
MODULE 3

WORKSITE ANALYSIS

Objectives

At the end of this module, participants will be able to...

- Identify the factors OSHA includes under *worksite analysis* in its voluntary Safety and Health Program Management guidelines.
- Define and identify the relationship between safety, hazards, and incidents.
- Identify methods that can be used to conduct a worksite analysis.
- Prepare a hazard inventory as part of worksite analysis.
- Describe hazards according to types/categories.
- Using a case study, review hazards found during a worksite analysis to determine what failure in the safety system permitted the hazard(s) to occur.

Time

80 minutes: 10:35 to 11:55 AM

Followed by a 60-minute lunch: 11:55 AM-12:55 PM

Agenda

1. Introduction to Worksite Analysis—Presentation (5 minutes)
2. OSHA’s Guidelines for Worksite Analysis—Activity (5 minutes)
3. Heinrich’s Triangle—Presentation and Activity (10 minutes)
4. Methods for Conducting Worksite Analysis—Presentation and Discussion (20 minutes)
5. The Hazard Inventory—Presentation (5 minutes)
6. Conducting a Worksite Analysis—Case Study (35 minutes)

A Note About the Case Study

You will be using the same case study in Modules 3, 4, and 5. However, the case description is only included in this module (Module 3). When participants are working on the case study in Modules 4 and 5, you may need to refer them back to this module to review the case description.

If you prefer not to have participants shuffle back and forth, you can make copies of the case description and distribute the copies as a handout. For your convenience, the case description is on your *Tools and Resources* CD.

RECOMMENDED PROCESS

1. Introduction to Worksite Analysis—Presentation (5 minutes)

Cues	Content
PPT 3-1	<ul style="list-style-type: none"> ■ You will cover Pages 1 and 2 in this segment. Spend most of your time on Page 2.
PPT 3-2 and PPT 3-3	<ul style="list-style-type: none"> ■ Show PPT 3-1 as you refer participants to Page 1 in Module 3 of their Participant Guides. ■ Introduce the module by saying that the second process in the OSHA voluntary safety and health management guidelines is worksite analysis.
Question	<ul style="list-style-type: none"> ■ Show PPT 3-2 and PPT 3-3 as you introduce the module objectives. ■ Refer participants to Page 2. ■ Ask participants: What is a worksite analysis?
PPT 3-4 Animated	<ul style="list-style-type: none"> ■ Ask participants: What is a worksite analysis? ■ Show PPT 3-4 as participants respond. When everyone has given their ideas, advance PPT 3-4 to reveal the definition of worksite analysis. ■ Refer participants to the flowchart at the bottom of Page 2.
Question	<ul style="list-style-type: none"> ■ Ask participants: Does anyone recognize what this is?
PPT 3-5 Animated	<ul style="list-style-type: none"> ■ Get some responses, then reinforce what participants have said by showing PPT 3-5 and making the following points. <ul style="list-style-type: none"> – The safety process consists of three steps. – The first step is to <i>recognize</i> hazards. You do this by examining your workplace and identifying the hazards you see. – The second step is to <i>evaluate</i> hazards. Once you know what the hazards are, you evaluate them to determine how big a risk they pose. – You do this by asking two questions.

- The first is “What is the chance I’ll be hurt?”
- The second is “How severe will it be?”
- When you ask these questions, you are *evaluating* risk, which is a part of hazard *evaluation*.
- The last step is to *control* hazards. You control hazards by eliminating them altogether, or by providing protections so that people can’t be harmed by them.
- Advance PPT 3-5 to emphasize that, when they perform a worksite analysis, they are *recognizing* the hazards.
- Advance PPT 3-5 again to emphasize that a worksite analysis can also help them *evaluate* hazards.
- Answer participant questions.

2. OSHA's Guidelines for Worksite Analysis—Activity (5 minutes)

Cues

Facilitator Note

PPT 3-6

Content

- It is essential that you do this activity because it will be used again in Module 6.
- You will cover Page 3 in this segment.
- Begin by referring participants to Page 3 and making the following points.
 - OSHA's Safety and Health Program Management Guidelines identify a number of factors that demonstrate effective worksite analysis.
 - These factors are listed on this page.
- Show PPT 3-6. Instruct participants to read Page 3 and check items they feel their organization does well.
- Allow participants a couple minutes to read and check the list, then ask one or two people to share what they think their organization does well.
- Tell participants you will cover many of these points throughout Module 3, and they will have a chance to work with them more in Module 6.

3. Heinrich's Triangle—Presentation and Activity (10 minutes)

Cues

PPT 3-7,
Animated

Content

- You will cover Page 4 in this segment. Spend most this time presenting the triangle at the bottom of the page.
- Refer participants to Page 4 and make the following points.
 - We've just learned that a worksite analysis helps us identify hazards in our workplace.
 - We've also learned that, if we know where the hazards are, we can take steps to control them.
 - If you've ever wondered why safety and health professionals put so much emphasis on recognizing and eliminating hazards, the work of a man named H.W. Heinrich can answer your question.
- Review the points at the top of Page 4 to introduce Heinrich and his work.
- When you get to the last bullet, show PPT 3-7 and refer participants to the triangle at the bottom of the page. Tell them you would like them to use the space to the right of the triangle to work along with you as you introduce them to Heinrich's triangle.
- Advance PPT 3-7 so that the first arrow points to the bottom box.
 - Look at the bottom of the triangle. Think of your worksite for a moment. Think of some of the common hazards or substandard practices that go on in your organization
 - Every organization has them.
 - These are the hazards we tend to take for granted because we see them so often.
 - We just assume they've always been that way and we make adjustments to work around them.

Question

- For example, it might be that frayed carpet with the turned up corner, or the missing piece of handrail on the stairwell, or that electrical cord in front of the copy machine.
- List as many of these hazards as you can think of in the bottom box.
- Allow participants a few moments to work, then ask them to share some of the hazards they identified.
- Advance PPT 3-7 so that the second arrow points to the second lowest box. Make the following points.
 - But sometimes, if we are in a hurry or if we forget, this hazard might give us a minor injury.
 - These are minor incidents that may not even hurt us or, if they do, the injury is slight.
 - For example, we might trip on that upturned carpet or slightly lose our balance when the stairwell railing suddenly disappears from our grip.
 - The more hazards you have in the workplace, the more minor incidents you will have.
 - Now think about some of the hazards you identified for the bottom portion of this triangle.
- Ask participants: Have there been minor incidents or close calls relating to any of these hazards?
- Allow participants some time to think about this question, then get their responses. Encourage them to write their answers on the appropriate line on Page 4.

Question

- Ask participants: In addition to the minor injuries or close calls you know about, how many others do you think there have been that you don't know about?
- Get some participant responses. Participants will acknowledge that most of the minor incidents probably go unnoticed.

Question

PPT 3-8,
Animated

- Advance PPT 3-7 so that the third arrow points to the second highest box. Make the following points.
 - According to Heinrich, for every 300 minor injuries or near misses you have, you will also have 29 more serious injuries that require first aid, trips to the hospital, or property damage.
 - Using the line corresponding to the second highest box, write down any serious injuries that have occurred in your organization.
 - If you have not had any injuries of this nature, consider yourself lucky and use the space to write some things that could happen based on the hazards you identified.
- Allow participants some time to work, then ask for their responses.
- Advance PPT 3-7 so that the final arrow points to the top of the triangle. Make the following points.
 - Heinrich also observed that for every disabling injury or fatality that occurs, there are 29 serious injuries leading up to it.
- Refer participants to the top of their triangle. Ask them to write any disabling injuries or fatalities that have occurred in their organization.
- If they have had none, have them write potential injuries based on the hazards they identified.
- Ask participants to share their responses, then ask: What important conclusions can be drawn from our examination of Heinrich's triangle?
- Show PPT 3-8 as participants respond. When everyone has shared their ideas, advance PPT 3-8 twice to reveal the two most important conclusions.
 - **First conclusion:** Incident investigation should include incidents that cause minor or no injuries.

- Because the underlying cause of these minor incidents many eventually cause a serious incident, it is important to learn what the cause is and eliminate it.
 - This may require a complete culture change in your organization if employees and supervisors are in the habit of simply ignoring minor injuries.
- **Second conclusion:** Reducing the number of no-injury incidents will also reduce the number of serious incidents.
- Of course, not every hazard will result in an incident, and not every injury will be disabling or fatal.
 - But, the more hazards there are, the more likely there is to be an incident.
 - And the more incidents there are, the more likely there is to be a disabling or fatal injury.
 - Worksite analysis helps us to identify minor hazards and incidents.
- Address participant questions.

4. Methods for Conducting Worksite Analysis—Presentation and Discussion (20 minutes)

Cues

PPT 3-9

Content

- You will cover Pages 5 through 7 in this segment. Allow roughly the same amount of time on each page.
- Refer participants to page 5. Make the following points.
 - We have discussed that a worksite analysis is performed to identify existing or potential hazards with the goal of controlling or eliminating them.
 - There are many methods for doing a worksite analysis.
 - Let’s review them.
- Show PPT 3-9 as you refer participants to the top box on Page 5. Introduce the comprehensive baseline survey with the following.
 - This is the survey that is conducted when an organization begins its safety and health management system.
 - It’s a thorough assessment of the organization and all of its hazards.
 - It provides a baseline assessment of where the organization stands.
 - The organization can use this survey to set goals for improving safety and health.
 - It also provides a basis for comparison when the organization conducts future assessments.
- Quickly review the list of items that a comprehensive baseline survey assesses.
- When you get to the last item in the box (**Roles**), ask participants whose role it is to ensure a comprehensive survey gets accomplished.

PPT 3-10

- Get several responses. Although everyone in the organization should be involved with this survey, it is top management's duty to initiate the survey and to ensure it gets completed and used.
- Show PPT 3-10 as you refer participants to the bottom box on Page 5. Introduce the job hazard analysis as follows.
 - A job hazard analysis is a step-by-step review of every job or task in an organization.
 - Each step of a job or process is analyzed for current or potential hazards.
- Review the list of items that a job hazard analysis assesses.
- When you get to the last item in the box (**Roles**), point out that everyone is involved in job hazard analysis.

PPT 3-11

- Refer participants to the top box on Page 6. Show PPT 3-11 to introduce change analysis. Make the following points.
 - A change analysis is a step-by-step review conducted any time there are changes such as a new building, new equipment, a new process or new materials.
 - This assessment helps an organization assess whether there are new hazards as a result of the change.
 - It should assess all elements of a job or process that has experienced change.
- When you get to the last item in the box (**Roles**), point out that although the entire organization should be aware of the impact a change has on the safety of their operation, the task of analyzing the change will most likely go to a safety person or to the person who has the safety responsibilities in the organization.

PPT 3-12

- Refer participants to the middle box on Page 6. Show PPT 3-12 to introduce safety and health inspections. Make the following points.
 - This is a routine inspection of a worksite conducted at regular intervals.

PPT 3-13

- Its purpose is to identify hazards that may appear after the baseline assessment.
- Hazards that are identified during a safety and health inspection should be corrected and tracked.
- Quickly review the list of items that a safety and health inspection assesses.
- When you get to the last item in the box (**Roles**), point out that everyone has responsibilities relating to safety and health inspections.
 - Top management must support them and ensure that supervisors are carrying them out.
 - Supervisors must carry them out and ensure that employees also know how to do them.
 - Employees must work along with supervisors during health and safety inspections.
- Refer participants to the bottom box on Page 6. Show PPT 3-13 to introduce incident investigations. Make the following points.
 - An incident investigation is conducted to determine how and why an incident has occurred.
 - The investigation examines the role that people, the environment, equipment and work practices played in the incident.
 - Its purpose is to identify the root causes of an incident or injury in order to find ways to prevent future incidents.
- Review the items assessed in an incident investigation.
- When you get to the last item in the box (**Roles**), point out that everyone has a responsibility relating to incident investigations.

PPT 3-14

- Top management must budget for and support them, and provide training to ensure supervisors and employees understand their importance and know how to perform them.
 - Supervisors must constantly communicate the importance of reporting all incidents, even those that are minor and don't cause injury.
 - Employees must report every incident, no matter how minor.
- Refer participants to the top box on Page 7. Show PPT 3-14 to introduce employee reports of hazards. Make the following points.
- This is a system in which employees report hazards they see on their jobs and make suggestions for controlling these hazards.
 - This system ensures that the people closest to the job—employees—are the ones looking for the hazards.
 - It keeps them active in hazard prevention and control.
- Review the important elements of the reporting system.
- When you get to the last item in the box (**Roles**), point out that everyone has a responsibility relating to the reporting of hazards.
- Top management must find ways to recognize and reward employees who report hazards.
 - Supervisors must encourage employees to report hazards. They must also pass these reports along to top management.
 - Employees must be comfortable with bringing hazards to the attention of management.

PPT 3-15

- Refer participants to the bottom box on Page 7. Show PPT 3-15 to introduce trend analysis. Say the following.

- A trend analysis is a systematic analysis of injury and illness trends over a period of time.
- It can help an organization determine hazard trends and patterns so that root causes can be found and corrected.
- Quickly review what a trend analysis should assess.
- When you get to the last item in the box (**Roles**), point out that in general, it is top management's responsibility to collect and analyze data in order to determine if there are any safety and health related trends.
- Answer participant questions.

5. The Hazard Inventory—Presentation (5 minutes)

Cues

Content

- You will cover Pages 8 through 12 in this segment. Allocate about 1 minute per page.
- Refer participants to Page 8. Tell them that a hazard inventory can be used to conduct a number of worksite analyses, including the comprehensive baseline survey and the job hazard analysis.
- The inventory is a thorough list that prompts the evaluator or reviewer to look at all aspects of a job and work environment.
- Quickly review the purposes for the hazard inventory listed on Page 8.
- Point out that a thorough hazard inventory will assess chemical, physical, biological and ergonomic hazards.
- Refer participants to the last section of Page 8. Point out that, depending on the complexity of the hazard inventory they would like to do, they may need to seek outside assistance.
- Quickly review the various places where a small business can find resources.
- Tell participants that you are now going to review samples of a hazard inventory in each of the four hazard categories.
- Refer participants to Page 9. Tell them that this is a sample hazard inventory for chemicals.
- They would use a form like this to evaluate all the chemicals at their worksite.
- Point out that if there is danger of exposure, further evaluation is required in order to determine exposure limits.
- Quickly review the five types of exposure for chemical hazards: inhalation, skin contact, absorption, injection, and ingestion.

Question

- Emphasize that the list of chemicals on the left is only an example. For their chemical hazard inventory, they would list chemicals their organization uses.
- Ask participants: How can you find out which chemicals your organization uses?
- Get some responses. The important one you are looking for is that they should review all their MSDSs.
- Each time they receive a new MSDS, they should add the listed chemicals to their chemical hazard inventory.
- Refer participants to Page 10. Tell them that this is a sample physical hazard inventory.
- In this inventory, they would assess how frequently employees encounter each of the listed exposures.
- Quickly review a few of the items on this page.
- Refer participants to Page 11. Tell them that this is a sample biological hazard inventory.
- In this inventory, they would assess how frequently employees encounter each of the listed exposures.
- Quickly review a few of the items on this page.
- Refer participants to Page 12. Tell them that this is a sample ergonomic hazard inventory.
- In this inventory, they would assess how frequently employees encounter each of the listed exposures.
- Quickly review a few of the items on this page.
- Answer participant questions.

6. Conducting a Worksite Analysis—Case Study (35 minutes)

Cues	Content
	<ul style="list-style-type: none"> ■ You will cover Pages 13 through 17 in this segment. Allocate time as follows. <ul style="list-style-type: none"> – 10 minutes to read the case description. – 10 minutes for participants to work in groups to perform the worksite analysis. – 15 minutes to include introducing and debriefing the case study.
Facilitator Note	<ul style="list-style-type: none"> ■ If you copied the case summary for participants to use as a handout, distribute the handout at this time. ■ Refer participants to Pages 13 through 16 (or to the handout). Begin with the following points. <ul style="list-style-type: none"> – Now you will have the opportunity to perform a worksite analysis by examining a case study. – As a class, we'll be reviewing a summary of an incident that actually happened. – Your job will be to identify the hazards that could have contributed to this incident. – Before we start, however, let's think about the type of worksite analysis you'll be doing.
Question	<ul style="list-style-type: none"> ■ Have participants refer back to Pages 5 through 7. Ask participants: Which of the worksite analyses on these pages will we be doing? ■ Get some participant responses. The answer you are looking for is incident investigation. ■ Because this incident has already occurred, they will be examining it to identify the root causes of the incident and to make recommendations for how to avoid future incidents.

PPT 3-16,
Animated

- Refer participants to page 13. Tell them that since the incident they will be investigating involves a palletizer, it is important to review how the palletizer in the facility worked.
- Quickly review the bullets on Page 13 to review how a palletizer works.
- When you review the second bullet, show PPT 3-16 so participants can see what the palletizer looks like.
- When you review the fifth bullet, advance PPT 3-16 to highlight the hoist.

PPT 3-17

- When you review the ninth bullet, show PPT 3-17 so participants can see what the completed palletizer looks like as it is ready to exit the hoist area.

PPT 3-18,
Animated

- When you review the tenth bullet, show PPT 3-18 to illustrate what happens when the pallet exits the system.
- Advance PPT 3-18 to highlight the location of the light curtain.
- Advance PPT 3-18 to highlight the pallet entrance and exit locations.
- Refer participants to page 14. Quickly review the additional hoist information on this page.
- Refer participants to pages 15 and 16. Tell participants that this is the summary of the incident.
- Tell participants that you will read this summary out loud. As you read, they should use the column on the right side of the page to write down the hazards they see.
- After you've read the case out loud, divide the large group into smaller groups of four to six people each.
- Tell the groups that they have 10 minutes to complete the worksheet on Page 17.
- Tell them that, if it will help their investigation, they can use any of the hazard inventory forms on Pages 9 through 12.

Question	<ul style="list-style-type: none">■ As participants work, walk around the room to answer questions and to get a sense of the types of hazards they are identifying.■ At appropriate intervals, announce that participants should move to the next item on Page 17. This will help pace participants.■ When time is up, lead a 15 minute debriefing.■ Begin with a short general discussion.■ Ask participants: What did you think of this incident?■ Get some responses. Try to learn if they thought this was a freak accident or if it could have been prevented. Also try to learn if they believe that something like this only happens to other people or that it can also happen to them.■ Lead a discussion of the questions on Page 17.
Facilitator Note	<ul style="list-style-type: none">■ As participants share their answers, write them on a flipchart page. Post this page in a visible place in the room, as you will use this information in Module 4.■ For each question, have participants share their answers, then add any of the following as appropriate.
PPT 3-19	<ul style="list-style-type: none">■ Show PPT 3-19 when you discuss the hazards/substandard conditions caused by management and employees.<ul style="list-style-type: none">– Question 1, Management<ul style="list-style-type: none">• Management may have failed to have inspection procedures.• Management may have failed to have the palletizer inspected• Management failed to have proper guarding on the palletizer.• Management failed to require use of lockout/tagout.

PPT 3-20

- Although the company claimed to have provided training for the employee, the following questions regarding the training could have contributed to the incident. When was the training? Was it eight years ago when the employee started? Was the training measured to determine if it succeeded?
- Management may have failed to train employees on proper use of lockout/tagout.
- Question 1, Employees
 - Employees may have failed to inspect pallets.
 - Employees failed to use lockout/tagout.
 - Employee took a risk.
- Show PPT 3-20 when you discuss the hazards/substandard conditions caused by equipment, work practices, and environment.
- Question 2, Equipment
 - The sensor on the palletizer failed to detect the pallet.
 - The sensor on the palletizer failed to detect a non-conforming object (the human).
 - The emergency stop failed to work.
 - Inadequate machine guarding.
- Question 3, Work Practices
 - No safety check prior to starting the job.
 - There was a possible lack of inspection procedures.
 - Palletizers were not properly guarded.
 - The procedure for adjusting pallets was dangerous.
- Question 4, Environment

	<ul style="list-style-type: none">• There was a culture of overtime that may have influenced tired employees to use bad judgment and make poor decisions.• There may have been too much pressure to produce quickly, which caused employees to take shortcuts in safety procedures.• The employee may have been fatigued.
Question	<ul style="list-style-type: none">■ To close the case study, lead a short discussion that ties the case study back to Heinrich's Triangle.■ Ask participants: Think for a minute about the victim's attempt to adjust the pallet. Do you think this was the <u>first</u> time someone in that organization adjusted the pallet in the manner the victim did?
Question	<ul style="list-style-type: none">■ Get some responses, then ask participants: Do you think there might have been some minor injuries or close calls in the past?■ Get some responses, then close the discussion by emphasizing that, consistent with Heinrich's Triangle, employees probably escaped serious injury hundreds of times doing the exact same thing the victim did.
60 Minute Lunch	Take a 60 minute lunch.

