

# **LANL Hazard Analysis Handbook Best Practice**

**VPPPA National Conference, DOE Workshop**

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**Beth Sellers, Deputy Director**



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# Hazard Analysis Handbook Background

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- Based on DOE's Integrated Safety Management System, LANL has applied Integrated Work Management principles for many years.
- Continuous improvements have been applied over the last 10 years with worker input
  - 2002 Focus on implementation for high and moderate hazard activities
  - 2006 Emphasis on improving processes based on work disciplines e.g. R&D, Maintenance, Operations and Subcontractors
  - Low hazard focus in 2011
- Feedback from various assessments with participants from LANL, DOE, DNFSB, and EFCOG suggested a tool to help users with Hazard Analysis.
- Handbook developed in November 2011 by a team of technical experts.

# Handbook Overview

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- A resource that provides users with various Hazard Analysis (HA) methods and tools for use in work control.
- Methods can be applied to all work including low, moderate and high-hazard activities.
- Scenarios included that reflect actual work and based on recent LANL events.
- Highlights strengths and limitations for common HA methods.
- Consistent with the DOE's Integrated Safety Management requirements and Activity Level Work Planning and Control guidance.

# Top 3 Hazard Analysis Methods

Method	Scoping Checklist	“What-If” Checklist	Procedure Analysis
Suggested uses:	R&D, ops, maintenance, and construction Facility-specific hazards Electrical work	R&D, ops, maintenance, and construction  Procedure development	Developing or reviewing any procedure or instruction
Strengths:	Well-organized Efficient	Promotes peer-to-peer brainstorming Moves beyond compliance mentality	Standalone work instructions are developed
Limitations:	Suitability of checklist strongly influences results Primarily one-event failures	Experience of team strongly influences results Primarily one-event failures	Experience of writer strongly influences results

**Additional methods included:** Task Analysis, Barrier Analysis, Failure Modes and Effects Analysis (FMEA), Hazard and Operability Study (HAZOP), Fault Tree Analysis.

# A “What-If” Hazard Analysis Example

A sample scenario for “What-If” analysis of a work activity for disposal of unused chemicals includes “Questions” like:

“What If” Question	Worst Consequence	Safeguards and Action Items	Response
Chemicals spill while handling chemical containers?	Employees come into contact with hazardous chemicals/fumes.	<p>PPE must be listed and worn when handling chemical containers.</p> <p>Containers must be inspected for damage prior to use.</p>	Employees must be protected from exposure.

# Handbook Usage and Availability

- Part of Integrated Work Management (IWM) training courses.
- Key audience - work planners, worker representatives and subject matter experts
- Located in the web-based IWM Toolbox. Web page hits since January = 1,520

Computing Employees Environment Finance News Safety Science Security Services

Safety » Integrated Work Management

**Safety**

**Integrated Work Management**

Emergency Operations

Industrial Hygiene and Safety

Injury/Illness

**Integrated Work Management**

Job Hazards Analysis Toolbox

Radiation Protection

**What is IWM?**

- LANL's process for doing all work
- Safety, security, and environmental integration effort
- Provides sound basis for mitigating risk
- Increases accountability by identifying single PIC
- Involves workers directly
- Promotes critical thinking

## Next Steps

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- With Handbook becoming more user-friendly and mature we are:
  - Increasing LANL internal communications of its availability
  - Starting to share it with other DOE sites
    - CD's are available for this audience that include these slides, the Hazard Analysis Handbook, and LANL's Integrated Work Management procedure
  - Prepared to share at the next Energy Facility Contractors Group (EFCOG) meeting
  - Planning to post it on LANL's open network web site for public availability

# Thank you!

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- Point of Contact
  - John McNeel
    - Los Alamos National Laboratory
    - (505) 664-0023
    - [McNeel@lanl.gov](mailto:McNeel@lanl.gov)
  
- Questions?