

IUOE National Training Fund National HAZMAT Program

Green Chemistry and Green Jobs Awareness Course

GJHA Activity Book Companion to the Student Manual







IUOE National Training Fund National HAZMAT Program 1293 Airport Road Beaver, WV 25813 (304) 253-8674 Fax (304) 253-7758 hazmat@iuoehazmat.org www.iuoehazmat.org

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- It is not the intent of the content developers to provide compliance-based training in this presentation, the intent is to address hazard awareness in the hazardous waste operations and emergency response (HAZWOPER) industry, and to recognize the overlapping hazards present in many construction workplaces.
- It should NOT be assumed that the suggestions, comments, or recommendations contained herein constitute a thorough review of the applicable standards, nor should discussion of "issues" or "concerns" be construed as a prioritization of hazards or possible controls. Where opinions ("best practices") have been expressed, it is important to remember that safety issues general and HAZWOPER jobsites specifically will require a great deal of site- or hazard-specificity a "one size fits all" approach is not recommended, nor will it likely be very effective.



To: Users of IUOE National Training Fund Programs

The IUOE National Training Fund -- National HAZMAT Program offers a broad spectrum of safety and health training, as well as training support to other users of the National HAZMAT Program's resources. The National HAZMAT Program has available, at no cost, the following:

- Direct training for IUOE Local Union members and other appropriate groups conducted at the Local Union, at an employer's site, or other appropriate locations
- Training materials, including personal protective equipment, and other types of equipment for National HAZMAT Program Master Instructors' HAZWOPER and other safety and health related classes
- New instructor mentoring for HAZWOPER and other safety and health related classes
- Safety and health regulations and standards interpretation assistance
- Technical safety and health, emergency/disaster response, and energy security and restoration assistance
- Training data information from the National training database for Local Union members and others who have completed training through the National HAZMAT Program
- Expertise to provide best practices and information sharing, develop scenarios, and conduct exercises to prepare all stakeholders to protect and restore critical infrastructure should an event, manmade or natural, occur
- Training information on HAZWOPER, OSHA, emergency/disaster response, and other safety and health classes held at other IUOE Local Unions nationwide

Inquiries regarding the services the IUOE National Training Fund -- National HAZMAT Program have to offer can be directed to Barbara McCabe at 1293 Airport Road, Beaver, WV 25813, called in at (304) 253-8674, faxed to (304) 253-7758, or emailed to hazmat@iuoehazmat.org. Forms requesting classes and materials can also be submitted via the Internet at www.iuoehazmat.org.

The IUOE National Training Fund encourages all workers to take advantage of the National HAZMAT Program's services to assist you to be employable, competitive, and safe in the workplace.

Sincerely,

Jeffrey R. Vincent Executive Director, IUOE National Training Fund



This training program was developed for the IUOE National Training Fund by



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Special Thanks

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- Bernard Mizula: Curriculum development
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- Ella Baker Center For Human Rights (www.ellabaker.org): Green jobs resource
- Green.dc.gov: Green jobs resource



Table of Contents

Activity: Green Job Hazard Analysis	Form1	-1
-------------------------------------	-------	----

Activity: General Steps of Wind Turbine Construction_____2-1

Step 1 - Install pedistal / foundation	
Step 2 - Erect tower from segments	
Step 3 - Join segments from within	2-4
Step 4 - Install nacelle	
Step 5 - Fasten blades together and hoist	
Step 6 - Attach blades to nacelle at the nose cone	
Note: Throughout construction, ground team stabalizes hoisted components	2-8
Step 7 - Operation and Maintenance	

Activity: General Steps of Green Roof Construction_____3-1

Step 1: Planning / design phase	
Step 2: Receive supplies	
Layers of a Green Roof	
Step 3: Install roofing membrane, root barrier, and insulation	
Step 4: Install drainage, root support, and primary root barrier	
Step 5: Add soil / growing medium	
Step 6: Add vegetation	



Green Job Hazard Analysis

Activity: Conduct a GJHA

Time for Activity: 45 minutes (30 minutes for group work and 15 minutes for report back).

Objective: The two main objectives of this activity are: 1) to familiarize participants with the job hazard analysis procedure and with the IOUE GJHA tool. 2) To help participants understand that green jobs are not necessarily safe jobs for the worker.

Task: Your group will be assigned a wind turbine or green roof installation to analyze for work hazards. The work tasks in these two green jobs are simplified for awareness-level training purposes. Use the provided IUOE GJHA tool and the supplied photos to conduct a GJHA. Each photo set is numbered in the order of installation from beginning to end. Have your group focus on sections 2 through 5 on the GJHA. For each photo, break down the work into a few steps and determine hazards and controls for each step. Make sure you create a manageable number of steps to address in order for you to cover them in the time you are given; don't create too many. You may wish to use one GJHA per photo. In order to better understand the job tasks and related hazards, you use the internet to fill in any questions that you may have about the wind turbine or green roof installation process. Remember, as discussed in class, "Section 3: Green Step", is used on a traditional job when there is a specific "green" procedure or product used, without classifying the entire job as "green."

Section 2: Sequence of task steps	Section 3: Green step	Section 4: Identified hazard	Section 5: Hazard Control
Remove dirt from con- tainer and spread by hand		Ergonomic issue: lower back injury	Have crane slowly move soil container and spread dirt
Mix fertilizer into soil		Chemical contact: skin sensitization	Wear chemical protective gloves/goggles, etc.

Below is an example of two analyzed steps green roof installations:

After you have conducted the JGHA, select a group member to report back to the class.

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	SECTION 1			
HAZARD	Job Task:	Date:		
	Job Task Location:	GJHA Number:		
	Contractor's name:	Name of person performing GJHA:		
	Supervisor's name:	Does job use special Green process? Y/N		
ANAL 1 313	Explain Green process:			
Has Green process been studied for worker health and safety?				
Is there safety and health guidance when performing process?				

Does job use a Green product? Y/N

Have you reviewed MSDS? Y/N List MSDS location:

List PPE or safety equipment required

SECTION 2: Sequence of Task Steps	SECTION 3: Green Step	SECTION 4: Identified Hazard	SECTION 5: Hazard Control
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			

SECTION 6				
Workers signatures verifying GJHA	Workers comments performing job	Applicable Standards and Guidance		
1.				
2.				
2				
3.				
4.				

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What is a Green Job Hazard Analysis (GJHA) and issues with Green Jobs

A job hazard analysis (JHA) is a technique that focuses on job tasks to identify hazards before they cause harm to workers. It breaks the job into tasks and identifies the steps that make up a task. It focuses on the relationship between the worker, task, tools, and the work environment. The goal is to eliminate or reduce the hazard before it harms a worker. A GJHA is a JHA that focuses on Green Jobs, green building materials, work processes and green building methods. Green jobs carry the same hazards as traditional construction work and may even have additional hazards. Not only should Green Jobs be beneficial to the environment and the citizens, using the end product they should not harm the workers on the job. *Include the worker in all phases of the analysis, from reviewing the job steps and procedures to discussing uncontrolled hazards and recommended solutions.* There are six sections for this GJHA. Section I: Background info, Section II: Sequences of basic tasks, Section III: Green Process, Section IV: Hazard Analysis, Section V: Hazard Controls and Section VI: Verification

Equipment considerations

You may want to have the following equipment on hand when conducting a GJHA; GJHA form, writing utensil that is water proof, clip board, digital camera or digital video recorder with zoom, binoculars (if you cannot get close enough to the view the worker performing task), lap top with GJHA electronic form (If collecting data electronically), any necessary safety equipment to protect you while performing the GJHA (ear protections, hard hat, safety shoes, etc.)

SECTION 2: Sequences of basic tasks - breaking down a job into small parts

Each job is comprised of a series of tasks. Tasks are comprised of a series of steps. Observe the job so that you can identify a list of tasks. Each task is then broken into steps. Once the step is clearly understood, analyze that step for hazardous conditions and/or unsafe behaviors. Developing the steps for a task is critical in the analysis process for improving a job's safety. Be sure to record enough information to describe each task step without getting overly detailed. Avoid long, overly detailed breakdown of steps but at the same time do not combine steps (look for "and" in the step). Get input from workers who have performed the same job. Review the steps with workers to make sure you have not omitted something. Ensure that you are evaluating the task, not the worker's job performance. It may be helpful to photograph or videotape the worker performing the task since visual records can be useful references when doing a more detailed analysis of the work as well as used in the creation of a safe job procedure or when making job modifications.

SECTION 3: Green Process

Record any step that is performed to make the job "Green" such as installing an exterior poly barrier on a building to collect fugitive airborne contaminants. This step protects the community from unwanted contaminants, but may increase air hazard and heat stress exposures for workers. Another example is use of any fertilizers on roof top gardens that may be harmful to the Stationary Engineer and staff who is responsible for maintaining the building and its systems.

SECTION 4: Analyzing hazards for each basic task

A hazard is a process or thing that has the potential to cause harm to the worker. To ensure that all hazards associated with a step are identified, analyze each step to identify potential as well as actual hazards produced by work process or activity, tools and work environment. Consider the following: Is there danger of striking against, being struck by, or otherwise making harmful contact with an object? Can the worker be caught in, by, or between objects? Is there potential for a slip or trip? Can the employee fall from one level to another or even on the same level? Can pushing, pulling, lifting, lowering, bending, or twisting cause strain? Is the work environment hazardous to safety or health? Is there potential for concentrations of toxic gas, vapor, fumes, or dust? Are there potential exposures to heat, cold, noise, or ionizing radiation? Are there flammable, explosive, or electrical hazards? Are there any other activities or items that may cause harm to the worker?

SECTION 5: Controlling the hazards

After reviewing your list of hazards with workers, consider what control methods will eliminate or reduce them. Apply the Hierarchy of Controls (elimination, engineering, administrative and PPE) and explore the application of different controls measures. The most effective measures are controls that remove or eliminate the hazards or physically change a machine or work environment. The less likely a hazard control can be circumvented, the better. If this is not feasible, administrative or PPE controls may be appropriate. The JHA itself can be an effective management control. Make sure the workers have input to ensure that the control will not only be effective for reducing or eliminating the hazard, but that the control will still allow the workers to perform their job. The prescribed control may change how workers do their job. If you plan to introduce new or modified job procedures, be sure workers understand what they are required to do and the reasons for the changes. Controls MUST NOT create an additional hazard

SECTION 6: Verification and final steps

Now that the GJHA is complete make sure workers that were involved in the process have signed the GJHA form. Verify the GJHA form is filled out completely. Copy and send back form (or file if done electronically) to the IUOE National Hazmat Training Program; Attention Chip Booth; 1293 Airport Road; Beaver, WV 25813 or cbooth@iuoehazmat.org.

The GJHA may be used to create a safe job procedure or modify a job task, tool(s) or work environment. Job and tasks should be reviewed after controls are in place for effectiveness



Activity:

General Steps of Wind Turbine Construction







Step 1 - Install pedistal / foundation













2-5





Step 6 - Attach blades to nacelle at the nose cone













	SECTION 1			
CRFEN	Job Task:	Job Task:		Date:
	Job Task Location	E.		GJHA Number:
	Contractor's name:		Name of person performing GJHA:	
HAZARD	Supervisor's name:		Does job use special Green process? Y/N	
ANALISIS	Explain Green process:			
Has Green process been studied for worker health and safety?				
Is there safety and health guidance when performing process?				
Does job use a Green product? Y	ct? Y/N Have you reviewed MSDS? Y/N List MSDS location:			

List PPE or safety equipment required

SECTION 2: Sequence of Task Steps	SECTION 3: Green Step	SECTION 4: Identified Hazard	SECTION 5: Hazard Control
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SECTION 6			
Workers signatures verifying GJHA	Workers comments performing job	Applicable Standards and Guidance	
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Activity:

General Steps of Green Roof Construction









3-3











Step 3: Install roofing membrane, root barrier, and insulation









Step 5: Add soil / growing medium







	SECTION 1			
CREEN	Job Task:	ob Task:		Date:
	Job Task Location	E.		GJHA Number:
	Contractor's nam	e:		Name of person performing GJHA:
HAZARD	Supervisor's name:		Does job use special Green process? Y/N	
ANALISIS	Explain Green pro	ocess:		
Has Green process been studied for worker health and safety?				
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