Ownership matrix

TABLE OF CONTENTS

TABLE OF FIGURES

TABLE OF ATTACHMENTS

1.0 PURPOSE AND SCOPE

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This procedure describes the Job Hazard Analysis (JHA) process for identifying, evaluating, controlling, and communicating potential hazards and environmental impacts associated with operations or work by the Tank Farm Contractor (TFC).

This procedure applies to all TFC work activities. This procedure applies to the performance of field work involving general plant maintenance, operations, and environmental remediation. This procedure applies to subcontractors who do not have a job hazard analysis process approved by Safety and Health.

Everyone is required to work safely and to maintain a safe work environment. A detailed general hazard analysis "Tank Farms General Industrial Safety Hazards Analysis" (Attachment A) has been performed and training reviewed to ensure that workers are trained to the general hazards associated with work at the tank farms. Visitors should be briefed on the general safety hazards they may be exposed to and controls expected of them as part of their orientation.

2.0 IMPLEMENTATION

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

3.0 RESPONSIBILITIES

Responsibilities are contained within Section 4.0.

4.0 PROCEDURE

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See Figure 1 for process flowchart.

4.1 Methods for Implementation of Controls

In order to effectively relay necessary controls to mitigate or eliminate hazards to the workers (end-users), the following guidelines may be used to select the methods of implementation:

1. Controls within the qualification or training of the worker that are often used do not need to be discussed in the work instructions. Examples: Use of leather gloves, safety glasses of the proper type that the worker normally uses.

2. Controls within the qualification or training of the worker but are seldom used, and are applicable to the entire work activity, should be placed in the precautions as a reminder that the hazard exists and the workers are expected to take the appropriate actions. Examples: Use of hearing protection due to a noisy environment at the job site, or observation of overhead lines when they are present at the job site.

3. Controls within the qualification and training of the workers, but are for hazards that are introduced at specific steps or by specific actions during the job, should have a warning or caution statement immediately prior to the step but require no detailed instructions to mitigate in the work instructions. Examples: a warning for the release of pressure when breaching a system that may have residual pressure, or Caution that if the next step is performed incorrectly equipment damage may occur.

4. Controls not within the qualification and training of the workers for hazards should have detailed instructions for how the workers are to mitigate the hazard and should be in the work instructions or procedure in a way that prevents or mitigates the hazard. Example: The steps required to successfully release the pressure on a system which is not normally performed or the use of permits or forms, e.g., Lockout/Tagout, Excavation, Confined space, etc., that have the controls in them.

4.2 General Hazards Analysis (applicable to all personnel)

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The General Hazards Analysis is associated with the majority of the injury types that occur while at work. A copy of the Tank Farms General Industrial Safety Hazards Analysis is posted on the Safety Website.

1. Tank Farms General Industrial Safety Hazards Analysis (Attachment A) should be available and 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 cabinets properly loaded from the bottom up
   - Keeping excess materials and tools property stored.

4.3 Worksite Hazard Analysis for Minor Work Activities

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Minor work activities (as defined in TFC-OPS-MAINT-C-01) assume the Employee Job Task Analysis (EJTA), General Hazards Analysis, and workers training and qualifications provide the worker with the proper skills and abilities to perform the activity**.**

Worker/Supervisor

1. Walk down the job site and fill out a Worksite Hazard Analysis form (A-6004-101).

2. If work requires a permit, form, or plan (Radiological Work Permit, Energized Electrical Work Permit, etc.), ensure the appropriate organizations (industrial safety, industrial hygiene, or radiological control) review the permit or form to ensure the correct permit or controls are in place and approved.

   NOTE: When performing work using a Worksite Hazard Analysis that has already been performed, you may re-use a copy of the form and adjust it, as necessary.

3. Once you have identified the hazards, controls, and appropriate personal protective equipment for the work, and are confident they are within your control you may perform work in accordance with TFC-OPS-MAINT-C-01.

4. If you are not sure you have the appropriate hazard controls and personal protective equipment identified using the Worksite Hazard Analysis, or you are not confident in your ability to perform the work safely, contact your field work supervisor or industrial safety, industrial hygiene, or radiological control personnel for resolution.

5. When the issue is resolved, perform the work in accordance with TFC-OPS-MAINT-C-01.

4.4 Hazard Analysis for Standard Work

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Worker/Supervisor/ Planner

1. Using the Worksite Hazard Analysis (A-6004-101), perform a walkdown of the job site and identify the tasks and hazards.

2. Using the Job Hazard Analysis Checklist (A-6003-911) and the Worksite Hazard Analysis, work with the planner and subject matter experts, as appropriate, to identify the hazards, along with the critical task hazards, and determine the controls required.

WARNING:

Not all work activities have *critical tasks*, and be careful that only appropriate steps are designated as critical. Confusion occurs when the definition of critical step or the harm that an error at a critical step could lead to is too broadly defined.

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

3. Identify permits, forms, and/or plans (Radiological Work Permit, Energized Electrical Work Permit, etc.), and ensure the appropriate organizations (industrial safety, industrial hygiene, or radiological control) review the permits or forms to ensure the correct controls are identified.

4. Select method of implementation of the controls in accordance with Section 4.0.

5. If the work is complex, as defined in TFC-OPS-MAINT-C-01, develop a Safety Plan (see Section 4.4).

4.5 Safety Plan Development for Complex Work

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Planner

1. Using the Worksite Hazard Analysis (A-6004-101), perform a walkdown of the job site and identify the tasks and hazards.

2. Develop a list of the tasks.

   NOTE: The identification of tasks will be iterative with the walkdown and hazard analysis. You will know that you are at the right level of detail for the task when you have the following information for each task:

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

3. Schedule a job hazard analysis meeting with the appropriate supervisors, workers and subject matter experts.

Planner

4. Conduct the job hazard analysis meeting using the Job Hazard Analysis Checklist (A-6003-911) as a guide. (7.1.2) Deleted: 7.1.3

Planner

5. Document the decisions of the job hazard analysis meeting on the Safety Plan form (A-6004-102).

Workers/Planner/ Subject Matter Expert/Field Work Supervisor

6. Review the critical tasks, hazards, and possible difficulties or problems to determine if there are any "what if" situations requiring specific worker direction such as spills, fires, exposures, failures, changing conditions, interferences, alarms, and unexpected equipment actuations.

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

7. Determine the minimum boundaries needed for the work for use in lockout and tagout of the structure, systems, or components.

8. If the equipment is in an abnormal condition (e.g., not functioning as designed, broken or abnormal lineup) adjust the controls using, as a minimum, engineering's evaluation.

9. Use radiological information available to determine the radiological risk.

10. Select method of implementation of the controls in accordance with section 4.0.

Planner

11. Use the Safety Plan to develop the work instructions in accordance with TFC-OPS-MAINT-C-01.

4.6 Hazard Analysis in Technical Procedures

Technical Writer/ Supervisor/Worker

1. Performance of a Job Hazard Analysis during technical procedure development is included in the processes identified in TFC-OPS-OPER-STD-01 and ATS-310-11.16.

2. Use the Worksite Hazard Analysis during the performance of the validation and verification process as described in TFC-OPS-OPER-C-13.

3. Incorporate appropriate controls into the procedure.

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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.

Worksite Hazard Analysis. A form (A-6004-101) used as a tool by the workers to identify the hazards, controls, permits, and personal protective equipment associated at a worksite.

Safety Plan. A form (A-6004-102) documenting decisions made during a job hazard analysis meeting. This form is used by the planner to develop work instructions.

6.0 RECORDS

(7.1.2)

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

Record Description	Vital Record Y/N	QA Record Y/N	QA Record Retention L/NP	NARA Retention Schedule	Other Retention Requirements	Records Custodian
Safety plans	N	Y	NP	ADM-17.32b1	N/A	Planning organization

The identified record custodian is responsible for record management in accordance with TFC-BSM-IRM_DC-C-02.

7.0 SOURCES

7.1 Requirements

1. RPP-MP-003, "Integrated Environment, Safety, and Health Management System Description for the Tank Farm Contractor."

2. 10 CFR 851, "Worker Safety and Health Program."

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7.2 References

1. ATS-310-11.16, "Technical Procedure Control Process."

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2. TFC-BSM-IRM_DC-C-02, "Records Management."

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3. TFC-BSM-IRM-STD-05, "Document Control Standard."

4. TFC-OPS-MAINT-C-01, "Tank Farm Contractor Work Control."

5. TFC-OPS-OPER-C-13, "Technical Procedure Control and Use."

6. TFC-OPS-OPER-STD-01, "Technical Procedure Format and Preparation Standard."

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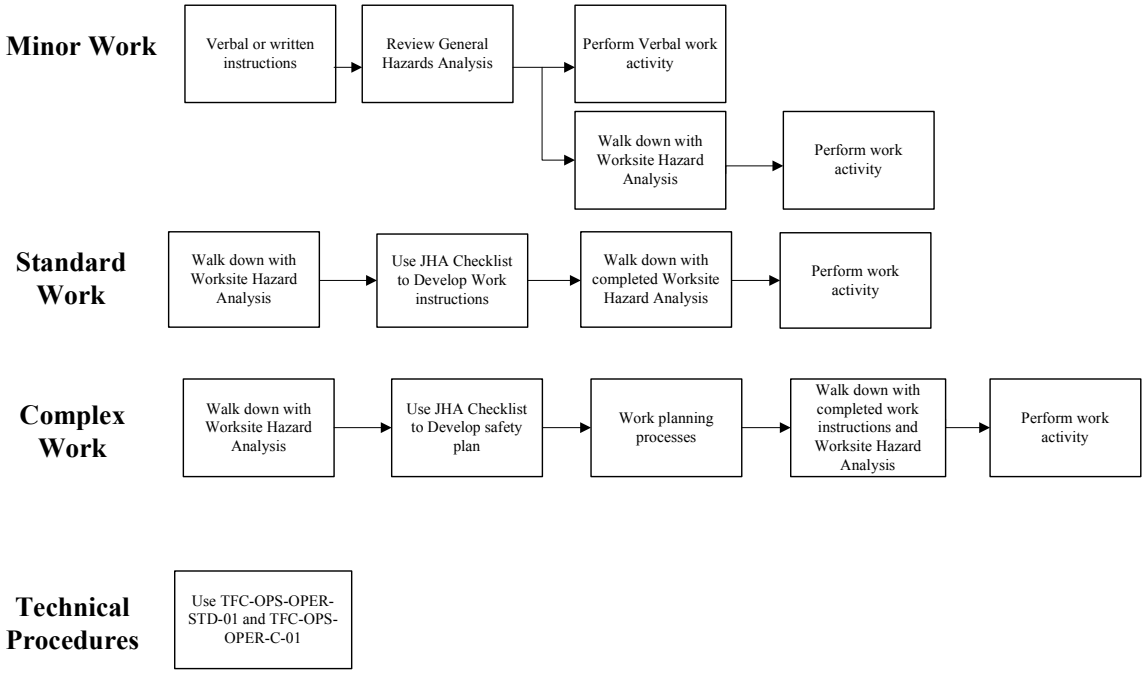
Figure 1. Job Hazard Analysis Process.



ATTACHMENT A - TANK FARMS GENERAL INDUSTRIAL SAFETY HAZARDS ANALYSIS

SCOPE:

This hazard analysis applies to all personnel employed by CH2M HILL Hanford or subcontracted to CH2M HILL on the Hanford Site. This hazard analysis applies to those hazards that are not normally covered in work instructions, or technical procedures. The hazards identified here are specific to those hazards having caused or been a part of the cause of injuries received by CH2M HILL employees during a 12 month period from August 2005 through July of 2006.

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 corner stone in working safely.

- **Pay attention to your surroundings** while you are working. You should stop whatever you are doing if your attention is drifting or there is any reason that you may not be able to give 100% of your attention to your work. You should make sure that distractions and horse play at work is not acceptable.

- **Maintain situational awareness** while you are working. You should be looking 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 your physical capabilities.** It is expected that if you have any doubts about your ability to physically perform a task that you work with your supervisor and get the right help or equipment to perform the task safely. Only you know if the task you are getting ready to do is within your capabilities to handle. You need to know when you should be stretching or when to take more time to move or lift something.

- **Use deliberate speed** in doing your work. Whether it be at the job site, at the office, or somewhere in between; take time to pay attention and understand your situation.

ATTACHMENT A - TANK FARMS GENERAL INDUSTRIAL SAFETY HAZARDS ANALYSIS (cont.)

Hazards	Controls	Discussion
Lifting	• Avoid lifting until you have warmed up and stretched • Do not lift over 40 lbs unassisted. Less, if you are not up to it • Use more than one person if greater than 40 lbs., greater than your capability, or the load is awkward • Use your legs to lift not your back • Use your feet to turn not your waist • Keep weight close to the body • Use hand carts where available and it makes sense • Use approved lifting devices • Use deliberate speed • Think through how you are going to lift • Do not jerk the load	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. At CH2M HILL the combination of lifting and moving objects accounts for twice as many injuries as any other hazard. 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. **Typical injuries:** 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.
Moving	• Avoid pushing or pulling objects until you have warmed up and stretched • Use deliberate speed • Think through how you are going to move the object • Do not jerk the load • Use your core muscles as much as practicable • Keep your fingers and toes out of the way to prevent injuring them • Maintain good footing and good gripping to prevent un-intended shifts or slips • Pushing is preferable to pulling	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. 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. **Typical injuries:** 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.

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ATTACHMENT A - TANK FARMS GENERAL INDUSTRIAL SAFETY HAZARDS ANALYSIS (cont.)

Hazards	Controls	Discussion
Insects	• Shake out clothing and shoes or boots • Do a thorough inspection of clothing or PPE prior to its use • Avoid bright flowery clothing • Inspect work areas for indication of hives, webs or nests • Do not wear perfumes or colognes • Avoid use of perfumed soaps, deodorants, or shampoos • Wear long sleeves • Be able to see where you are reaching into • Avoid slapping or swatting at bees or wasps • Wipe sweat from neck and face routinely • Let someone know if you are allergic to bees, wasps or other insects, and if you carry an EpiPen®	One of the most prevalent bees on the Hanford site are called sweat bees and are attracted to moist surfaces. 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. **Typical injuries:** 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. Immediate attention should be received for all insect bites or stings.
Sharp Objects	• Use proper tools for the task at hand • Use gloves suited for the task • Use deliberate speed • Keep your eyes and your mind focused on the task • Do not use your hands or fingers to test how sharp something is • Never try cutting something by pulling the blade towards you • While handling or near sharp objects, keep the location of all body parts in mind • Read and follow manufacturer safety recommendations for portable tools and sharp equipment	Hands and fingers are the second most injured part of the body. Approximately 25% of all injuries are to the fingers and hands. 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. 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. **Typical injuries:** 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.

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ATTACHMENT A - TANK FARMS GENERAL INDUSTRIAL SAFETY HAZARDS ANALYSIS (cont.)

Hazards	Controls	Discussion
Slippery Surfaces	• Avoid walking in areas of ice or snow • Use non-skid shoe covers • Avoid the use of dress shoes with slick soles • Use shoes appropriate for the weather and conditions • Use deliberate speed in walking or moving • Avoid walking on painted surfaces • Keep your position balanced over your feet • Use ice melt or salt on icy surfaces • If indoors ensure that appropriate signs or postings are in place around wet floors • Pay attention to signs and postings • Use smaller (shorter) steps while walking • Pay extra attention when changing positions (such as, kneeling, sitting down, or standing up)	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. **Typical injuries:** 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.
Trip Hazards	• Inspect the travel path or work area for potential tripping hazards • Remove tripping hazards whenever possible • Maintain a clean and uncluttered work area • Pay close attention to where you are walking, do not take anything for granted • Pay extra attention when carrying bulky items • When laying down tent floors remove any potential tripping hazards	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. **Typical injuries:** 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.

ATTACHMENT A - TANK FARMS GENERAL INDUSTRIAL SAFETY HAZARDS ANALYSIS (cont.)

Hazards	Controls	Discussion
Stairs or Steps	• Be on the look out for tripping hazards • Use hand rails • Don't bounce in your steps • Use deliberate motion to climb up or walk down stairs, don't run • Keep your hands free whenever possible • Minimize turning while going up or down stairs • Utilize proper footwear • Check that railings seem stable prior to use • Think about the step you are taking when changing elevations	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. **Typical injuries:** 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.
Uneven Surfaces	• Use appropriate footwear with ankle support • Focus on walking and taking smaller steps • Think about the step you are taking when changing elevations • Pay attention to sudden changes in elevation such as holes or bumps • Maintain proper illumination using flashlights and portable lighting if working at night	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 to 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.

ATTACHMENT A - TANK FARMS GENERAL INDUSTRIAL SAFETY HAZARDS ANALYSIS (cont.)

Hazards	Controls	Discussion
Chemical	• When working with or around chemicals, use a Worksite Hazard Analysis or Safety Plan if associated with a specific work activity • Identify your work in your employee job task analysis (EJTA) and attend hazardous waste worker annual training • Be trained on the specific chemicals you are using • Ensure proper handling and storage of chemicals	When working with chemicals that you do not normally work around you are expected to know and follow the recommendations of the MSDS. It is always a good idea to review the MSDS with your Industrial Safety Specialist. If using the chemicals as part of a work activity or procedure the chemical should have been reviewed and controls placed in the work instruction or procedure for any uses that are beyond the normal control and precautions associated with working around chemicals for which you are trained.
Ergonomic (Office)	• Use appropriate Work Station – Keyboard – Mouse – Desk – Chair • Maintain posture so that you are not bending awkwardly or twisting while sitting • Ensure ergonomic evaluation is completed when changing equipment • Take frequent breaks and stretch versus longer breaks less often • Pay attention to position monitor to minimize glare	Poor workstation ergonomics continues to be one of the top ten causes of injuries. 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. **Typical injuries:** Sore wrists or arms. Shoulder strain. Back pain. Neck or Head ache.

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When working around the tank farms there are Tank Farm Vapor Information Sheets (TVIS) that explain the chemicals in the tanks and potential VCZ and associated postings for the tank farm.¶
¶
Typical injuries:¶
Headache.¶
Nausea.¶
Rashes.¶
Running Nose or Watery Eyes.¶

ATTACHMENT A - TANK FARMS GENERAL INDUSTRIAL SAFETY HAZARDS ANALYSIS (cont.)

Hazards	Controls	Discussion
Ergonomic (Field)	• Use Impact gloves for repetitive vibration activities • Avoid awkward positions • When crawling or bending do it slowly while thinking through your movements • For repetitive tasks take frequent breaks and stretch versus longer breaks less often • Repetitive lifting should be shared with co-workers • If you are prone to injury from bending, kneeling, or lifting, get help or use tools that minimize risk • Use knee pads or mats when kneeling; pad areas to avoid contract stress when in awkward posture or when leaning against a solid object	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. Stretching should be practiced daily and just prior to the start of any activity that requires strain on a muscle group. 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. Repetitive lifting or moving of even relatively light objects can cause strain to the back, legs, knees, shoulders, arms, or wrists. **Typical injuries:** Straining of leg or back. Strain of knee joint.

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