (e.g., radiological control, fire protection, industrial safety, or industrial   |

hygiene) review the permit or form to ensure the correct permit or controls are in place and approved.

Planner/Procedure Writer 13. Finalize the JHA by documenting the results of the hazard identification, hazard analysis, selection of controls, and method of control implementation on the JHA Checklist (A-6004-101) (or equivalent for Subcontractors).

14. Incorporate beyond skill-based controls into the work document.

Supervisor/Safety & Health Representative(s) 15. Review JHA Checklist for completeness and technical accuracy ensuring controls identified for activities are appropriate. Approve the checklist if it is complete and accurate.

NOTE 1: When work is to be performed by a subcontractor, additional review and concurrence is required by the subcontractor safety representative.

NOTE 2: The approved JHA checklist is used as input to development of the work document.

Planner/Procedure Writer 16. Retain the approved checklist with the work package or in the technical procedure history file. If checklist is to be used as a Standing JHA Checklist, retain a copy and follow steps outlined in Section 4.2.2.

NOTE: A copy of the Standing JHA is issued with the performance document or, if a technical procedure, available through IDMS (Safety Programs may also be contacted for support).

#### 4.2.2 Standing Job Hazard Analysis Checklist

A Standing JHA Checklist may be developed for specific scopes of work performed on a routine basis or when determined appropriate. When Standing JHA Checklists are used, field conditions must be reviewed each time the work is performed and approved controls established based on hazards identified.

Supervisor/ Safety & Health Representative(s) 1. Prepare a JHA Checklist as outlined in Section 4.2.1.  
2. Route approved original JHA Checklist to Safety Programs.

Safety Programs Representative 3. Review JHA Checklist for completeness.  
a. If complete, assign a tracking number.  
b. If not complete, contact the originator to resolve issues identified.  
4. Post the Standing JHA Checklist to the WRPS Safety – Health Programs Web Page.  
5. Remove any Standing JHA Checklist from the WRPS Safety – Health

Programs Web Page if expired.

Responsible Manager/Procedure Owner	6. Ensure that a review of Standing JHA Checklists is performed and documented by the appropriate SMEs on an annual basis to ensure no changes are required.
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#### 4.2.3 Field Condition Hazard Evaluation

(7.1.1, 7.1.2, 7.1.3)

Supervisor	1. Conduct pre-job briefing in accordance with TFC-OPS-MAINT-C-02.
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NOTE: Subcontractors may also use, as a supplemental tool, the Job Safety Analysis (JSA) checklist. Use of the JSA checklist is governed by the subcontractor procedures and controls. When this option is invoked, the content of the JHA checklist and contractor JSA must be consistent.

Worker/Supervisor	2. Prior to work execution, inspect the job site and determine if hazards exist relating to the current field conditions (e.g., co-located work, weather conditions).
	3. If field hazards are identified, implement controls (e.g., work-rest regimen, hard hats, barricades, heat stress mitigation form as required by TFC-ESHQ-S_IH-C-07, ice removal, lighting, etc.).
	4. When required controls and appropriate personal protective equipment have been established, work may be performed.
	5. Ensure controls remain in place while the hazard(s) exists.

#### 4.3 Methods for Implementation of Controls

Methods of implementation communicate to the workers how controls are to be implemented. Methods of controls are identified on the JHA checklist and include the following:

- **Precaution/Limitation/Prerequisite** – Control incorporated into the Precaution/Limitation/ Prerequisite section of the work document.

The Precaution/Limitation method is selected when the hazard and relating control are general in nature and apply to the entire scope of work.

Prerequisite is selected if the control must be in place and verified as complete PRIOR to start of work.

- **WARNING/CAUTION**– Specified through a statement in a work document.

This method is selected when a hazardous condition applies to a specific step in the body of a procedure or work instruction or when a step has been identified as critical.

A WARNING is used in the body of the procedure or work package instruction to clearly flag critical tasks with a potential to impact personnel safety or the environment. A CAUTION is used if there is a potential to impact systems, structures, or components.

The WARNING/CAUTION is added just PRIOR to the step(s) where the hazard is introduced.

- **Work Package/Technical Procedure Work Instruction** – Directions provided through mandatory step sequencing within a work document.

This method is selected when the control is established through mandatory performance of a sequence of steps.

- **Permit/Plan** – Detailed controls are specified in a permit or plan.

This method is selected when hazard controls are contained in supporting permits or plans required to be generated by another controlling procedure/program.

- **Pre-Job Briefing** – Hazards and controls are reviewed, discussed and understood by all involved during a pre-job briefing conducted in accordance with TFC-OPS-MAINT-C-02 prior to commencement of work.

This method is selected when established controls are skill based, and reinforcement through the Pre-Job Briefing is determined adequate.

In order to effectively communicate the necessary controls to mitigate or eliminate hazards to the workers, the following additional guidelines should be used to select the methods of implementation:

1. The following hierarchy of methods to eliminate or mitigate hazards shall be used in descending order, when feasible and appropriate:
  - a. Eliminate/reduce the hazard or substitution (e.g., different chemical cleaning agent)
  - b. Utilize engineering controls (e.g., ventilation)
  - c. Administrative controls (e.g., dose monitoring)
  - d. Personal protective equipment (PPE) (e.g., self-contained breathing apparatus).
2. Five points to consider for each hazard identified for the activities that align with the hierarchy of methods of control include:
  - Can a less hazardous way to do the job be found?
  - Can the physical conditions that created the hazard be changed?
  - Can the sequence or way the job is planned be revised to a safer alternative?
  - Can the need for doing the job or the frequency of doing the job be reduced?
  - Can personal protective equipment be used?

#### 4.4 Changes to the Job Hazard Analysis Checklist

Changes to the JHA checklist are not required for hazards and controls related to field conditions (e.g., weather, co-located work, etc.) or if additional identified hazards fall within the GHA. Changes to the JHA Checklist may be performed by marking up the original JHA Checklist (for work packages) or a copy of the JHA Checklist (for technical procedures) with the change needed or preparing a new JHA Checklist form describing the additional hazards and controls. The key

in selecting the change method is determined by the amount of changes that need to be made and the ability for the change to be made in a legible manner.

- |   |   |
|---|---|
| Supervisor/Planner/<br>Procedure<br>Writer/Safety &<br>Health<br>Representative | 1. Prepare the change by marking up the original JHA Checklist (for work packages) or copy of the JHA Checklist (for technical procedures) or; prepare a new JHA Checklist identifying the new/changed hazards and relating controls. |
| Worker/Supervisor/<br>Safety & Health<br>Representative                         | 2. Review the change, ensuring conflicts do not exist.  |
| Supervisor/ Safety &<br>Health<br>Representative/SME                            | 3. If acceptable, the Supervisor, Safety & Health Representative, and any appropriate SMEs must approve change.   |
| Supervisor/Planner/<br>Procedure Writer   | 4. Review the other documents (e.g., work document, permit, plan) to determine the need for revision and revise in accordance with the applicable procedure.  |

## 5.0 DEFINITIONS

Critical Task. An instruction or procedure step, series of steps, or action that, if performed improperly, will cause intolerable or irreversible harm to people, plant, or environment or significantly impact plant operation.

Field Condition Hazard Evaluation. A process of reviewing field conditions and related hazards (e.g., co-located work, weather, changes to facility conditions, etc.) prior to performance of work to ensure adequate controls are in place.

Job Hazard Analysis Checklist. A form (A-6004-101) used to identify the hazards, controls, permits, and personal protective equipment associated with the non-Analytical Laboratory scope of work.

Standing Job Hazard Analysis Checklist. A JHA Checklist developed allowing repetitive performance of a specific scope of work.

## 6.0 RECORDS

(7.1.2)

The following record is generated during the performance of this procedure:

- Job Hazard Analysis checklist (A-6004-101) (retained with the performance document/procedure history file)
- Standing JHAs (retained in IDMS).

The record custodian identified in the Company Level Records Inventory and Disposition Schedule (RIDS) is responsible for record retention in accordance with [TFC-BSM-IRM\\_DC-C-02](#).

## 7.0 SOURCES

### 7.1 Requirements

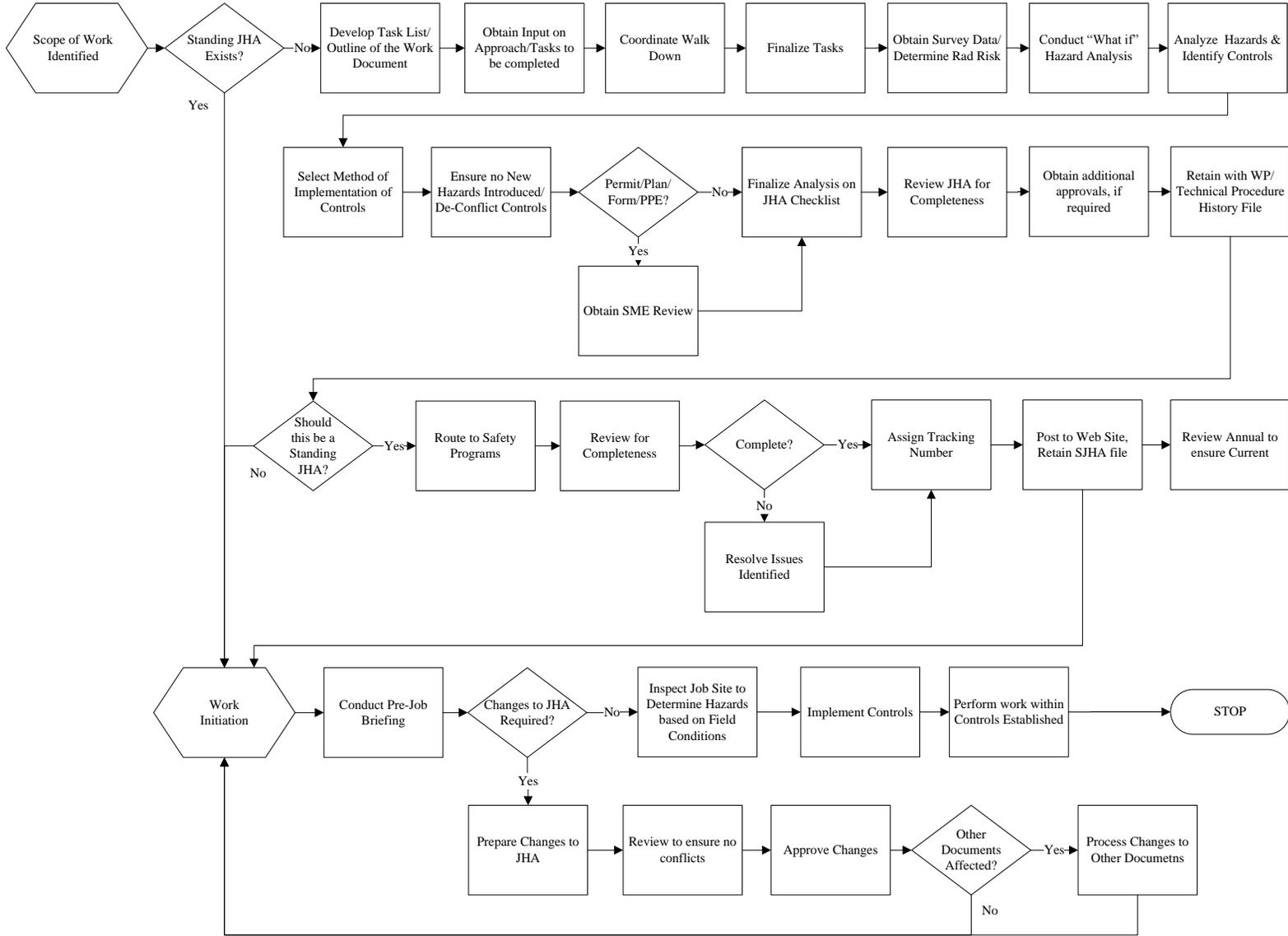
1. [TFC-POL-16](#), "Integrated Safety Management System Policy."
2. [TFC-PLN-01](#), "Integrated Environment, Safety, and Health Management System Plan."
3. 10 CFR 851, "Worker Safety and Health Program."

### 7.2 References

1. [ATS-310, Section 11.16](#), "Technical Procedure Control Process."
2. DOE-0346, "Hanford Site Fall Protection Program."
3. DOE-0360, "Hanford Site Confined Space Permit."
4. [RPP-MP-003](#), "Integrated Environment, Safety, and Health Management System Description for the Tank Operations Contractor."
5. TFC-BSM-FPM\_PR-C-03, "Work Control - General Purpose Facilities."
6. [TFC-BSM-IRM\\_DC-C-01](#), "Document Control."
7. [TFC-BSM-IRM\\_DC-C-02](#), "Records Management."
8. TFC-ESHQ-S\_IH-C-07, "Heat Stress Control."
9. [TFC-ESHQ-S\\_IH-STD-03](#), "Ergonomics."
10. [TFC-ESHQ-S-STD-03](#), "Electrical Safety."
11. [TFC-OPS-MAINT-C-01](#), "Tank Operations Contractor Work Control."
12. TFC-OPS-MAINT-C-02, "Pre-Job Briefings and Post-Job Reviews."
13. [TFC-OPS-OPER-C-13](#), "Technical Procedure Control and Use."

14. [TFC-OPS-OPER-C-49](#), “Development of Waste Retrieval and Transfer Operating Procedures (including Water and Chemical Additions).”
15. [TFC-OPS-OPER-STD-01](#), “Technical Procedure Format and Preparation Standard.”
16. [TFC-PLN-100](#), “Tank Operations Contractor Requirements Basis Document.”

Figure 1. Job Hazard Analysis Process.



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## ATTACHMENT A - WRPS GENERAL HAZARDS ANALYSIS

This hazard analysis applies to all personnel employed by WRPS or subcontracted to WRPS on the Hanford Site. This hazard analysis applies to those hazards that are not normally covered in the work documents. The hazards identified here are specific to those hazards having caused or been a part of the cause of injuries received by tank farm employees or others.

The following rules should be reviewed often and reinforced by peers and supervisors at safety or staff meetings, tailgates, or by just walking around. They are a cornerstone in working safely.

- Employees shall have completed HGET (or facility specific training) prior to using the GHA.
- **Pay attention to your surroundings** while doing work. Stop doing work if attention is drifting or less than 100% of attention is applied to the work activity. Do not tolerate distractions or horse play at work.
- **Maintain situational awareness** while working. Look for error traps or error likely situations brought on by the environment, housekeeping, travel path, or location at the worksite. Utilize the correct PPE (Gloves, Safety Glasses, Safety Shoes, Long Sleeve Shirts etcetera) for hazards that are present.
- **Assess individual physical capabilities.** It is expected that if there are any doubts about an individual's ability to physically perform a task, contact the supervisor and get the right help or equipment to perform the task safely. Only individual performing the work is aware of physical limitations they may have or if the task is within their capabilities to handle. Know when you should be stretching or when to take more time to move or lift something.
- **Use deliberate speed** in doing work. Whether it be at the job site, at the office, or somewhere in between; take time to pay attention and understand the situation.

**ATTACHMENT A – WRPS GENERAL HAZARDS ANALYSIS (cont.)**

With the exception of a RWP, the related radiological risk screening form, and/or TVIS SEG-1 IHSP, no other permits, plans, or checklists may be applied to work covered by the GHA. If permits, plans, or checklist are required beyond the RWP and/or TVIS SEG-1, use of a JHA checklist is required. Refer to the Safety – Health Programs web site for Standing JHAs for job specific work activities.

<b>Hazards</b>	<b>Controls</b>	<b>Discussion</b>
Chemical	<ul style="list-style-type: none"> <li>• Be trained on the specific chemicals you are using</li> <li>• Ensure proper handling and storage of chemicals</li> <li>• Avoid breathing vapors</li> <li>• Avoid contact with skin</li> <li>• Safety glasses with side shields</li> </ul>	<p>When working with chemicals that you do not normally work around you are expected to know and follow the recommendations of the MSDS. Contact an Industrial Safety Specialist or Industrial Hygienist for questions pertaining to specific chemical use.</p> <p>If using the chemicals as part of a work document, the chemical should have been reviewed and controls placed in the work document for any uses that are beyond the normal control and precautions associated with working around chemicals for which you are trained.</p> <p>A JHA checklist is required when a new chemical is being used and/or a sample plan is required or when working with chemicals that meet or contain the following:</p> <ul style="list-style-type: none"> <li>• Carcinogenic agents</li> <li>• Paints with epoxy or isocyanides</li> <li>• RCRA corrosive materials &gt;12.5 or ph &lt;2</li> <li>• Cryogenic material (liquid nitrogen)</li> <li>• Lead Acid vehicle batteries</li> <li>• Expanding Foams</li> <li>• Polymerization Chemicals</li> <li>• Water Reactive</li> <li>• Explosives</li> <li>• Reactive Metals</li> <li>• Flammable Materials (not gasoline for vehicles)</li> <li>• Ozone depleting substance</li> <li>• Pesticides-insecticides-fungicides</li> <li>• Organic peroxide</li> <li>• Cadmium, Beryllium, Benzene, Arsenic</li> <li>• Carbon Tetrachloride, Chloroform, Laboratory Chemicals</li> <li>• LPG</li> <li>• Acetylene compressed gas</li> <li>• Aflatoxin poisons, strong oxidizers, powdered metals, cyanides, Aldehydes and Ketones</li> <li>• Dioxins, polycyclic aromatic hydrocarbons</li> <li>• Mercury, Selenium</li> <li>• Bacterial or Fungal agents</li> <li>• Toluene</li> <li>• Ethyl Benzene, xylene</li> <li>• Vinyl chloride</li> <li>• Formaldehyde</li> </ul>

## ATTACHMENT A – WRPS GENERAL HAZARDS ANALYSIS (cont.)

Hazards	Controls	Discussion
Electrical	<ul style="list-style-type: none"> <li>● Use of receptacles</li> <li>● Cord and Plug</li> </ul>	<p>Visually inspect all electrical equipment prior to use to ensure there is no damage to equipment, cords, and receptacles. Contact Building Administrator if a circuit has tripped. Prior to installing additional equipment into power strip or receptacles, ensure that the additional equipment will not overload the circuit. Overloading the electrical system may cause damage to the equipment or create a potential for a fire. Photo copiers and heating equipment typically require greater loads. Request assistance from the safety group or electrical craft to determine load limits. Cord and plug under exclusive control.</p>
	<ul style="list-style-type: none"> <li>● Use of GFCIs</li> <li>● Use of Power Strips</li> </ul>	<p>Perform user test prior to using a GFCI. Do not connect power strips together or daisy chain with electrical power cords.</p>
	<ul style="list-style-type: none"> <li>● Use of Extension Cords</li> </ul>	<p>Do not connect multiple cord sets together (daisy chain).</p>
Ergonomic (Field)/Manual Handling	<ul style="list-style-type: none"> <li>● Use Impact gloves for repetitive vibration activities</li> <li>● Avoid awkward positions</li> <li>● When crawling or bending do it slowly while thinking through your movements</li> <li>● For repetitive tasks take frequent breaks and stretch versus longer breaks less often</li> <li>● Repetitive lifting should be shared with co-workers</li> <li>● If you are prone to injury from bending, kneeling, or lifting, get help or use tools that minimize risk</li> <li>● Use knee pads or mats when kneeling; pad areas to avoid contact stress when in awkward posture or when leaning against a solid object or sharp edge</li> </ul>	<p>In every day work in the shops and the field, workers are susceptible to injuries from repetitive motion or awkward positions. As the age of the worker increases their susceptibility increases without them being aware of it until they feel the pain.</p> <p>Stretching should be practiced daily and just prior to the start of any activity that requires strain on a muscle group.</p> <p>The strain put on knees and backs during kneeling and bending can be avoided by using a more deliberate motion and the use of aids in getting up or down from the standing position.</p> <p>Repetitive lifting or moving of even relatively light objects can cause strain to the back, legs, knees, shoulders, arms, or wrists.</p> <p><b>Typical injuries:</b> Straining of leg or back. Strain of knee joint.</p>

## ATTACHMENT A – WRPS GENERAL HAZARDS ANALYSIS (cont.)

Hazards	Controls	Discussion
Ergonomic (Office)	<ul style="list-style-type: none"> <li>● Use furniture in good condition</li> <li>● Use appropriate Work Station (e.g., Keyboard, Mouse, Desk, Chair)</li> <li>● Maintain posture so that you are not bending awkwardly or twisting while sitting</li> <li>● Ensure ergonomic evaluation is completed when changing equipment</li> <li>● Take frequent breaks and stretch versus longer breaks less often</li> <li>● Pay attention to position monitor to minimize glare</li> </ul>	<p>Inspect office furniture (chair and desk) prior to use for damages. Contact Building Administrator if damaged. Poor posture and poor work station setup are the main issues. People who work at workstations as a main part of their job should have routine evaluations performed using ergonomic software or by our Ergonomic Specialist. This is one injury that can be detected early and severity avoided by changes to the way a person works or by changes to equipment adjustments.</p> <p><b>Typical injuries:</b> Sore wrists or arms. Shoulder strain. Back pain. Neck or Head ache.</p>
Fire	<ul style="list-style-type: none"> <li>● Control the amount of combustibles</li> <li>● Use metal or fiberglass instead of wood</li> <li>● Do not store combustibles under desks or tables</li> <li>● Maintain a minimum of 3 feet between combustibles and a heat/ignition source</li> </ul>	<p>Combustible need to be kept ALARA. In nuclear facilities, which include the farms, combustibles such as wood shall be fire retardant impregnated or covered with a NRTL listed fire retardant coating in accordance with manufacturer's instructions (if instructions are for two coatings, it needs two coatings), and all plastics and tent membrane materials shall meet the testing requirements of NFPA 701.</p> <p>Combustibles in buildings shall not be stored under tables or desks other than on shelving as part of the desk.</p>
Insects	<ul style="list-style-type: none"> <li>● Shake out clothing and shoes or boots</li> <li>● Do a thorough inspection of clothing or PPE prior to its use</li> <li>● Avoid bright flowery clothing</li> <li>● Inspect work areas for indication of hives, webs or nests</li> <li>● Do not wear perfumes or colognes</li> <li>● Avoid use of perfumed soaps, deodorants, shampoos, hairspray, or gels</li> <li>● Wear long sleeves</li> <li>● Be able to see where you are reaching into</li> <li>● Avoid slapping or swatting at bees or wasps</li> <li>● Wipe sweat from neck and face routinely</li> </ul>	<p>One of the most prevalent bees on the Hanford site are called sweat bees and are attracted to moist surfaces.</p> <p>Insect stings from bees or wasps and bites from spiders are especially prevalent in the spring and summer. IF a person is stung by a bee they should remove the stinger as quickly as possible. IF a person is attacked by bees or wasps, they should run away, get into shade, or indoors.</p> <p><b>Typical injuries:</b> Stings or bites on the neck are the most common. Bites or stings on the back, arms, and legs from insects inside of clothing are a typical way this injury occurs.</p> <p>Immediate attention should be received for all insect bites or stings.</p>

## ATTACHMENT A – WRPS GENERAL HAZARDS ANALYSIS (cont.)

Hazards	Controls	Discussion
Insects (cont.)	<ul style="list-style-type: none"> <li>Let someone know if you are allergic to bees, wasps or other insects, and if you carry an EpiPen ®</li> </ul>	
Ladders	<ul style="list-style-type: none"> <li>Complete the computer based ladder safety training course.</li> <li>Properly inspect ladders before use to ensure they are in good condition. Verify ladders have a current inspection sticker/tag.</li> <li>Always climb facing the ladder.</li> <li>Always secure ladders from slipping</li> <li>Center your body between the rails. As a general rule, never let your belt buckle pass beyond either rail.</li> <li>Use both hands to properly grip the ladder and maintain a firm grip.</li> </ul>	<p>Falls from heights continue to be a safety problem in industry. Ladders account for thousands of injuries each year and at least 300 people a year die in simple falls from ladders. In a fall of eleven feet or more, 50% of the victims will not survive.</p> <p>Major causes of ladder accidents in the workplace include the following: Ladders not held, tied, or otherwise secured. Slippery surfaces and unfavorable weather conditions. Failing to grip ladders adequately when climbing. Taking unsafe positions such as leaning out too far. Poor ladder placement. Using defective ladders. Using a ladder of inadequate weight bearing capacity. Careless handling around electrical power lines.</p>
	<ul style="list-style-type: none"> <li>Maintain 3-point contact of hands and feet at all times.</li> <li>To keep both hands free when climbing, transport materials on a tagline, hoist or with a tool belt.</li> <li>Ascend and descend deliberately and cautiously.</li> </ul>	<p><b>Typical Injuries</b> Falls from ladders involve a variety of circumstances resulting in a variety of injuries. Nonfatal falls most frequently result in injuries to multiple parts of the body including sprains, strains, fractures, bruises and contusions to the head, neck, back, knees, ankles and wrists.</p>
	<ul style="list-style-type: none"> <li>Avoid pushing, pulling, and over reaching while on a ladder.</li> <li>Do not stand above the 2nd step from the top of a step ladder or the 4th rung from the top of an extension ladder.</li> <li>Wear slip resistant footwear.</li> <li>Avoid the use of flat or smooth soles.</li> </ul>	
	<ul style="list-style-type: none"> <li>Do not use metal ladders when performing electrical work or near power lines.</li> </ul>	

## ATTACHMENT A – WRPS GENERAL HAZARDS ANALYSIS (cont.)

Hazards	Controls	Discussion
Ladders (cont.)	<ul style="list-style-type: none"> <li>• Be sure all ladder feet are on firm, level ground.</li> <li>• Properly set up an extension ladder at a 4-to-1 working angle.</li> </ul>	
	<ul style="list-style-type: none"> <li>• Do not exceed the Duty Rating of a ladder.</li> </ul>	
Lifting	<ul style="list-style-type: none"> <li>• Avoid lifting until you have warmed up and stretched</li> <li>• Do not lift over 40 lbs unassisted. Less, if posture is awkward or given a lifting restriction.</li> <li>• Use more than one person if greater than 40 lbs., greater than your capability, or the load is awkward</li> <li>• Use your legs to lift not your back</li> <li>• Use your feet to turn not your waist</li> <li>• Keep weight close to the body</li> <li>• Use hand carts where available and it makes sense</li> <li>• Use approved lifting devices</li> <li>• Think through how you are going to lift</li> <li>• Do not jerk the load</li> </ul>	<p>Lower back pain and injuries attributed to manual lifting activities continue to be one of the leading occupational health and safety issues in workplaces across the nation. According to the National Safety Council, overexertion injuries represent more than 30 percent of all workplace injuries.</p> <p>At WRPS the combination of lifting and moving objects accounts for many injuries.</p> <p>Most of the injuries caused by lifting occur while lifting much less than the maximum allowed in the course of our normal work. Injuries typically occur while moving the weight in a manner that stretches or twists the shoulders or torso.</p> <p><b>Typical injuries:</b> Back and shoulder injuries are common due to twisting or lifting things too far from the body. Shoulder injuries occur due to lifting things above the head. Or moving things repeatedly.</p>
Moving	<ul style="list-style-type: none"> <li>• Avoid pushing or pulling objects until you have warmed up and stretched</li> <li>• Think through how you are going to move the object</li> <li>• Do not jerk the load</li> <li>• Use your core muscles as much as practicable</li> <li>• Keep your fingers and toes out of the way to prevent injuring them</li> <li>• Maintain good footing and good gripping to prevent unintended shifts or slips</li> <li>• Pushing is preferable to pulling</li> </ul>	<p>Moving objects typically is included with lifting but is also when we are pulling, pushing, or turning objects and is included as part of the hazard causing the most injuries at Tank Farms.</p> <p>Included in this category of hazards are the activities associated with using tools such that require you to use force in conjunction with their operation. Warming up and stretching prior to using the tools would mitigate the chance of stress injuries to muscles, joints, and bones.</p> <p><b>Typical injuries:</b> Lower back and shoulder strains are the most common and due to twisting or over excursion while pulling or pushing things that are too heavy or to stuck in place to move easily.</p>

## ATTACHMENT A – WRPS GENERAL HAZARDS ANALYSIS (cont.)

Hazards	Controls	Discussion
Noise	<ul style="list-style-type: none"> <li>• Use Hearing Protection where required</li> <li>• Maintain zones that require distance or time allocations for noisy areas</li> <li>• Move away from the source of loud noises when possible</li> <li>• Do not wear ear pieces/headphones in tank farms or while performing manual work outside of administrative areas</li> </ul>	<p>Work is not covered by the GHA if &gt;85db is expected over an 8 hour period. Completion of a JHA checklist is required if these conditions exist. Headphones and ear pieces preclude the ability of the worker to hear alarms, instrument/vehicle noises, backup signals and verbal direction from others. This inability to hear places workers at risk and the risk can be severe.</p> <p><b>Typical Injuries:</b> Loss of hearing over time, Inability to hear signals of danger or instruction that can cause physical harm Noise-induced hearing loss can lead to communication difficulties, learning difficulties, tinnitus, distorted, or muffled hearing, and inability to hear some environmental sounds and warning signals.</p>
Sharp Objects	<ul style="list-style-type: none"> <li>• Use proper tools for the task at hand</li> <li>• Use gloves suited for the task</li> <li>• Use deliberate speed</li> <li>• Keep your eyes and your mind focused on the task</li> <li>• Do not use your hands or fingers to test how sharp something is</li> <li>• Never try cutting something by pulling the blade towards you</li> <li>• While handling or near sharp objects, keep the location of all body parts in mind</li> <li>• Read and follow manufacturer safety recommendations for portable tools and sharp equipment</li> <li>• Personal pocket knives are not allowed for work in Tank Farms</li> </ul>	<p>Hands and fingers are the second most injured part of the body. Approximately 25% of all injuries are to the fingers and hands.</p> <p>Sharp objects may be the tools we use or the result of worn or frayed cables, improperly fitted plastic or metal flashings, burrs on pipes or other metals.</p> <p>It seems that people are drawn to checking to see how sharp things are by touching them. This curiosity causes injuries and should be avoided.</p> <p><b>Typical injuries:</b> Finger cuts from sharp edges on tools or equipment. Scrapes on hands or knuckles caused by rubbing or banging into sharp edges of equipment or buildings. Scrapes or cuts on legs due to running into or bumping into sharp edges.</p>

## ATTACHMENT A – WRPS GENERAL HAZARDS ANALYSIS (cont.)

Hazards	Controls	Discussion
Slippery Surfaces	<ul style="list-style-type: none"> <li>● Avoid walking in areas of ice or snow</li> <li>● Use non-skid shoe covers</li> <li>● Avoid the use of dress shoes with slick soles</li> <li>● Use shoes appropriate for the weather and conditions</li> <li>● Avoid walking on painted surfaces</li> <li>● Keep your position balanced over your feet</li> <li>● Use ice melt or salt on icy surfaces</li> <li>● If indoors ensure that appropriate signs or postings are in place around wet floors</li> <li>● Pay attention to signs and postings</li> <li>● Use smaller (shorter) steps while walking</li> <li>● Pay extra attention when changing positions (such as, kneeling, sitting down, or standing up)</li> <li>● Use of handrails</li> <li>● Use of walking stick is acceptable to increase balance</li> </ul>	<p>Slippery surfaces account for some of the most disabling injuries. Slippery surfaces typically come from temporary weather conditions or temporary housekeeping issues. Due to icy conditions each winter, there is an increase in the number of falls that we have. Early morning frost remains on some surfaces even when other surfaces are clear. Other slippery conditions are caused by walking into wet areas on hard surfaces or tracking water onto hard surfaces.</p> <p><b>Typical injuries:</b>            Straining a muscle in the leg, back or shoulder caused by being thrown off balance.            Injured knee joints from trying to recover your balance or hitting the ground.            Turning an ankle while recovering.            Scrapes and bruises from the fall as a result of using hands, arms, or face to stop the fall.</p>
Stairs or Steps	<ul style="list-style-type: none"> <li>● Be on the lookout for tripping hazards</li> <li>● Use hand rails</li> <li>● Don't bounce in your steps</li> <li>● Use deliberate motion to climb up or walk down stairs, don't rush</li> <li>● Keep your hands free whenever possible</li> <li>● Minimize turning while going up or down stairs</li> <li>● Utilize proper footwear</li> <li>● Check that railings seem stable prior to use</li> <li>● Think about the step you are taking when changing elevations</li> <li>● Steps shall be utilized for access to elevations with a difference of 19" or greater</li> </ul>	<p>Changing elevations carries with it several hazards that lead to injuries. Stepping downward puts significant strain on the joints and muscles of the legs, ankles, and feet. The extra weight of something being carried can mean the difference between a safe step and one that results in injury. When going down stairs there is a tendency to bounce on the ball of your feet. While it is good to cushion the blow of stepping down by taking deliberate steps and using the ball of your feet, it is not good to do this too quickly.</p> <p><b>Typical injuries:</b>            Straining a muscle in the leg or back while stepping up.            Turning an ankle while stepping down.            Scrapes and bruises from the fall as a result of a missed step.</p>

## ATTACHMENT A – WRPS GENERAL HAZARDS ANALYSIS (cont.)

Hazards	Controls	Discussion
Trip Hazards	<ul style="list-style-type: none"> <li>• Inspect the travel path or work area for potential tripping hazards</li> <li>• Remove tripping hazards whenever possible</li> <li>• Maintain a clean and uncluttered work area</li> <li>• Pay close attention to where you are walking, do not take anything for granted</li> <li>• Pay extra attention when carrying bulky items</li> <li>• When laying down tent floors remove any potential tripping hazards</li> </ul>	<p>We work in an inherently trip hazard environment at Tank Farms. Risers, cover blocks, valve handles, hoses, and lines are part of the facility and not able to be removed. This makes it even more important to inspect our travel path and work areas and remove those tripping hazards that can be eliminated. Poor housekeeping is typically the one thing that increases our tripping hazards. It is important that you are able to see where you are going and that you do not take walking for granted.</p> <p><b>Typical injuries:</b>  Straining a muscle in the leg, back, or shoulder by being thrown off balance.  Injuring knee joints by trying to recover your balance.  Turning an ankle while recovering.  Scrapes and bruises from the fall as a result of a missed tripping hazard.</p>
Uneven Surfaces	<ul style="list-style-type: none"> <li>• Use appropriate footwear with ankle support</li> <li>• Focus on walking and taking smaller steps</li> <li>• Think about the step you are taking when changing elevations</li> <li>• Pay attention to sudden changes in elevation such as holes or bumps</li> <li>• Maintain proper illumination using flashlights and portable lighting if working at night</li> <li>• Highlight change in work place elevations</li> </ul>	<p>Uneven surfaces are a part of working at Tank Farms. Gravel surfaces in and around the farms along with small changes in elevation due to trenches or mounds cause trips slips and falls as well as turned ankles, and strained knees. The sudden jolt from stepping either too far down or up when not ready for it is a major contributor. For these reasons the use of proper sturdy footwear with ankle support and the need to pay attention to not just where you are walking but to how you are walking is a key to preventing injury.</p>