

Hazard Analysis Form for Detector Development and Operations

Back to [Hazard Analysis Main Page](#)

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Hazard Analysis Form

This form can be used by Fermilab Employees, Fermilab Supervisors, Fermilab Task Managers and Construction Coordinators, Services Coordinators and Fermilab Subcontractors. This is a dynamic document which may require modification as the project moves from start to finish and should be readily available at the site where the work is being performed.

Note: Not all sections of the first page are applicable to every job or task, complete what is necessary for your specific job or task.

Job Title

Owner: John Voirin
Form ID: 2130

Job Location

Work Permit Association: ?

Contract/Work Order #

TO BE COMPLETED FOR WORK INVOLVING SUBCONTRACTORS

Subcontractor (if applicable)

Fermilab

Company

Project Eng./C.M. FNAL ID

Project Manager

Phone Cell

Phone Page

TM/CC/SC FNAL ID

Phone Page Cell

ESH Rep.

ESH Rep. FNAL ID

Phone Page

Phone Page Cell

AT LEAST TWO SIGNATURES ARE REQUIRED

Prepared

Date

Accept

Date

Accepted As Noted

Date

Description of Work:

<p>Industrial Hazards</p> <p><input type="checkbox"/> Flammable Gas Areas</p> <p><input type="checkbox"/> Working within Magnetic Field areas</p> <p><input type="checkbox"/> Heat Stress /Cold Stress</p> <p><input type="checkbox"/> Structural Demolition</p> <p><input type="checkbox"/> Excavation</p> <p><input type="checkbox"/> Scaffold Erection</p> <p><input type="checkbox"/> Scaffold Use</p> <p><input checked="" type="checkbox"/> Ladder Use</p> <p><input type="checkbox"/> Steel Erection</p>	<p>Electrical Hazards</p> <p><input type="checkbox"/> Manipulative Energized Work</p> <p><input type="checkbox"/> Diagnostic Energized Work (inc. LOTO verification)</p> <p><input type="checkbox"/> Working within 25 feet of 345kV overhead utilities</p> <p><input type="checkbox"/> Working within 10 feet of overhead utilities</p>	<p>Environmental Hazards</p> <p><input type="checkbox"/> Potential impact to Storm Water</p> <p><input type="checkbox"/> Potential Release to Environment</p> <p><input type="checkbox"/> Air emissions (including equipment/generators)</p> <p><input type="checkbox"/> Waste generation (Hazardous, Radioactive, etc.)</p> <p><input type="checkbox"/> Discharge to sanitary sewer</p> <p><input type="checkbox"/> Use of refrigerants</p>	<p>Radiation Safety</p> <p><input type="checkbox"/> Posted Radiological Area (Radiation Area, HRA, Contamination, Airborne)</p> <p><input type="checkbox"/> Radioactive Material, Ionizing Radiation, Radiation Sources, RGDs, RAW systems, Exhaust Systems, Beamline Components - including targets & absorbers</p> <p><input type="checkbox"/> Area working in >= 100 mrem/hr</p> <p><input type="checkbox"/> Worker receiving >= 50 mrem for the job</p>	<p>General Hazards</p> <p><input type="checkbox"/> Traffic Control</p> <p><input type="checkbox"/> Working above others</p> <p><input type="checkbox"/> Biological Hazards</p>
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- Fall Protection - Fall Exposures >4 feet (>6 feet for construction)
- Heavy Equipment Operation (crane, boom lift, excavator)
- Critical Crane Lift
- Rotating Equipment
- High Pressure air/fluids
- Welding/Cutting/Brazing /Grinding
- Lead (Lead paint, moving bricks, cutting sheets, soldering)
- Chemical Use (cleaners, solvents, adhesives, etc.) (if checked attach or link SDS to the HA) Upload Files Add Hyperlinks
- Non ionizing radiation (lasers, RF, UV, magnets)
- Confined Space
- Ergonomics (overexertion, repetition, heavy lifting, awkward lifting, static posture)
- Silica (machining - concrete, asphalt, grout, mortar)
- Loud Noise (continuous, instantaneous)
- Asbestos (presumed or suspect building materials, e.g. tile, pipe insulation, roofing materials, etc.)
- Nanomaterial (1-100nm)
- Beryllium
- Potential Oxygen Deficiency - ODH 1 or ODH 2 Area
- Oil use and storage

Personal Protective Equipment: (Check all that are required for the job.)

- | | |
|---|--|
| <input checked="" type="checkbox"/> Safety glasses (marked Z87+, Z87-2+ for prescription) | <input type="checkbox"/> Chemical splash goggles |
| <input type="checkbox"/> Hearing Protection | <input checked="" type="checkbox"/> Hard Hats |
| <input type="checkbox"/> 3.0 Brazing goggles | <input type="checkbox"/> Impact Goggles |
| <input checked="" type="checkbox"/> Face shield | <input type="checkbox"/> Rubber apron |
| <input checked="" type="checkbox"/> Leather gloves | <input type="checkbox"/> Hot/Cold thermal protective gloves |
| <input type="checkbox"/> Chemical resistant gloves (specify type): | <input type="checkbox"/> Respirators |
| <input type="checkbox"/> _____ 256 | <input checked="" type="checkbox"/> Safety Footwear (specify): |
| <input type="checkbox"/> Other required PPE (specify): | <input type="checkbox"/> Steel toes _____ 245 |
| <input type="checkbox"/> _____ 256 | <input type="checkbox"/> Fall protection equipment (specify): |
| | <input type="checkbox"/> _____ 256 |

Environmental Impacts (Required - check one):

- Yes, I have thought about potential the environmental impacts (see Guidelines for Completing the HA below) of this job and will document such impacts and mitigation steps within this document.
- Yes, I have thought about the environmental impacts of this job and no such credible impacts exist and therefore do not need to be written in this document.

Equipment required for the job: (List the tools needed to perform the job.)

House crane, slings Fork truck, Straps, large saw. Circular saw with carbide blade. Arial lift.

Work plan history information; (List any lessons learned incidents from this job, tips from previous jobs)

Combination of proven processes.

Improvement/Feedback: At the conclusion of the job, the Task Manager, Supervisor and / or Project Leader shall work with those involved to consider lessons learned and receive in order to improve future work plans.

Check one:

Yes we have considered lessons learned and accepted feedback on this job and will communicate such information so that in future work plans may be improved.

Yes we have considered lessons learned feedback and determined that future work plans do not need to be improved.

Utilizing the format below, identify hazards and environmental aspects, and their corresponding safety precautions/procedures to mitigate hazards. Use as many sheets as necessary.

HAZARD ANALYSIS

	Description	Safety Hazards / Potential Environmental Impacts	Precautions / Safety Procedures
1 ▼ ☰	Cut coil layers manually. remove one layer at a time. Start at steel and stair step away from steel until last layer is cut. Cut incrementally.	Noise, Working from a lift, Flying debris, No lubrication. Cutting to much at a time. Unsecured coil piece.	Wear hearing protection, Wear safety glasses and face shield. Keep area clear. Have trained operators, Use lubrication. Cut slowly. Keep both hands on saw. Secure coil piece with clamp or strap.
2 ▼ ▲ ☰	Repeat until coil layers are all cut and end is exposed.	Noise, Working from a lift, Flying debris, No lubrication. Cutting to much at a time. Unsecured coil piece.	Wear hearing protection, Wear safety glasses and face shield. Keep area clear. Have trained operators, Use lubrication. Cut slowly. Keep both hands on saw. Secure coil piece with clamp or strap. Avoid coil piece on final cut.
3 ▼ ▲ ☰	Remove Minos modules following HA 2108 and procedures. When several feet are exposed and removal becomes difficult, Use guillotine saw on hydraulic table to cut coils piece. Do only upper coil.	Loose saw to coil connection. Saw not aligned. Operator not trained. Poor communication. Coil piece falling free when cut loose.	Have good communication. Use trained operators. Maintain good coil to saw connection. Have sling tight to prevent coil piece from falling free. Cut only upper coil loose at this time.

4 ▼ ▲ ☰	Repeat step 5 until reach end of detector. Secure coil to beam with slings. Remove the final planes.	Coil not secure. Planes not free of coil.	Verify coil is secure. Make coils position to allow removal of final planes. Keep clear of pinch zones.
5 ▼ ▲ ☰	Use crane to secure final portion of coil and remove straps. Move final coil parts to scrap.	Coil not secure. untrained operator. Coil falling free. Pinch hazards.	Verify coil is secured with slings. Remove straps. Use trained operators. Use good communication. Keep clear of pinch zones. Allow coil to rotate down to remove potential energy.
6 ▼ ▲ ☰	Cut North end of coil layers manually. Remove one layer at a time. Cut on east horizontal surface. Cut incrementally.	Noise, Working from a lift, Flying debris, No lubrication. Cutting to much at a time. Unsecured coil piece.	Wear hearing protection, Wear safety glasses and face shield. Keep area clear. Have trained operators, Use lubrication. Cut slowly. Keep both hands on saw. Secure coil piece with clamp or strap.
7 ▼ ▲ ☰	Put east horizontal coil on several Die carts. Roll upstream. Secure end with crane. Insert Guillotine saw and cut into manageable pieces. Repeat.	Loose saw to coil connection. Saw not aligned. Operator not trained. Poor communication. Coil piece falling free when cut loose.	Have good communication. Use trained operators. Maintain good coil to saw connection. Have sling tight to prevent coil piece from falling free. Cut only upper coil loose at this time.
8 ▲			

[+Add New Step](#)

GUIDELINES FOR COMPLETING THE HAZARD ANALYSIS

Phase of Work	Safety Hazards / Potential Environment Impacts	Precautions / Procedures
Examining a specific job by breaking it down into a series of steps or tasks, will enable you to discover potential hazards employees may encounter. Each job or operation will consist of a set of steps or tasks. For example, the job might be to move a box from a conveyor in the receiving	A safety hazard is potential danger to a person or equipment. An environmental impact is a change to the environment. The purpose of the Job Safety Analysis is to identify ALL hazards - including those produced by the environment, those connected with the job procedure, and those with the potential to result in an environmental impact.	Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the hazards that could lead to an accident, injury or occupational illness. Consider the hierarchy of controls: 1. Elimination (physically remove the

<p>area to a shelf in the storage area. To determine where a step begins or ends, look for a change of activity, change in direction or movement.</p> <p>Picking up the box from the conveyor and placing it on a hand truck is one step. The next step might be to push the loaded hand truck to the storage area (a change in activity). Moving the boxes from the truck and placing them on the shelf is another step. The final step might be returning the hand truck to the receiving area.</p> <p>Be sure to list <i>all</i> steps needed to perform the job. Some steps may not be performed each time; an example could be checking the casters on the hand truck. However, if that step is generally part of the job it should be listed. Close observation and knowledge of the job is important. Examine each step carefully to find and identify hazards - the actions, conditions, and possibilities that could lead to an accident. Compiling an accurate and complete list of potential hazards will allow you to develop the recommended safe job procedures needed to prevent accidents.</p>	<p>To identify hazards, ask yourself these questions about each step:</p> <p>Is there a danger of the employee striking against, being struck by, or otherwise making injurious contact with an object? Can the employee be caught in, by, or between objects? Is there potential for slipping, tripping, or falling? Could the employee suffer strains from pushing, pulling, lifting, bending, or twisting? Is the work environment hazardous to safety and/or health (toxic gas, vapor, mist, fumes, dust, heat, or radiation)? Are there electrocution hazards? Will action require soil/erosion control? Will chemicals or petroleum products be used in an area where they could be released into the environment? Will action have the potential to affect storm water (drains, ponds, or streams in the vicinity)? Will action have the potential to affect the sanitary water system? Will action involve refrigerants? Will any regulated or recyclable waste be generated?</p>	<p>hazard)</p> <ol style="list-style-type: none"> 2. Substitution (replace with something less hazardous) 3. Engineering controls (isolate the hazard) 4. Administrative controls (change the work) 5. PPE <p>List the recommended safe operating procedures. Begin with an action word. Say exactly what needs to be done to correct the hazard, such as, " lift using your leg muscles." Avoid general statements such as, "be careful", "use caution", and "be alert".</p> <p>List the required or recommended personal protective equipment necessary to perform each step of the job.</p> <p>Give a recommended action or procedure for each hazard.</p> <p>Serious hazards should be corrected immediately. The JSA should then be changed to reflect the new conditions. Finally, review your input on all three columns for accuracy and completeness. Determine if the recommended actions or procedures have been put in place. Re-evaluate the job safety analysis as necessary.</p>
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I have reviewed this hazard analysis and I understand the hazards and required precautionary action. I will follow the requirements of this hazard analysis or notify my supervisor or Fermilab contact if I am unable to do so.

Signed	Name	Date
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[+Add a person for signatures](#)

- Update this hazard analysis information with the current information displayed here. If stored as a draft, messages will not be sent to those subscribed to get system update messages and its draft status will be visible on the list of HAs.
- Draft?
- Copy this hazard analysis to a new entry. The new entry will appear in the list under the department of the person doing the copy. After the copy, the entry can be viewed and updated.
- This will re-display this form in a format better for printing and bring up the print dialog. If changes have been made, save them first using the Save or Update button. More information on [printing](#) is available.