


Environmental Management System

Overview Presentation

Los Alamos National Laboratory Environmental Management System



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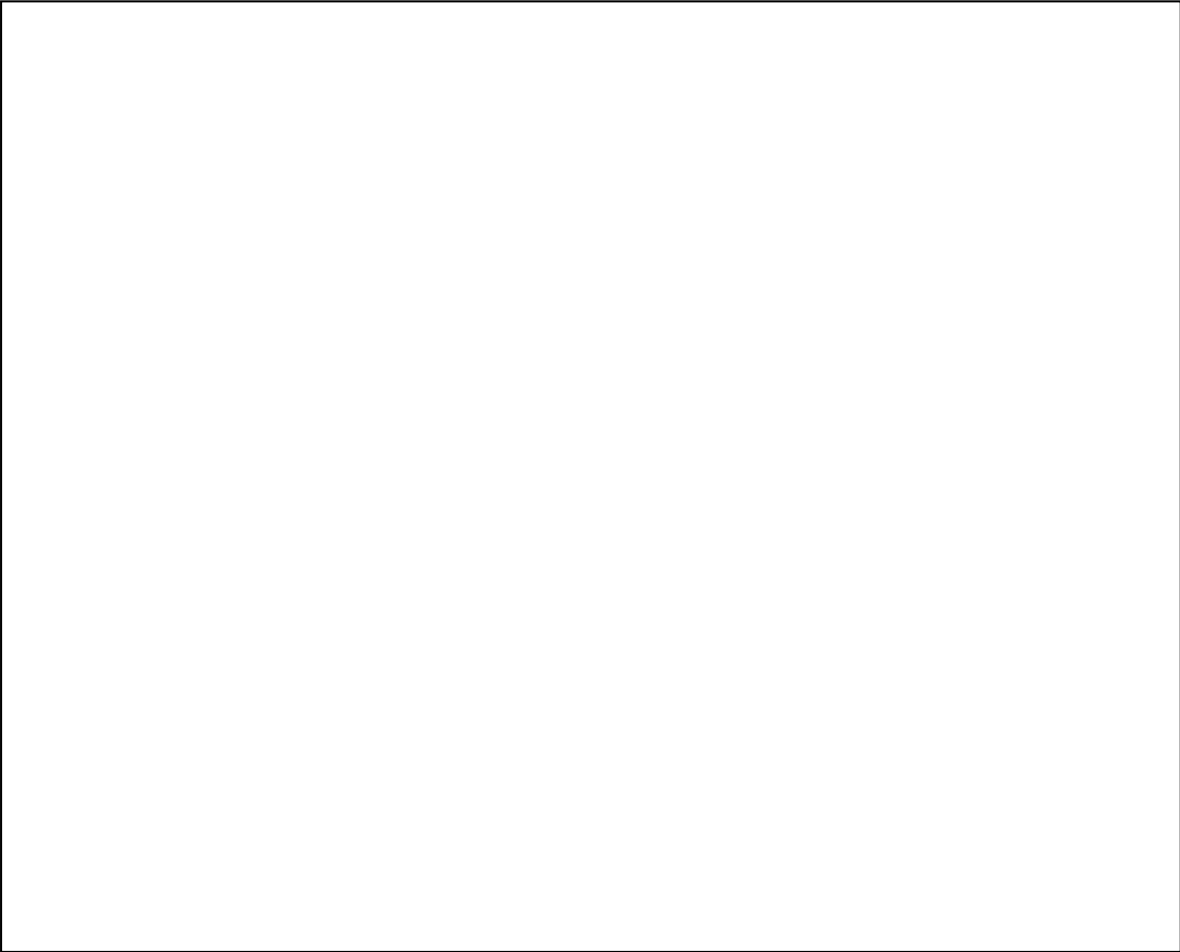


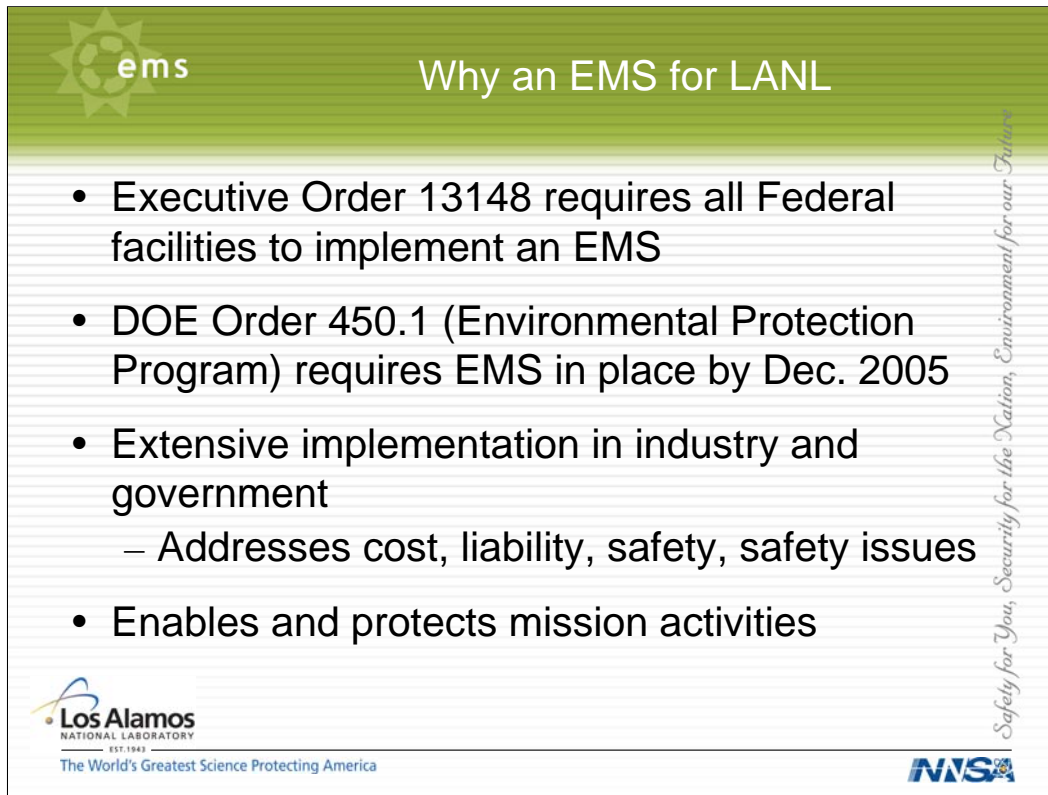
EMS Overview

- Why an EMS for LANL?
- Organization and Structure
- EMS Toolkit Implementation
- Management Review Process
- Continuous Improvement Project Approach




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ems Why an EMS for LANL

- Executive Order 13148 requires all Federal facilities to implement an EMS
- DOE Order 450.1 (Environmental Protection Program) requires EMS in place by Dec. 2005
- Extensive implementation in industry and government
 - Addresses cost, liability, safety, safety issues
- Enables and protects mission activities

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There are a lot of orders and requirements for an EMS but the main reason LANL chose to implement a very comprehensive EMS was to reduce environmental liabilities to mission programs.

There is no shortage of examples


ems

Why an EMS for LANL?

Rocky Flats Closing



High flux beam at Brookhaven




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For example,



The closing of Rocky Flats and the high flux beam facility at Brookhaven were both based on environmental issues.

 Why EMS for LANL?

Delayed startup of our hydrodynamic test facility, DHART 

Bio Safety Level III Facility not operating

 At DX-2, leaks kept scientists from using lab sinks for over two years

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At Los Alamos, environmental issues delayed the startup of our hydrodynamic test facility costing over \$10 M in delay fees

Our BioSafety Level 3 lab is still not operating, suffering over two years of delays over environmental impact statements

And, repairing leaking wastes lines and the process of setting up new high explosive wastewater tanks at DX-2 kept scientists from using their lab sinks for over two years.

ems **EMS Required Outcomes**

- Improvement of environmental performance
- Integration of environment into operations
- Improved communication on environmental issues
- Move beyond strict compliance approach
- Include stakeholders in the process
- Implement it!

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Lab management chartered an Environmental Management System team with the following requirements

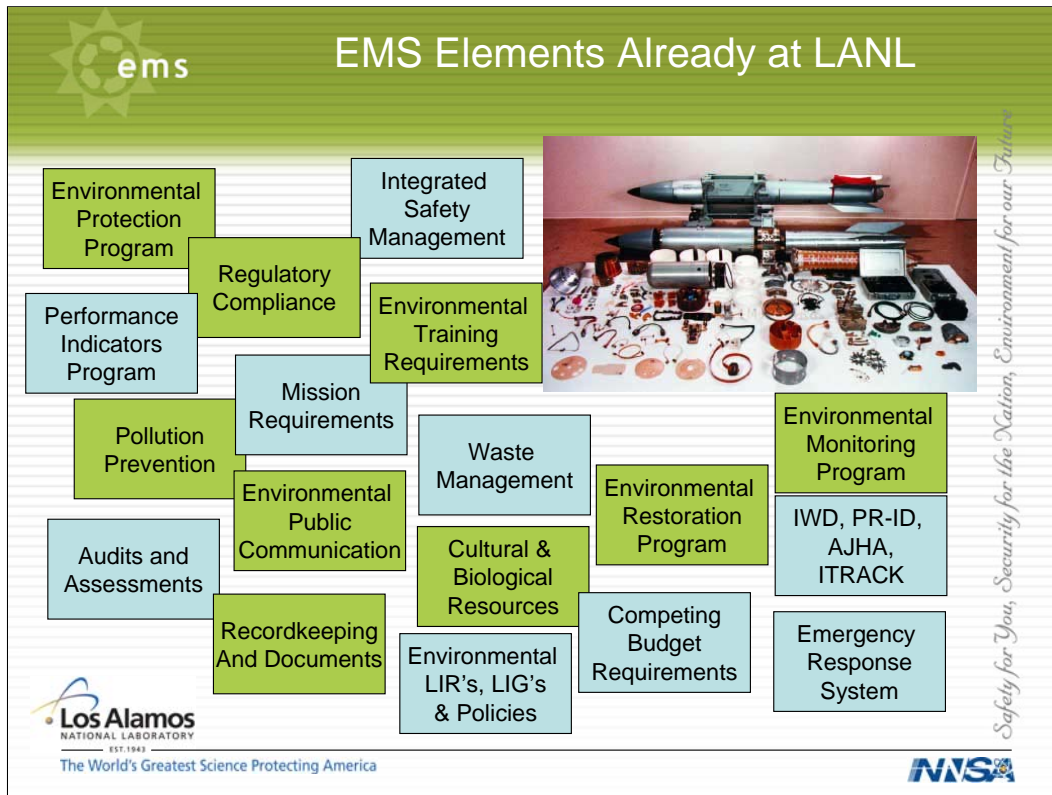


LANL EMS Approach

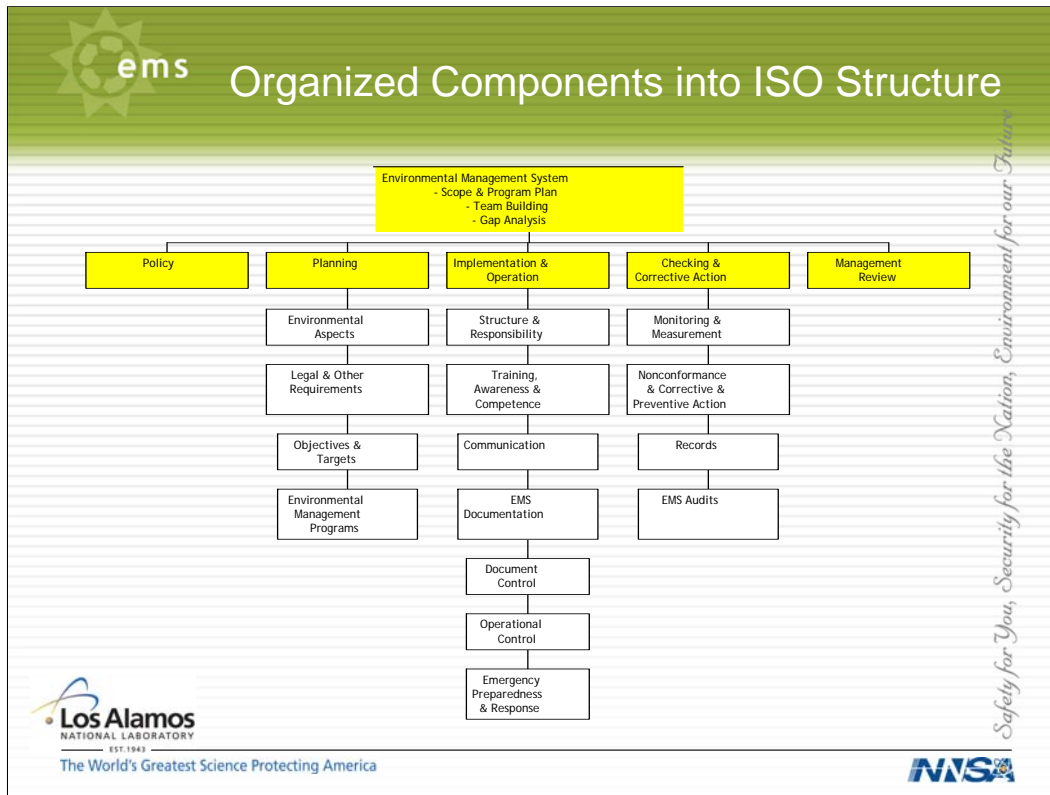
- Implemented as part of work by all workers
 - EMS Core Team provides framework, procedures and technical assistance.
- Engage Divisions from beginning
 - 43 people, 15 Divisions on initial team
 - ISO 14001 certification training for Core Team
 - ISO 14001 Audit training for Core Team
- Listen to and incorporate feedback
- Benchmark
 - INEEL, SRS, Honeywell Kansas City contributed
- Use the LANL culture



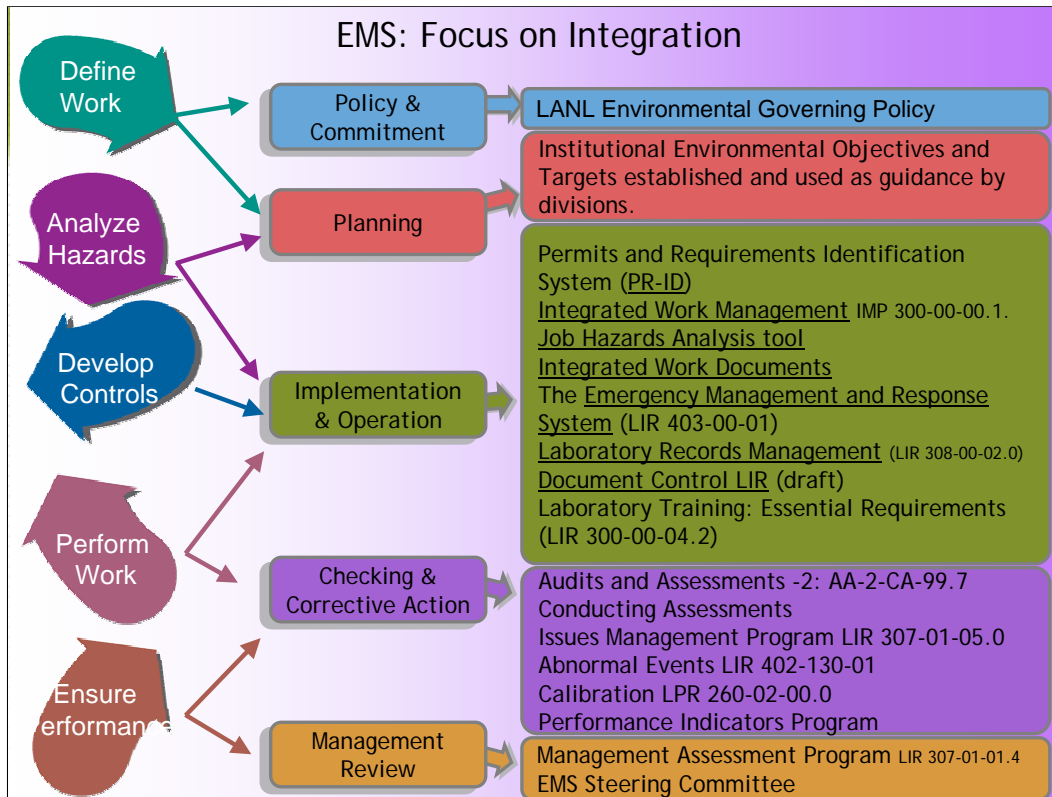
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We had many components of an environmental management system at Los Alamos but as the picture illustrates, having the components doesn't mean that they work together as a system.

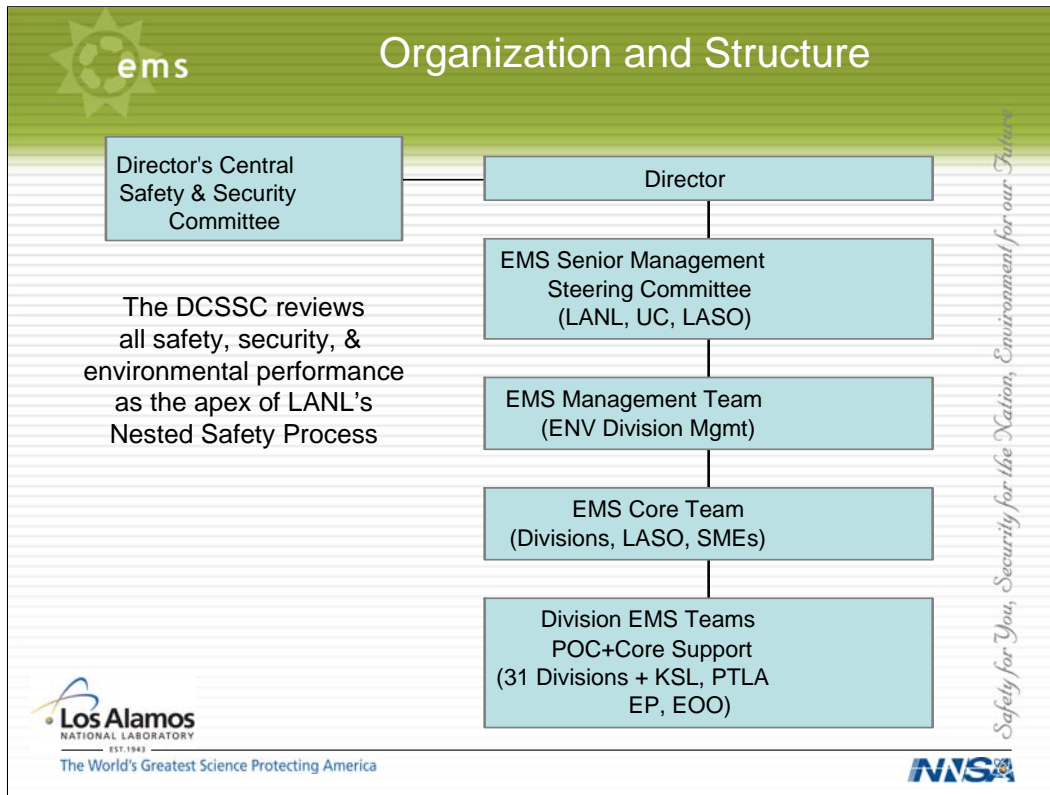


The Structure of the ISO 14001 EMS simply coordinates all of those required components into a system that is repeatable and continuously improves.



An initial step was to match EMS and ISO requirements to existing ISM systems and use them where ever possible.

This reduced redundancy and created ties between these systems



The organizational structure of the LANL EMS relied on teams built from the working level up but with strong management involvement.

ems Essential Tools

Environmental Management System
EMS Toolkit

Toolkit as a formative approach to system design

- Target Audience
 - Division EMS Points of Contact
- Purpose
 - To make deployment easy by providing the recipe and tools
- Full review of process scheduled during this audit

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A critical implementation process was the development and use of a toolkit to explain how ISO processes work, to guide workers on implementing the process and to collect results.

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Environmental Management System

Environmental Protection

Laboratory Environmental Governing Policy

It is the policy of Los Alamos National Laboratory that we will be responsible stewards of our environment.

It is our commitment to:

- Manage and operate our site in compliance with environmental laws and standards and in harmony with the natural and human environment
- Meet our environmental permit requirements
- Use continuous improvement processes to recognize, monitor, and minimize the consequences to the environment stemming from our past, present, and future operations
- Prevent pollution and foster sustainable use of natural resources
- Work to increase the body of knowledge regarding our environment

To find out more about the policy or the LANL Environmental Management System, contact the EMS team at:

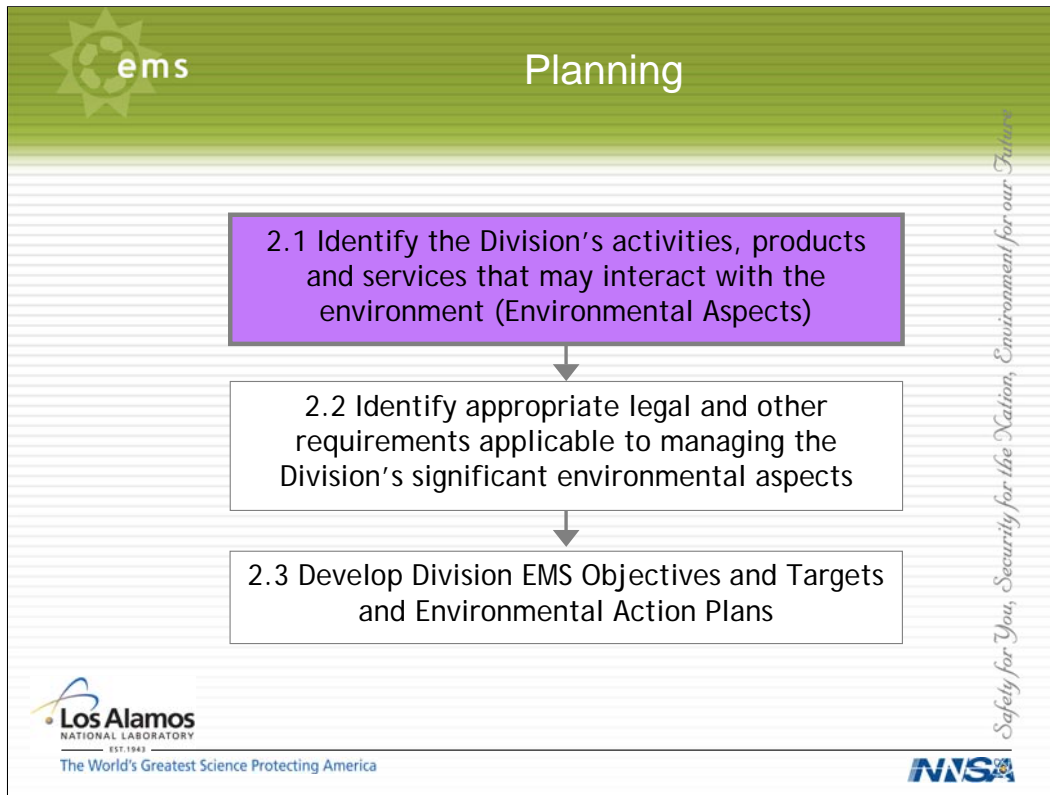
<http://www.ems.lanl.gov>
ems@lanl.gov
(505) 667-4348

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Environmental Compliance


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Another critical element was a marketing plan to communicate environmental policy to all employees along with training and new environmental improvement tools.



Each Laboratory division individually went through the basic EMS process using forms and guidance from the toolkit

What follows is an example of the steps they took:

 2.1.1 Identify the Division's activities, products and services

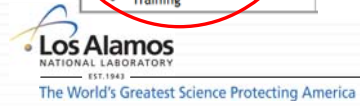

TR 2.4 Activities, Products and Services with Likely Environmental Aspects

Preparer: Libby Chaplin Division: Construction Date: February 8, 2005


A. Division Activities, Products, and Services
Identify high level categories and list bullet points under them for specific activities, products and services.

Admin / Office work

- Vehicle Operation
- Procurement/Purchasing
- Budgeting
- Records Management
- Computer Support
- Information Management
- Reuse, Recycle, Salvage
- Waste Management
- Reports, Letters, Procedures, Presentations
- Work Certifications
- Training

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- Identify activities products and services: what do you do for a living?




ems


2.1.2 Identify environmental aspects related to Division activities, products, and services

TR 2.4 Activities, Products and Services with Likely Environmental Aspects

Preparer: Libby Chaplin	Division: Construction	Date: February 8, 2005																																									
<p>A. Division Activities, Products, and Services Identify high level categories and list bullet points under them for specific activities, products and services.</p> <p>Admin / Office work</p> <ul style="list-style-type: none"> • Vehicle Operation • Procurement/Purchasing • Budgeting • Records Management • Computer Support • Information Management • Reuse, Recycle, Salvage • Waste Management • Reports, Letters, Procedures, Presentations • Work Certifications • Training 	<p>B. Environmental Aspects (Use TR 2.7 Environmental Aspect Descriptions and an example)</p> <table border="1" style="width: 100%; border-collapse: collapse; font-size: 8px;"> <thead> <tr> <th>Air Emissions</th> <th>Interaction with Surface Water and Storm Water</th> <th>Discharge to Wastewater Systems</th> <th>Interaction with Drinking Water Production Systems or Groundwater</th> <th>Work within or near Occupations and Activities</th> <th>Interaction with Wildlife and/or Habitat</th> <th>Biological Hazards</th> <th>Spore or Fungus producing</th> <th>Cultural/Historical Resource disturbance</th> <th>Visual Resources</th> <th>Hazardous/Infectious Material Use, Packaging & Transportation</th> <th>Radioactive Waste Generation & Management</th> <th>Hazardous or Mixed Waste Generation & Management</th> <th>Solid or Sanitary Waste Generation & Management</th> <th>Interaction with Contaminated Sites</th> <th>General Use and Storage</th> <th>Radioactive Material Use and Storage</th> <th>Surplus Properties and Materials Management</th> <th>Resource Use, Reuse, Recycling</th> <th>Storage of Hazardous or Radioactive Materials and Wastes in Tanks</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> </tr> </tbody> </table>		Air Emissions	Interaction with Surface Water and Storm Water	Discharge to Wastewater Systems	Interaction with Drinking Water Production Systems or Groundwater	Work within or near Occupations and Activities	Interaction with Wildlife and/or Habitat	Biological Hazards	Spore or Fungus producing	Cultural/Historical Resource disturbance	Visual Resources	Hazardous/Infectious Material Use, Packaging & Transportation	Radioactive Waste Generation & Management	Hazardous or Mixed Waste Generation & Management	Solid or Sanitary Waste Generation & Management	Interaction with Contaminated Sites	General Use and Storage	Radioactive Material Use and Storage	Surplus Properties and Materials Management	Resource Use, Reuse, Recycling	Storage of Hazardous or Radioactive Materials and Wastes in Tanks	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Air Emissions	Interaction with Surface Water and Storm Water	Discharge to Wastewater Systems	Interaction with Drinking Water Production Systems or Groundwater	Work within or near Occupations and Activities	Interaction with Wildlife and/or Habitat	Biological Hazards	Spore or Fungus producing	Cultural/Historical Resource disturbance	Visual Resources	Hazardous/Infectious Material Use, Packaging & Transportation	Radioactive Waste Generation & Management	Hazardous or Mixed Waste Generation & Management	Solid or Sanitary Waste Generation & Management	Interaction with Contaminated Sites	General Use and Storage	Radioactive Material Use and Storage	Surplus Properties and Materials Management	Resource Use, Reuse, Recycling	Storage of Hazardous or Radioactive Materials and Wastes in Tanks																								
x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x																							



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Aspects: how does what you do for a living relate to the environment?

2.1.3 Identify environmental impacts associated with the Division's environmental aspects

TR 2.4 Activities, Products and Services

Preparer: Libby Chaplin

A. Division Activities, Products, and Services	Air Emissions	Interference with Surface Water and Storm Water	Discharge to Wastewater Systems	Groundwater
Admin / Office work				
• Vehicle Operation				
• Procurement/Purchasing	x	x	x	x
• Budgeting	x	x	x	x
• Records Management				
• Computer Support				
• Information Management				
• Reuse, Recycle, Salvage				
• Waste Management				
• Reports, Letters, Procedures, Presentations				
• Work Certifications				
• Training				


TR 2.10 Environmental Aspect and Impact Significance Form (Example Only)

A. Preparer: Libby Chaplin
 B. Division: Construction
 C. High Level Division Activity, Product or Service: Office Work/Administration


D. Environmental Aspect	E. Environmental Aspect Characteristics
Air Emissions	Vehicle emissions
	Ozone depleting substances
Discharge to wastewater systems	Discharge wastewater from restrooms
Solid Waste generation & Management	Generate Solid Waste
Resource use, reuse, recycling	Energy use Wood/Paper products Non toxic material and chemical use

+


Look at the details of the environmental aspects



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How are these aspects significant: what are the vulnerabilities?




2.1.3 Identify environmental impacts associated with the Division's environmental aspects

TR 2.10 Environmental Aspect and Impact Significance Form (Example Only)

A. Preparer		Libby Chaplin												
B. Division		Construction												
C. High Level Division Activity, Product or Service		Office Work/Administration												
D. Environmental Aspect	E. Environmental Aspect Characteristics	F. Impact (Check those that apply) Assume no controls or controls fail for negative impacts												
		Negative						Positive						
		A	W	S	B	C	N	A	W	S	B	C	N	
Air Emissions		X												
	Vehicle emissions	X												
	Ozone depleting substances	X												
Discharge to wastewater systems			X	X	X									
	Discharge wastewater from restrooms		X	X	X									
Solid Waste generation & Management							X							
	Generate Solid Waste						X							
Resource use, reuse, recycling														
	Energy use	X						X						
	Wood/Paper products				X			X						X
	Non toxic material and chemical use									X	X	X	X	X
A Air		W Water		S Soil		B Biota		C						
EI Environmental impact		PP Pollution Prevention		LR		Legal & other requirements								




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Where can we impact the environment?




2.1.4 Determine the Division's draft Significant Environmental Aspects

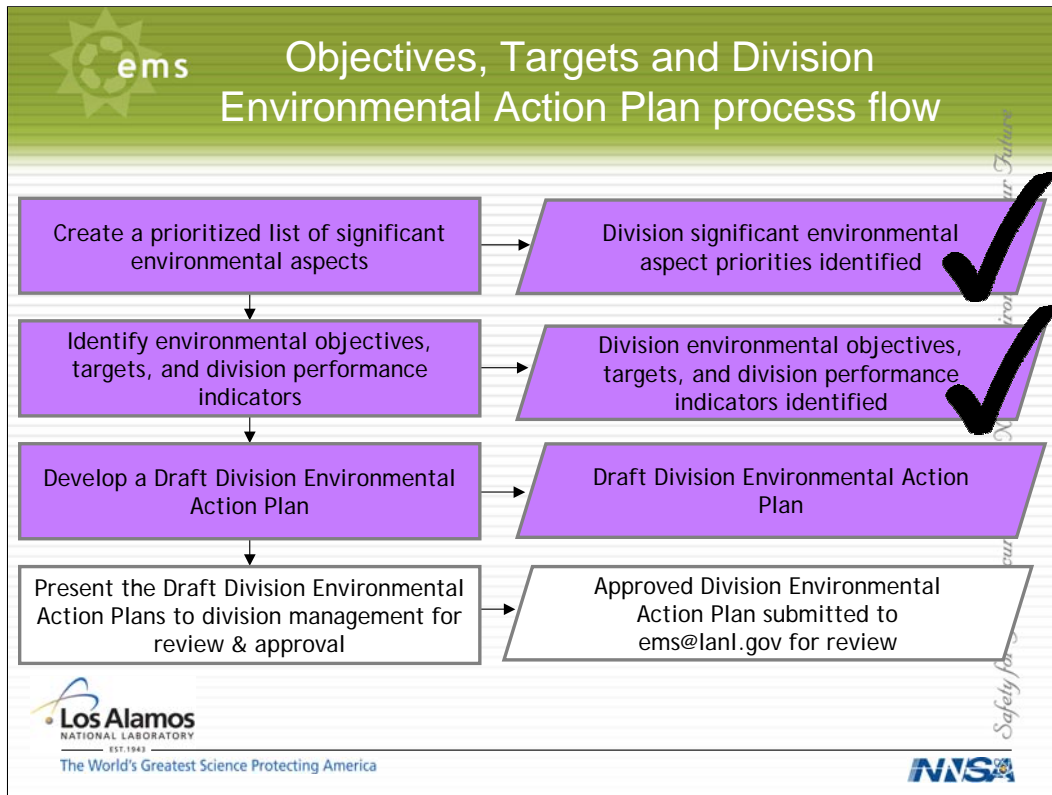
Futures

TR 2.10 Environmental Aspect and Impact Significance Form (Example Only)


A. Preparer		Libby Chaplin										Date		February 28, 2005					
B. Division		Construction																	
C. High Level Division Activity, Product or Service		Office Work/Administration																	
D. Environmental Aspect	E. Environmental Aspect Characteristics	F. Impact (Check those that apply) Assume no controls or controls fail for negative impacts										G. Significance (Write Yes if significant)					H. Explanation/ supporting information		
		Negative					Positive					EI	PP	LR	SC	MI			
		A	W	S	B	C	A	W	S	B	C								
Air Emissions		X																	
	Vehicle emissions	X																	Little or no increase in vehicle emissions one car used infrequently
	Ozone depleting substances	X																	Little or no increase in ozone depleting substances
Discharge to wastewater systems			X	X	X					X				YES		YES			
	Discharge wastewater from restrooms		X	X	X					X				X		X		Reduction in water use due to installation of low flow toilets.	
Solid Waste generation & Management							X							YES		YES			
	Generate Solid Waste						X								X		X	Potential for increased waste generation. Actual amount unknown, may need to benchmark	
Resource use, reuse, recycling		X			X	X	X	X	X	X	X	X	YES	YES	YES				
	Energy use	X			X								X		X			Potential for inefficient use of resources	
	Wood/Paper products				X	X						X	X	X	X			Potential for use of recycled or resource efficient products or services that exceeds regulatory requirements. Potential for minor non-compliance	
	Non toxic material and chemical use						X	X	X	X	X	X						Reduction in pollution or use of recycled or resource efficient products or services that exceeds regulatory requirements.	
A	Air	W	Water	S	Soil	B	Biota	C	Cultural Resources	N	Natural Resources								
EI	Environmental impact	PP	Pollution Prevention	LR	Legal & other requirements	SC	Stakeholder concern	MI	Mission Impact										

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Significance: what do we need to work on?



The result of the process is a Division specific Environmental Action Plan that summarizes what the Division will work on for the following year.



Example Division Environmental Action Plan

Futures

TR 2.23 Division Environmental Action Plan

Contents

Approvals 1
Priority Significance Environmental Aspects 2
Summary of Objectives, Targets and Division Performance Indicators 3
Actions 4

Division	Construction (Fictitious)	Directorate	LNL	
Division EMS Point of Contact	Libby Chaplin	Email	libby@construction.com	Phone 8 9973

Division EMS Participants

Name	Group
Janis Joplin	Construction Division
Pierre Fontaine	Construction Division
Stacy Fernaldo	Construction Division


Name	Group
Grace Nedly	Construction Division
Greg Martinez	Construction Division

Approvals

Name	Title	Date	Signature
Heather St James	Construction Planning Group Leader	5/1/05	<i>Heather Martinez</i>
Julio Archuleta	Environment and Safety Group Leader	5/3/05	<i>Julio Archuleta</i>
Peiro Salvo	Division Leader	5/4/05	<i>Peiro Salvo</i>
Carolyn Romero	Associate Director	5/12/05	<i>Carolyn Romero</i>


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EXAMPLE

The action plan must be signed by the management chain responsible for the work and that is including in employee performance assessment processes.



Example Division Environmental Action Plan

Actions

Objective 1.	Minimize storm-water contamination			
Target	Zero non-conformances found during Management Self Assessment by Dec 2006			
Division Performance Indicator	Quarterly results of Management Self Assessments			
Action	Who	Due	Resources (\$, people, time, equipment materials)	Status Update
Purchase stormwater monitoring kits for all construction teams	Pierre Fontaine	5/4/05	Stormwater monitoring kits - 24 x \$15	Quotes obtained and order placed
Ensure constructions teams are briefed on the use of stormwater monitoring kits	Pierre Fontaine	6/4/05	24 Presentations x 1 Hr x 1 TSM & 24 Presentations x 15 minutes x staff (TSM/SSM/...))	Waiting for kits to arrive in order to prepare appropriate briefing materials
Investigate stormwater protection best practices	Stacy Fernaldo	6/4/04	16 Person-Hours (Within existing resources) Staff: 1TSM	Underway
Prepare a briefing note for all site supervisors	Grace Nedly	7/4/04	8 Person-Hours (Within existing resources) Staff: 1SSM	
Ensure Management Self Assessments monitor stormwater quality	Heather St James	6/4/05	1 Hour per quarter. Staff 1 TSM Management	
Objective 2.	To successfully recycle concrete and asphalt			
Target	To increase recovery of asphalt and concrete recycling by 75% by 2006			
Division Performance Indicator	Material recovery data from County Receipts			
Action	Who	Due	Resources (\$, people, time, equipment materials)	Status Update
Meet with the County to determine their specifications for receiving concrete and asphalt	Heather St James	5/4/05	Within existing resources	Scheduled for 5/2/05
Establish concrete and Asphalt recovery procedure	Grace Nedly	6/4/05	16 Hours (Within existing resources)	Waiting on outcomes of the meeting with the County
Brief Construction recover material and provide to the County within their specifications	Pierre Fontaine & Grace Nedly	7/4/05	Training will occur during nested safety meetings	

April 16, 2005
Version 0

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TR 2.23

Initials of Approvers:

Each action comes with specific times, dates and people for performance

These actions are the heart of the LANL EMS

IN FY 06, the Divisions have committed to nearly 600 improvement actions.

As of mid-year, the vast majority of the action projects are on target for completion.

ems Using the EMS Once Implemented

- Division Environmental Action Plans are reviewed by ENV Subject Matter Experts
- EMS Management Team review and roll-up division data to develop proposed institutional objectives and targets
- EMS Steering committee review and approve proposed institutional objectives and targets
- Continuous improvement process - institutional projects implemented
- Institutional objectives guide next Division plan


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The intent of the LANL EMS is to identify and resolve major institutional issues. We do this by:

- Finding big issues identified by the Divisions but too big for the Divisions to solve by themselves.
- Putting together institutional objectives and targets to resolve the problem.
- Feeding those objectives back to Divisions with new tools for implementation




DRAFT FY06 Institutional Objectives

1. Conduct the Laboratory mission while demonstrating rigorous compliance with Federal and State environmental regulations and permits.
2. Conduct the Laboratory mission through continuous and measurable environmental risk reduction to protect workers, the public and the natural environment.
 - Demonstrate continuous improvement in energy and fuel conservation.
3. Use an ISO 14001 prevention-based Environmental Management System (EMS) to improve environmental performance.
4. Effectively manage waste and excess materials and equipment generated during historical, current and future Laboratory operations.




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This year the institutional objectives for LANL include compliance, risk reduction through pollution prevention and dealing with legacy equipment and materials on the site.



EMS EMS Continuous Improvement Projects

- Automated Job Hazard Analysis (EMS funded - done)
 - Early effort to add environment to work controls
- Chemical Life Cycle Management (OE funded - done)
 - Procurement, management, disposition
- Energy & Fuel Conservation Working Group (unfunded - starting)
 - Lab-wide effort to develop short, mid and long-term options
- Permit Requirement Identification Improvement (Overtarget funded)
 - Pro-active review of environmental requirements
- Equipment Materials Disposition Project (OE funded)
 - Long-term plan to address transportainers and storage


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These projects are examples of improvement efforts that have come out of the LANL EMS

ems
Independent Third-Party Review

- LANL completed ISO 14001-2004 audit process in March 2006 and was certified to the standard in April 2006



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(800) 352-9699


Certificate of Registration
This certifies that the Environmental Management System of
Los Alamos National Laboratory
Mail Stop M992
Los Alamos, New Mexico, 87545 USA
has been assessed by NSF-ISR and found to be in conformance to the following standard(s):
ISO 14001:2004


Scope of Registration:
Research and Development concerning National Security.

Industrial Classification:
IAF: 15
SIC: 87
NAICS: K 74

Certificate Number: 73571-1-1
Certificate Issue Date: 04/11/2006
Company Initial Date: 03-24-2006
Registration Date: 03-24-2006
Expiration Date*: 03-23-2009



Christine B. Lopez, General Manager
NSF-ISR, Ltd.


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Safety for

The LANL process underwent 73 auditor days of review this past year and the findings have been used to quickly improve our system.

ems Summary

- Seeking performance-driven EMS with bottom-up involvement matched by top-down commitment
- Division level implementation is the heart of the system
- Continuous improvement showing in cross-laboratory corrective action projects
- ISO 14001 audit feedback has been invaluable in identifying new improvement targets.

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We are happy to be certified but our real objective is performance

Without pushing the system down to the worker level we would never achieve the level of environmental awareness we are looking for

We are using the system to attack the big problems and using the system to eliminate those problems before they become mission-threatening liabilities.