



PDHonline Course G347 (3 PDH)

Job Hazard Analysis – A Cornerstone of a Good OHS System

Instructor: Jeffrey R. Sotek, PE, CSP, CIH

2020

PDH Online | PDH Center

5272 Meadow Estates Drive
Fairfax, VA 22030-6658
Phone: 703-988-0088
www.PDHonline.com

An Approved Continuing Education Provider

Job Safety Analysis (JSA)

A Cornerstone of a Good OHS System

How to prepare new JSAs and analyze health & safety hazards at your worksite.

Jeffrey Sotek, PE, CSP, CIH

Training Objectives

- Explain what is a JSA
- Explain the need for JSAs
- Explain the benefits of JSAs
- Provide the information and tools necessary to properly complete JSAs

Objectives

- Employee involvement
- Develop new JSAs that are task/equipment specific

What is a Job Safety Analysis?

- A JSA is the evaluation of the hazards (a potential for harm) associated with an employee's work activity
 - **Provides organized approach for the evaluation of a process by breaking down the job task into separate and distinct steps**
 - **Identifies hazards (before they occur), root causes and corrective actions**
 - **Focuses on “fixing” the root causes that brought the hazardous condition or unsafe practice into the workplace**
 - **Incorporates reviewing safe behaviors into the normal operating procedures**
 - **Determines the appropriate controls needed to control each of the identified hazards**

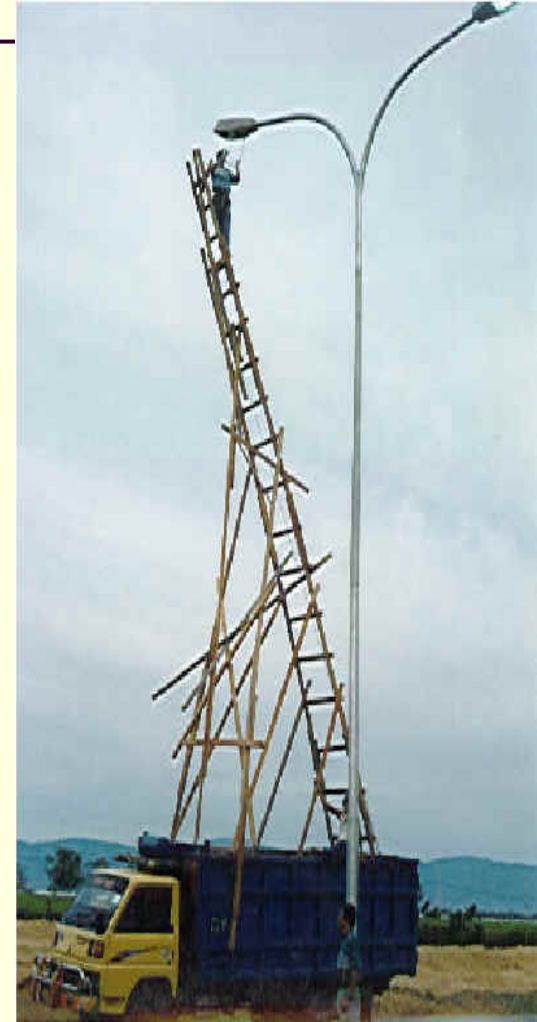


JSA Benefits

- **Identifies unsafe work practices**
- **Increases employee hazard recognition and awareness**
- **Develops safe job procedures**
- **Standardizes operations based on acceptable safe practices**
- **Allows formal documentation of employee's knowledge of the job requirements**
- **Ensures all employees have the training, equipment (i.e. PPE), and supplies to do their jobs safely**
- **Allows a fresh look**

JSA Key Terms

- Job - Any activity (mental, physical or both) that has been assigned to personnel as a responsibility and carries with it both positive and/or negative consequences based on the performance of that activity.
- Hazard – An unavoidable danger, peril, risk, or difficulty, even though often foreseeable.
- Analysis - the breaking down of any material or abstract entity into its component elements and then evaluating each.



Other Terms - Examples

- Job Task - *change a light bulb*
- Job Step - *climb ladder*
- Hazard - *defects on ladder*
- Exposure - *injury from ladder fall*
- Control - *inspect ladders before use and
remove from service if defective*
- Accident/Incident - *fall with or without
injury*

Preliminary information generally included on a JSA form:

- **Original/Revision Date**
- **New/Revised JSA (check box)**
- **Task/Equipment**
- **Department**
- **Completed By**
- **Reviewed By (after complete)**
- **Approved By (after complete)**
- **General Statements** (i.e. required PPE, machine guarding requirements, ergonomic requirements, etc.)

Column 1 – Process Steps

- Break job into 4-12 steps
- Less than 4 - too general, be more specific
- More than 12 - break into two JSAs
- Make sure that at least one person who actually does the job/task provides input - otherwise you risk missing important steps!!!

Column 2 – Potential Hazards

- **List the hazards associated with the step**

- Be sure to consider:

- Electrical Hazards
- Machine Guarding
- Access and Egress
- Noise
- Contact Hazards
- Lockout/Tagout
- Chemicals

- Slip, Trip, or Fall Hazards

- Human Factor Issues

- Ergonomics

- Pinch Grasp
- Reaching
- Lifting
- Etc.

Column 3 – Recommended Action

- Is there a less hazardous way to do the job?
- Can physical conditions (tools, materials) be changed?
- Can the frequency of performing the hazardous step be reduced?
- Is different/additional personal protective equipment required?

Steps to complete a JSA

- 1. Involve employees/operators in JSA process.**
- 2. Identify the job or task to be analyzed.**
- 3. Break the job or task into key components.**
- 4. Identify the hazards found in each key component.**
- 5. Identify ways to eliminate or control these hazards and act on them.**
- 6. Train employees on new/improved JSAs.**
- 7. Periodically assess controls to ensure they are working correctly**

Step 1 – Employee Involvement

- Include employees assigned to the job/task as they are the most knowledgeable about the process
- Supervisors should be included for buy in

Step 2 – Identify the Task/Job for Analysis

- Any job or task that meets any of the following conditions should have a JSA conducted for it:
 - Jobs with catastrophic potential – fire, explosion, large chemical releases, massive equipment failure
 - Tasks in which one simple human error could lead to serious injury
 - Tasks that have changed (i.e. new environment, new people, engineering change, etc.)
 - Rarely performed jobs
 - Any job done under a “safety permit” – confined space permit, hot work permit, etc.

Step 2 – Identify the Task/Job for Analysis

- Conduct a preliminary worksite walk-around to observe or identify hazardous jobs or tasks.
 - Observe workers doing their jobs to identify potential hazards that may lead to an injury, pay attention to the amount of time the worker is exposed to a particular hazard.
 - Talk with workers to find out what they think the most hazardous part of their job is, ask them if what you observed them doing is typical.

Step 3 - Break the Job/Task into Key Components

- Once a job or task is identified, observe the task and break it into key components or sub-tasks.
 - Direct Observation
 - Employee Participation
- Record Results
- Ensure that the information is complete and accurate.

Step 3 - Break the Job/Task into Key Components – Example: Changing a Light Bulb

| Too Much Detail | Too Little Detail | Right Amount of Detail |
|--|--|---|
| <p>Get ladder from storage.</p> <p>Get new light bulb from storage.</p> <p>Carry ladder and light bulb to light needing changing.</p> <p>Place ladder under light to be changed.</p> <p>Ensure light switch is in the off position.</p> <p>Climb ladder.</p> <p>Remove light cover.</p> <p>Twist light bulb in a counter clock-wise direction until it is free of the socket.</p> <p>Remove old light bulb.</p> <p>Insert new light bulb into socket.</p> <p>Turn in a clock-wise direction until tightened.</p> <p>Replace light cover.</p> <p>Descend ladder.</p> <p>Carry ladder back to storage.</p> | <p>Get a ladder and new light bulb.</p> <p>Change bulb.</p> <p>Put ladder away and throw out old light bulb.</p> | <p>Get ladder and new light bulb from storage areas.</p> <p>Turn light switch off.</p> <p>Place ladder under light to be changed.</p> <p>Using ladder, change bulb.</p> <p>Put ladder back in storage and discard old light bulb.</p> |

Step 3 - Break the Job/Task into Key Components - Tips

- **Evaluate all aspects of the job task, even if performed infrequently**
- **Observe more than one employee doing a specific job task**
- **Observe more than one shift**
- **Take enough time observing the job, don't rush**
- **Observe a worker actually doing the job, not just describing job**

Step 4 - Identify the Hazards in each Component

- Once you've identified the steps of the job/task, you'll need to identify the hazards of these tasks and start addressing the most serious first.
- One method for ranking tasks considers the probability of the hazard causing injury, along with an estimate of the severity of the resulting injury.
- These are not necessarily precise predictions of when and how severe an injury may be, they are an estimate of the outcome and the likelihood of the injury occurring.

Step 4 - Identify the Hazards in each Component

| | |
|---------------------------------------|--|
| Slip, Trip, or Fall Hazards: | Are workers working at heights (from a ladder, roof top etc.)? What is the condition of the walking/working surfaces, housekeeping, etc.? |
| Confined Space Entry: | Do workers have to enter a confined space? |
| Excavations, Holes or Floor Openings: | Are there excavations, holes, or floor openings in the work area? Can workers fall into or through them? |
| Equipment: | Is there machinery, forklifts, etc. in the area? Do the tools or equipment create a hazard? Can any part of the worker's body or clothing be caught in the equipment? Is the tool or equipment appropriate for the task (strength, size, power, etc.)? Are robotics used in the process? |
| Human Factor Issues: | Can human factor issues (training, fitness, fatigue, etc.) create a hazard? |
| Chemicals: | Do workers use solvents, acids, bases, pesticides, consumer products, etc.? Does the worker come into direct contact with the chemicals? Are the chemicals released into the air (gas, mists, vapors, etc.)? |

(Handout)

Step 4 - Identify the Hazards in each Component - Example

| PROCESS STEPS | POTENTIAL HAZARDS | RECOMMENDED ACTION |
|----------------------------|---|--------------------|
| Get ladder from storage. | Back or Muscle Strain <ul style="list-style-type: none">▪ Trying to lift too heavy objects▪ Bending over at the waist when lifting▪ Turning (twisting) back while lifting | |
| Using ladder, change bulb. | Ladder Tipping Over: <ul style="list-style-type: none">▪ Ladder was not on a level surface▪ Ladder was on soft ground and the leg sunk in▪ The person reached out too far▪ The ladder wasn't high enough to reach up safely – the person stood up near the top of it▪ Ladder broken or damaged Electrical Shock <ul style="list-style-type: none">▪ Electricity not turned off. | |

Step 5 - Identify ways to Eliminate or Control Identified Hazards

- Now that you've identified the job and evaluated its sub-tasks and their hazards, you need to identify ways to eliminate or control these hazards

- Engineering Controls
- Administrative Controls
- Personal Protective Equipment (PPE)
- Combinations of Controls

- Combinations of Controls may need to be used if the hazard can't be completely controlled by engineering controls alone.



Step 5 - Identify ways to Eliminate or Control Identified Hazards - Example

| Job Steps | Hazard | Control Methods |
|--------------------------------|---|--|
| Get ladder from storage. | Back or Muscle Strain <ul style="list-style-type: none"> Trying to lift too heavy objects Bending over at the waist when lifting Turning (twisting) back while lifting | <ul style="list-style-type: none"> Use proper lifting practices (bend knees, don't twist) For very heavy objects, use mechanical devices or get another person to help. |
| Get ladder and new light bulb. | Ladder Tipping Over: <ul style="list-style-type: none"> Ladder was not on a level surface Ladder was on soft ground and the leg sunk in The person reached out too far The ladder wasn't high enough to reach up safely – the person stood up near the top of it Ladder broken or damaged Electrical Shock <ul style="list-style-type: none"> Electricity not turned off. | <ul style="list-style-type: none"> Set ladder feet on solid level surfaces. When reaching out, keep belt buckle between the side rails of the ladder. Do not stand on the top of a stepladder or on the first step down from the top. Replace or repair ladder Replace bulb with longer lasting type (i.e LED) Ensure electricity is turned off at source. |

Step 6 – Train employees on new/improved JSAs

- **Any time you complete or revise a job safety analysis, it is important to train all employees affected by the changes in the job methods, procedures, or protective measures adopted.**
- **Going Forward: new/transferred personnel should be trained to relevant JSAs by their trainer**

Step 7 - Periodically assess controls to ensure they are working.

- **Assess how well the JSA process is “fixing” hazardous conditions by:**
 - Updating JSAs for routine and non-routine task
 - Ensuring JSAs were developed for all new processes
 - Conducting routine self-inspections
 - Reviewing Injury Investigations and Near Miss Hazard Observations
 - Following up on employee concerns
- **Incorporate evaluation into an Annual JSA Evaluation process and JSA update.**



THANK YOU



Jeffrey Sotek, PE, CSP, CIH