OHSAS 18001

Environmental Restoration Projects Implementation Plan

What IS OHSAS 18001 & Why?

- **Standard System for Managing an OS&H Program**
  - **Integrates well with EMS ISO 14001 standard to support integrated safety management**
  - **Registration via External Auditor**
- **Good Hazard Identification and Risk Management Tool**
  - **Must Involve Workers**
  - **Analysis of Risks at Facility Level (FRA)**
    - **Risks from nature of area you work in**
  - **Analysis of Risks at Job Level (JRA)**
    - **Risks of tasks or steps taken to do work**
- **Potential to Reduce Injuries and Incidents**
  - **Job Hazard Analyses' (JHAs) are primarily a hazard assessment tool**
  - **OHSAS focus on Risk from hazards in workplace**
- **Promote Better Working Environment**
  - **Direct worker involvement in safety issues**
  - **Direct feedback of concerns to management**

Benefits We Expect From OHSAS

- **Improve Worker Involvement in Safety**
  - **Worker involvement is <u>required</u> by standard**
  - **Job Risk Assessments (JRAs) address this**
    A JRA is an assessment of the risk of each individual step or task required to complete a process or work function. For each step the hazards and controls are identified and the overall risk estimated.

- **Improve Communication**
  - **Between workers and supervisors**
  - **Between workers and Department**

- **Improve the Way We Do Work**
  - **New ideas or procedures**
  - **Share experience & expertise**

- **Reduce Injuries**
  - **Requires tracking & trending**

How We Are Implementing OHSAS

- **Created Lists of Common Jobs & Hazards**
  - Facility-wide issue → Facility Risk Assessment (FRA)
  - Job-specific issue → Job Risk Assessment (JRA)
  - Prioritized by perceived **risk**
- **Used Worker Teams that Included:**
  - Workers who do the job or similar tasks
  - Safety, Quality, Training, Work Control and Building Managers to add level of expertise and experience
- **JRA Team Discussed or Observed Work**
  - Analyzed steps/tasks, hazards & controls
  - Assign frequency, severity & likelihood → risk levels
  - Suggest improvements to reduce risk
- **Web Page with Results and Summaries**
  - Currently on U: drive – Web page to be developed

List of Risk Assessments

Facility

- **Building Office Spaces**
- **General Housekeeping Issues**
- **General Electrical Issues**
- **General Fire Issues**
- **General Radiological Issues**
- **General Material Handling**
- **Noise**
- **Walking/Working Surfaces**
- **Vehicle Operation**

Job

- **BGRR Below Ground Duct (BGD) Inspection**
- **BGRR BGD Water Pump Out**
- **WLA Inspection**
- **WLA Water Pump Out**
- **WLA Lock Maintenance**
- **HFBR Inspection**
- **HFBR Water Pump Out (Stack & Compressors)**
- **HFBR Misc. Surveillance and Maintenance Activities**

Some JRA Priorities for ERP

Job	Description	Hazards	Priority	Reason
General Office Space	Offices throughout the BGRR and HFBR	Repetitive motion; eye strain; ergonomic issues; material handling (5 gallon water bottles)	Medium	Frequency of performance increases risk.
General Housekeeping	General housekeeping throughout the BGRR and HFBR.	Fire loading; falls on same level; impaired egress; being struck by object	Medium	Work areas cluttered, creating restricted walkways, trip hazards, increased fire loading.
General Electrical Issues	Standard electrical equipment and activities throughout buildings	Electrical shock; injury from reflex; burns	Medium	Required by maintenance activities.
General Fire Issues	General Fire Protection throughout buildings	Fire; smoke and heat	Medium	Not all areas are sprinkler equipped; housekeeping effects risk; consequences high.
General Radiological Issues	Radiation from residual materials and contamination throughout buildings	Radiological exposure; ALARA; contamination control	Medium	No significant issues, but consequences raise risk level.

Name(s) of Risk Team Members: B. Heneveld; B. Lein; J. Montalto; T. Doyle; D. Atchison; F. Sauerbrun; G. Hartsough	Point Value Parameter	1	2	3	4	5
Area/Facility Description Title: **Environmental Restoration Projects** Area/Facility # (if applicable): **ERP-FRA-001**	Occupancy or Use	<once/year	<once/month	<once/week	<once/shift	>once/shift
Area/Facility Description: **Building Office Spaces**	Severity	First Aid Only	Medical Treatment	Lost Time	Partial Disability	Death or Permanent Disability
Date: December 22, 2005 Rev.#: 0	Likelihood	Extremely Unlikely	Unlikely	Possible	Probable	Multiple
Reason for Revision (if applicable):				Comments:		

Physical Item or Activity	Hazard(s)	Control(s)	Risk with Controls in Place				Control(s) Added to Reduce Risk	Risk with Additional Controls in Place				
			Occupancy A	Severity B	Likelihood C	Risk* AxBxC		Occupancy A	Severity B	Likelihood C	Risk* AxBxC	% Risk Reduction
Walking surfaces in and between offices	Falls on same level	Facility maintenance; postings; barriers; snow removal; training; safety shoes; Tier I inspections; housekeeping policy; normal and emergency lighting	5	3	3	45	De-icing agents are available at entrances for application when needed	5	3	2	30	33
Office shelving	Being struck by an object such as a shelf item	Limit use of top shelves; lower shelf heights; Tier I inspections	5	2	2	20						
	Falls to lower level, such as falling from a stool	Lift limits; use of step stools; use of dedicated movers	5	2	2	20						
Storage	Combustibles	Tier I inspections; fire detection systems	5	3	2	30						
	Blocked egress	Normal and emergency lighting; life safety codes; proper planning of office equipment layout; Tier I inspections	5	3	2	30						

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Electrical	Fire	Proper grounding, fire detection systems; Tier I inspections; facility maintenance; use of equipment bearing the seal of a NRTL; use of listed and approved devices	5	3	2	30							
Electrical – cont.	Contact with temperature extremes that result in such injuries as burns	Tier I inspections; use of equipment bearing the seal of a NRTL; use of listed and approved devices	5	2	2	30							
	Electrical shock	Proper grounding, Tier I inspections; facility maintenance; use of equipment bearing the seal of a NRTL; use of listed and approved devices; work planning; LOTO; GFCI	5	2	2	20							
Computer and Office Machine Usage	Overexertion injuries caused by excessive lifting, pushing, pulling, holding, or carrying of an object	BNL SHSD ergonomic reviews; training; use of ergonomically designed equipment	5	2	3	30							
Working Environment	Poor air quality	HVAC and facility maintenance; Tier I inspections	5	2	2	20							
Further Description of Controls Added to Reduce Risk:													

*Risk:	0 to 20 Negligible	21 to 40 Acceptable	41 to 60 Moderate	61 to 80 Substantial	81 or greater Intolerable

Summary of JRA Risk Levels

Summary of Environmental Restoration Projects FRA/JRAs
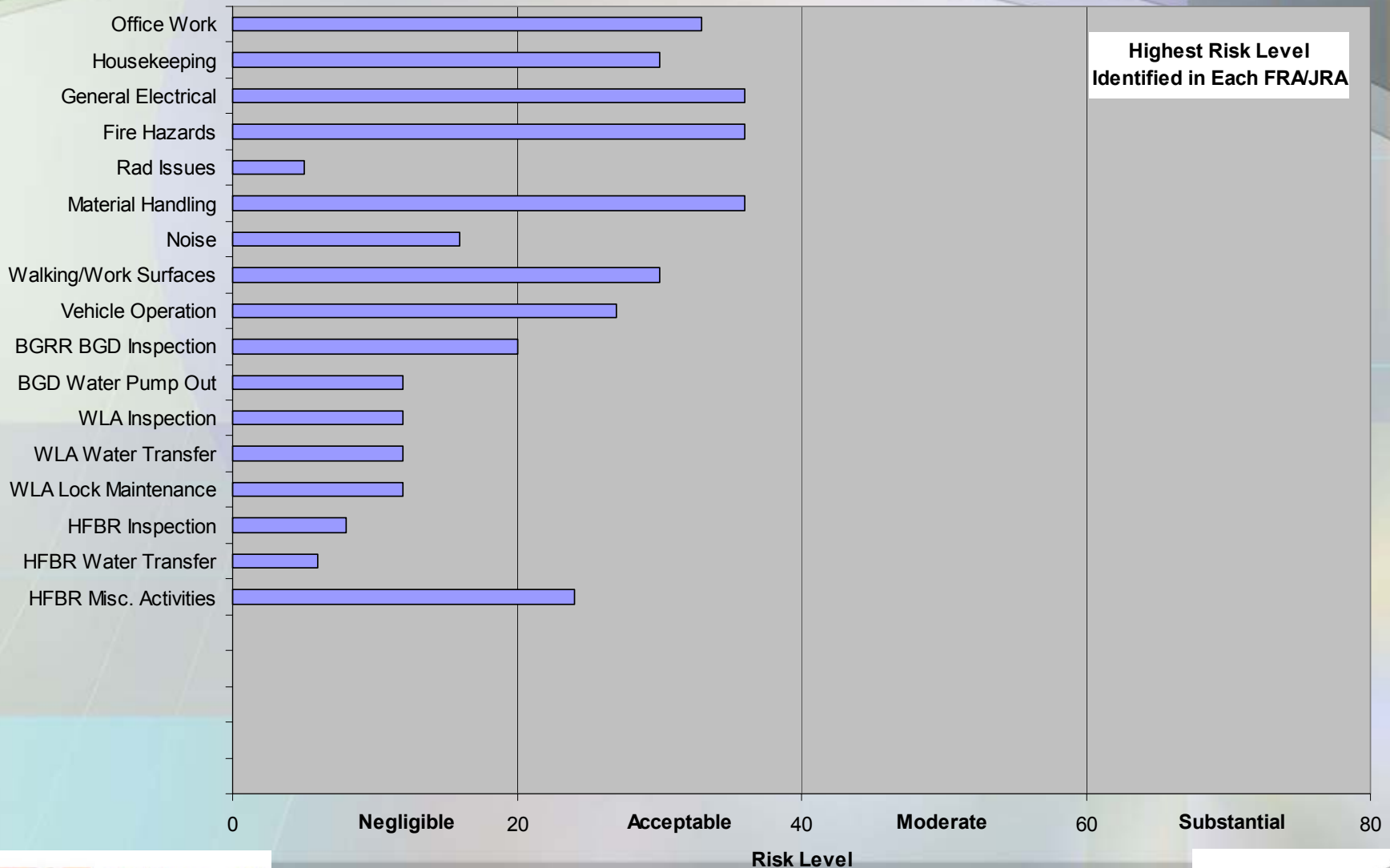
Highest Risk Level Identified in Each FRA/JRA

Where Do We Go From Here?

- **Our Goal is Zero Accidents**
  - NOT zero errors or mistakes
  - Prevent mistakes from becoming accidents

- **Recognize Critical Step in a Task**
  - Where cannot afford an error
  - Put defenses in place

- **Recognize Error Precursors**
  - Conditions that make it more likely to have an error
  - Eliminate or mitigate

- **Observe Work in Progress**
  - Discover problems not communicated in JRA
  - Propose solutions or defenses

- **Each Group Suggests a Job to Assess**
  - Consider risk level & injury consequences
  - Jobs done frequently, routinely or follow a formal procedure

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ERP Commitment

- **Establish Goals**
  - **Keep injuries to a minimum**
  - **Track & trend injuries**

- **Follow-up on Injury Reports**
  - **How did it happen?**
  - **What job and job step?**
  - **Why did it happen?**
    - **Conditions?**
    - **Actions?**
    - **Wrong or confusing procedures?**
    - **Inadequate tools?**

Error Precursors
short list

Task Demands	Individual Capabilities
• Time pressure (in a hurry)	• Unfamiliarity w/ task / First time
• High Workload (memory requirements)	• Lack of knowledge (mental model)
• Simultaneous, multiple tasks	• New technique not used before
• Repetitive actions, monotonous	• Imprecise communication habits
• Irrecoverable acts	• Lack of proficiency / Inexperience
• Interpretation requirements	• Indistinct problem-solving skills
• Unclear goals, roles, & responsibilities	• "Hazardous" attitude for critical task
• Lack of or unclear standards	• Illness / Fatigue

Work Environment	Human Nature
• Distractions / Interruptions	• Stress (limits attention)
• Changes / Departures from routine	• Habit patterns
• Confusing displays or controls	• Assumptions (inaccurate mental picture)
• Workarounds / OOS instruments	• Complacency / Overconfidence
• Hidden system response	• Mindset ("tuned" to see)
• Unexpected equipment conditions	• Inaccurate risk perception (Pollyanna)
• Lack of alternative indication	• Mental shortcuts (biases)
• Personality conflicts	• Limited short-term memory

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Two Views of Human Error

The Old View of Human Error

Human error is the cause of accidents.

To explain failure, you must seek failure.

You must find people's inaccurate assessments, wrong decisions, bad judgments.

New View of Human Error

Human error is a symptom of trouble deeper inside a system.

To explain failure, do not try to find where people went wrong.

Instead, find how people's assessments and actions made sense at the time, given the circumstances that surround them.

Principles

1. People are fallible, and even the best make mistakes.

2. Error-likely situations are predictable, manageable, and preventable.

3. Individual behavior is influenced by organizational processes and values.

4. People achieve high levels of performance based largely on the encouragement and reinforcement received from leaders, peers, and subordinates.

5. Events can be avoided by understanding the reasons mistakes occur and applying the lessons learned from past events.
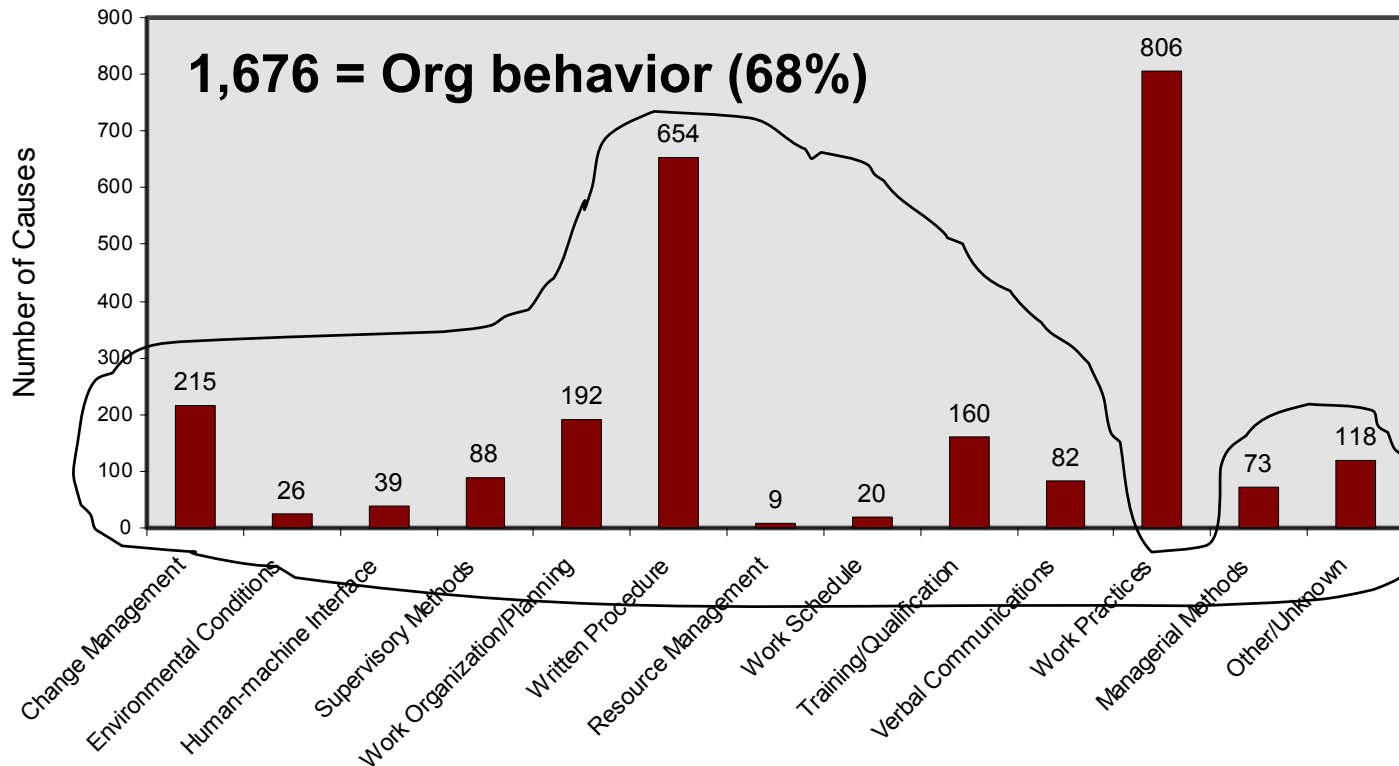
Industry Event Causes
due to human performance

806 = Individual behavior (32%)

1,676 = Org behavior (68%)

Bar chart — Number of Causes:

Category	Number of Causes
Change Management	215
Environmental Conditions	26
Human-machine Interface	39
Supervisory Methods	88
Work Organization/Planning	192
Written Procedure	654
Resource Management	9
Work Schedule	20
Training/Qualification	160
Verbal Communications	82
Work Practices	806
Managerial Methods	73
Other/Unknown	118

Source: INPO, Event Database, March 2000. For all events during 1998 and 1999.