Viewer's Guide

The Work...and what we learned

A daily approach to
Integrated Safety Management (ISM)

Los Alamos
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Integrated Safety Management (ISM)

Integrated Safety Management—or ISM—is a complete program where safety is always an important part of any work activity. The term "integrated" describes how safety and environmental responsibilities are normal and natural elements of doing work. Safety is not added to the work because it is already part of the work. Line management is responsible for safety, and ISM is the way that management meets its moral commitment to protect people and the environment. Ultimately, ISM is found in the everyday attitudes and behaviors of everyone—workers, managers, and the organization itself.

The 5-Step Process

Integrated Safety Management can be put to use everyday in every work activity by applying 5 basic steps.

Step #1	The Basics	Questions to ask yourself at the start of each day…
Define Work	*Define:* *Work activities* *Expectations* *Priorities* *Resources* *Disposal path* *Time needed*	What are we going to do? What do we need to get done? What outcome is expected of me today? Who is helping me? Do others need to know what I'm doing? Do I have the right equipment? While I can do this work, should I do it? (Am I authorized to do it?) Am I sure? Am I comfortable proceeding? Other questions to add? Should I stop work?

Step #2	The Basics	Questions to ask yourself at the start of each day…
Analyze Hazards	*Identify hazards.* *Identify <u>new</u> hazards.* *Analyze hazards.* *Categorize hazards.*	Have the hazards changed? Has a new hazard been introduced? (New kind of material? New amount of material? New equipment?) How can I or my coworkers get hurt? What can go wrong? What has gone wrong before? What are the hazards or risks? Do I understand them? Is the risk acceptable? Other questions to add? Should I stop work?

Step #3	The Basics	Questions to ask yourself at the start of each day…
Develop Controls	*Create a safety envelope.* *Identify standards.* *Identify controls.* *Use controls.*	Is there a standard operating procedure (SOP)? Are special permits needed? Is special training/authorization required? Is there a material safety data sheet (MSDS)? Is personal protective equipment (PPE) required? Is special equipment needed? Do I understand the controls? Do the controls function correctly? Am I comfortable with them? Was I involved in their development? Are the controls realistic? Will they get implemented? Other questions to add? Should I stop work?

Step #4	The Basics	Questions to ask yourself at the start of each day…
Perform Work	*Make sure everything is ready.* *Make sure the equipment "fits" the worker.* *Think several steps ahead.* *Do the work safely.*	Is everything the same today as it was yesterday? Are all controls in place? Is all equipment working? Do I know enough to perform the work safely? Have all my questions been answered? Does everything make sense? Am I feeling rushed or pressured to do this job? Am I physically/psychologically fit to do this job? Do I need help? Does the outcome make sense? Am I concerned with what I see, hear, feel, smell? Other questions to add? Should I stop work?

Step #5	The Basics	Questions to ask yourself at the start of each day…
Assure Performance	*Get feedback from employees.* *Identify ways for improvement.* *Make changes for improvement.* *Take part in your own improvement.* *Take responsibility for your work.* *Participate in management walkarounds.* *Talk safety every day.*	Did the activity "work"? Am I satisfied with the results? Did I express my concerns? Were they heard? Did we identify problems and correct them? Are changes needed? Are safer/better methods possible? Were responsibilities clear? Do I ever want to do this again? Other questions to add?

Activity #1
The welding accident and the 5-Step Process

Directions: Discuss how the 5-Step Process could have prevented the welding accident.

Welding accident events

INTRODUCTION

Metal barrels were periodically converted into moisture collectors as needed for a nuclear facility. This same work had been done for over 10 years without any problems. In April 1999, staff members decided to convert 2 more metal barrels. This was because one of the mechanical technicians —Mech Tech #1— who was normally part of this work, was soon going on vacation. Therefore, work began to make the 2 backup moisture collectors before Mech Tech #1 left.

DAY 1

1. Mech Tech #1 began the work by drilling holes in each of the 2 barrels. He drilled using a dry method without any oil. When he was done he gave them to Mech Tech #2 for welding.

2. Mech Tech #2 welded tubes into the first barrel's drilled holes and returned the barrel to Mech Tech #1 for leak testing.

DAY 2

3. Mech Tech #1 tested the first barrel for possible leaks; the barrel passed the leak test.

4. Mech Tech # 2 welded tubes into the second barrel and returned it to Mech Tech #1 for testing.

5. Mech Tech #1 prepared to leak test the second barrel. By this time, the leak checker that was normally used was not available to test the second barrel, so an older leak detector with an oil-roughing pump was found and fitted to the barrel for testing. As the test progressed, a leak became evident. Some oil and metal chips were discovered inside the barrel—this material prevented any effective leak test. This was the first time in many years that a barrel had ever been found with material in it. Because the barrel could not be pumped down until the barrel was cleaned out—it could not be checked for leaks.

6. The Mech Techs discussed the problem and decided to first remove the chips, clean the inside of the barrel with ethanol, vent the barrel, and then check the barrel for leaks.

7. The group had recently obtained a brand new leak detector that can find leaks without having to pump down the entire barrel—and by using this new leak detector, Mech Tech #1 found the leak.

8. Mech Tech #1 cleaned the inside of the barrel with ethanol, emptied it, and allowed it to vent upside down for about half an hour.

9. Mech Tech #1 then told Mech Tech #2 that the barrel had been leak checked and was ready to be welded. Mech Tech #1 showed Mech Tech #2 the leak's location.

10. Mech Tech #2 did not know about the group's new leak detector. He assumed that the barrel had been tested with the leak detector normally used for this work, which would have removed all ethanol vapors from the barrel.

11. Mech Tech #2 got ready to weld, positioned himself with all his protective equipment, and struck the arc. The welding arc ignited ethanol vapors that had remained in the barrel. The explosion vented through the open bunghole and pushed Mech Tech #2's arm upward, burning his right hand, wrist, and forearm.

12. Mech Tech #3 rushed to the aid of Mech Tech #2, notified the Group Office, and took Mech Tech #2 to the nearby Emergency Center.

13. Mech Tech #1 surveyed the accident site and made sure that the welding equipment power was turned off.

14. The Project Leader stayed at the Group Office and reported the accident to all the appropriate people. The Group Leader and Deputy Group Leader went immediately to the hospital to be with Mech Tech #2.

15. The Emergency Center staff treated Mech Tech #2 and then sent him to the Burn Center in Albuquerque, which was better equipped to evaluate and treat his injuries. At the Burn Center, the medical staff determined that there was only flesh damage with no nerve damage, and that a skin graft would not be necessary.

16. The Group Management stayed in close contact with Mech Tech #2, making sure his needs were met. Mech Tech #2 was back to work within a week and regained full use of his hand.

Activity #2
Your work and the 5-Step Process

The 5-Step Process is not a written procedure—it is thinking, attitude, and behavior. It can be a formal process or a simple conversation among workers. While the 5-Step Process is easily understood, its application to complex work may be difficult.

Directions: With the above in mind,

- Describe a work activity in your team or group;
- Look at the work activity description and analyze the ways in which the 5-Step Process could be applied, or is being applied, to the work activity.

  Use some of the questions listed with each step on pages 2-7 or ask your own questions.

- Determine how the 5-Step Process could, or could not, help a worker at the start of any given work day.

Activity #3
Analyzing your work's strengths and weaknesses

Directions: After generating a list of work activities in your team or group, fill in the table below for each of the five steps indicating where you and your team or group are successful and where improvements could be made.

Step	Our Strengths How we have been successful	Our Weaknesses How we could improve
#1		
#2		
#3		
#4		
#5		