



Environmental Management System

# LANL EMS

## Aspects, Objectives & Targets

### Process

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# Overview

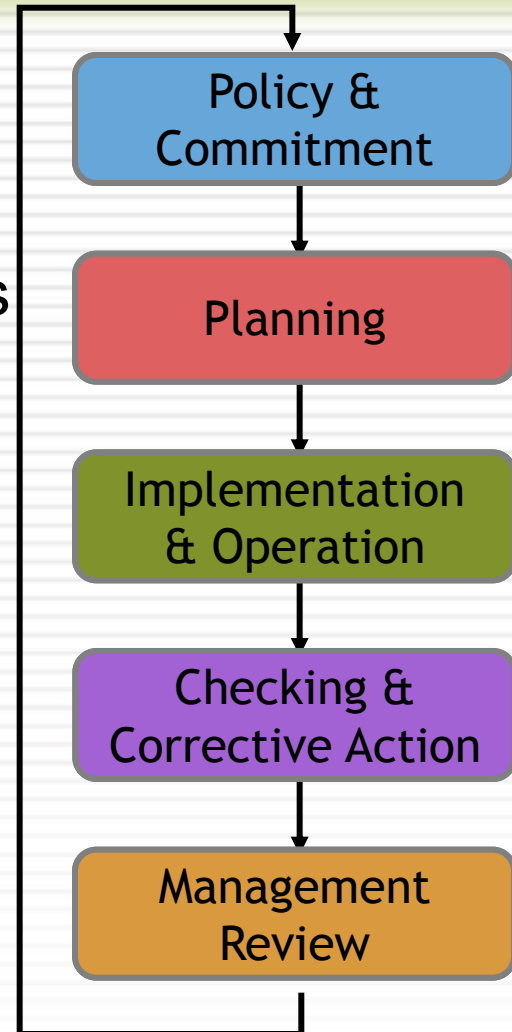
- Objectives & Targets process supports broader EMS implementation goals:
  - Coordinating and streamlining fragmented processes
  - Constantly reducing the risk posed by significant aspects
  - Demonstrating continuous improvement (S-S-S)
- Challenge is to link EMS, compliance and improvement into a single system
- LANL used bottoms-up rather than top-down approach

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# EMS Implementation

- Used culture of Lab
- Formed Directorate & Division Team
- Defined activities, products & services
- Defined environmental aspects
- Prioritized improvement needs
- Developed Environmental Action Plan (EAP) process
  - 600+ local actions per year
- Institutional goals roll from bottom



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# Laboratory ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)

Annual process of Performance Measurement & Continuous Improvement

Inputs to Institutional  
annual environmental  
objectives, &  
performance

Contractual & Regulatory  
Requirements

Existing Goals,  
Objectives, Targets, &  
Key Performance  
Indicators, Appendix F

ENV Division  
environmental expertise

Directorate Significant  
Environmental Aspects  
and Objectives

Changing customer  
needs, institutional  
requirements, and  
annual reviews

Directorates

revise Action Plans  
with Objectives,  
Targets, &  
Performance  
Indicators traceable  
to individuals

Steering Committee

Review & approve  
recommended Institutional  
Environmental Objectives,  
Targets, & Division  
Performance Indicators

EMS Management Team

Review Action Plans to  
identify recommended  
institutional environmental  
objectives, targets, &  
performance indicators

EMS Core Team

Review & refine  
recommended institutional  
environmental objectives,  
targets, & performance  
indicators

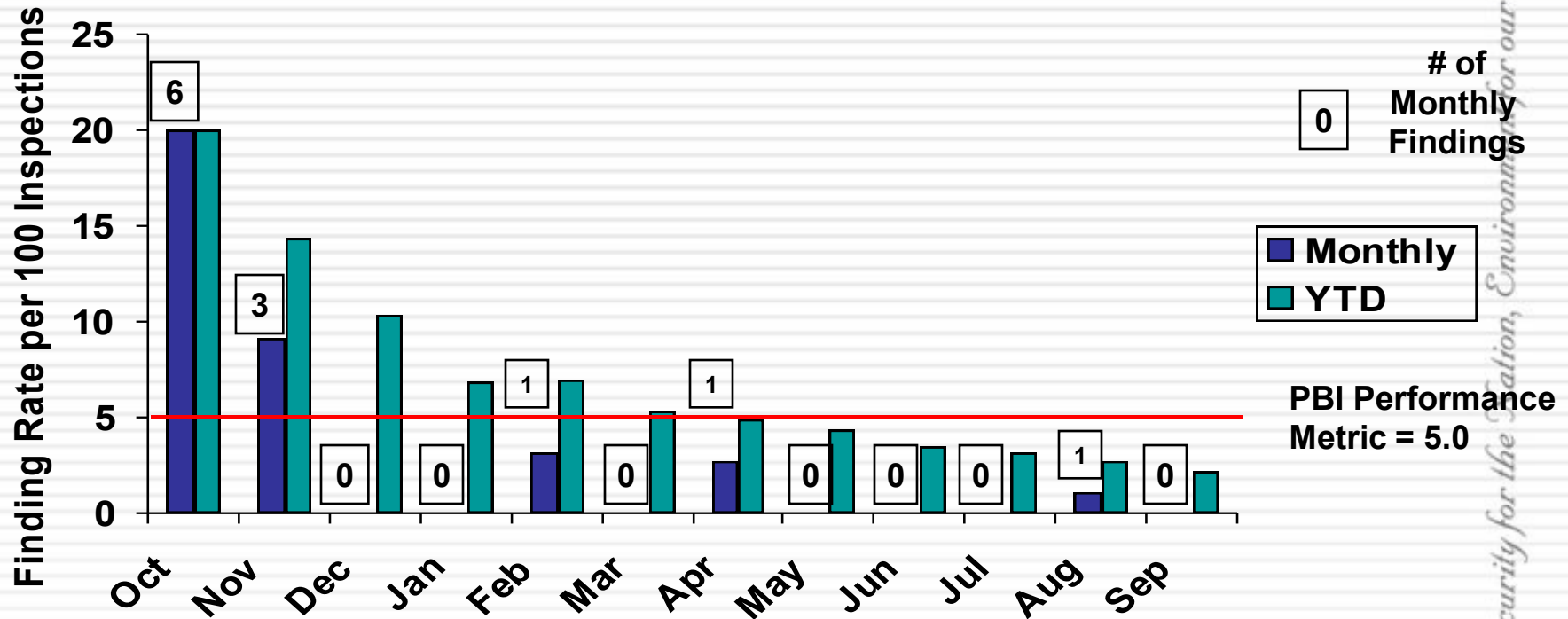


# FY 07-08 Laboratory Objectives and Targets

- Ensure Environmental Compliance
- Reduce Radioactive and Hazardous Waste
- Energy and Fuel Conservation
- Site-wide Equipment and Materials Disposition
  - Includes Chemical Life Cycle Management
- Zero Liquid Discharge by 2012

**All objectives and targets are approved by Senior Management and are directly tied to contract performance metrics**

# NPDES Stormwater Compliance Example



- EMS partnership to find root causes, corrective & preventive actions
  - Major overhaul of contractor language & construction training



# Compliance Accomplishments

- ENV completed all regulatory deliverables and had a 100% on-time submission rate with high quality
- NEPA and SWEIS Mitigation Action Plan closely aligned with EMS Objectives and Targets
- Air: Anticipated off-site dose from all LANL operations in 2007 is ~0.5 mrem vs. 10 mRem limit
- RCRA is next target

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# Laboratory Objective: Reduce Radioactive & Hazardous Waste

## Effort focused upstream

- Looking to Directorates to set target levels
- Current waste volume information available from P2 Program
- P2 assessments available to find process opportunities
- P2 engineering support for projects
- GSAF fees fund end-user projects
- Awards programs spread word
- Metrics to track success



## Improvement Targets

- Hazardous
- Transuranic
- Low Level
- Mixed Low Level
- Sanitary
- Recycle Rate
- Affirmative Procurement



# Waste Reduction Results

- 1,000,000 l/yr RLW effluent reduced;
- 1,100,000 RLW process waste reduced
- 88.5 m<sup>3</sup> of TRU waste eliminated
- 83.5 m<sup>3</sup> LLW eliminated
- 32,000 mt of sanitary waste reused or recycled
- 6600 chemical containers removed from inventory
- GSAF: 24 projects funded (cost avoidance- \$4.9M)
- Pollution Prevention program yielded **\$18.4 M in cost avoidance** in FY07 (conservative estimate)



# Laboratory Objective: Energy & Fuel Conservation


**Improve Laboratory-wide Energy and Fuel Conservation by meeting or exceeding the following goals set by the Energy Policy Act of 2005 by executing the following:**

- Annual energy reduction goal of 2% from FY06 to FY15
- Electric metering required by 2012 for all federal buildings
- New buildings to be designed 30% below ASHRAE standard or International Energy Code if life-cycle cost-effective
- Assure renewable electricity consumption of not less than 3 % by FY 2009
- Commit to Federal Electronics Challenge Requirements



# Energy & Fuel Progress

- **Energy and Fuels Conservation**
  - Construction of E85 fueling station
    - Funding obtained to finish installation and permitting
  - Partnership with NORESKO to utilize alternative energy and fuel sources
  - Implementation of “green” / LEEDs design
- **Footprint Reduction**
  - Reduction of Laboratory footprint -- corresponding reduction in resource usage
  - Links directly to Cleanout Objective
- **Energy Awareness**
  - Weekly Energy Booth at Otowi during October
  - Change-a-Light Campaign Participant (DOE and Bechtel)
- **Joint Sustainability Initiative with Los Alamos County**
  - Just beginning but with large focus on energy and fuel issues



# Laboratory Objective: Zero Liquid Discharge

- Objectives: NPDES Outfall Elimination by 2012
  - Provide investment to reduce long-term costs associated with liquid discharges (including evaluating Zero Liquid Discharge at each outfall)
- Components
  - Upstream - Reduce sources of wastewater (GSAF and P2 projects)
  - Recycle wastewater effluent (SERF, etc)
  - End of pipe - Construct advanced treatment facilities / eliminate outfalls
- Actions
  - Determine outfall ownership of directorate
  - Participate in engineering analysis of current outfalls
  - Set priorities for outfall closures
  - Support institutional funding requests

# Laboratory Objective: Laboratory-wide Cleanout



- Root causes: departures
- Provide Cleanout Toolkit and checklist to guide process
  - Safety & Security
  - Where to go & who to call
- Directorate's walk own spaces
- Don't let refill happen
- Future costs drive near-term action
- Subprojects to address new problems discovered



# Results of Completed Space Cleanouts

Location	Type	Amount	Description
TA 21	Space	28,369 ft <sup>3</sup>	Footprint reduction
TA 21	Reuse	14,000 items	Unused cardboard boxes
TA 21	Reuse	7 units	Sheds and transportainer
TA 21	Recycle	1 roll off each	Metal and cardboard
TA 51	Reuse	not estimated	PVC and auger pipe donated to Sevilleta NWR
TA 51	HAZ	2 units	Contaminated and unsound transportainers
TA 51	Reuse	300 ft <sup>3</sup>	LIDAR equipment donated to UIA
TA 51	Salvage	2500 ft <sup>3</sup>	Excess equipment
TA 51	Recycle	1 roll off	Aluminum
TA 51	Recycle	2 roll offs	Other metal
TA 51	Reuse	30 lbs	Bentonite reused by LWSP
TA 51	LLW	not estimated	Trinity soil samples



# Equipment and Materials Disposition Sub-Projects

- Procurement: Beta test of new Oracle system completed, will be release Oct. 22<sup>nd</sup>
    - Environmental High Risk Chemical icon on vendors web site w/link to alternative listings (LANL)
  - ChemLog PDA system upgraded to handle “Pocket PC” units - facilitates labeling as recyclable
    - 274 owners of recyclable/surplus chemicals identified
    - ~84% of chemical already managed in new system
  - Environmental High Risk Chemicals Management
    - Flow sheet for alternative chemicals completed for majority of chemicals listed
    - JHA tool question added requiring users to address alternative chemical usage
  - Canned Air Issue
    - Excess purchase and disposal costs as RCRA waste
    - Informed, collected, stopped procurement for non-R&D uses
- Los Alamos** > \$200 k annual savings  
NATIONAL LABORATORY

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# Zero Liquid Discharge

- Project Funded Through Generator Set Aside Fund
- First Stage is Engineering Analysis of 17 Outfalls
  - Completed site visits and interviews with outfall owners
  - Document and data collection is complete
  - Treatment / discharge options evaluated have been identified for each outfall
  - Analysis of the options has been initiated and a "preliminary" recommended option has been identified for each outfall
- FY08 Performance Measure and Director's Goal
  - Fully integrated with implementation of new NPDES permit
  - Project will be permit implementation baseline

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# Tools to Communicate O&T

- Directorate, Division & Group Meetings
  - Top-down message on importance
- Mgmt. All-hands memos with actions & commitments
  - Highlight contribution to Lab goals
- Newsletters and websites
- Include responsibilities in Individual Performance Objectives
  - General employee requirements for everyone
    - Complete Environmental Awareness Training
  - Specific job assignments for employees with EAP responsibilities
- Tools from EMS Core Team:
  - Posters on policy & other topics, Environment Smarts, IPO guidance, LINKs stories, database to track progress

# Aligning Objectives, Targets, Metrics

2005-2006	2006-2007	2007-2008
<ul style="list-style-type: none"> <li>• Functional Mgr</li> <li>• UC ES&amp;H Performance</li> <li>• NNSA Report</li> <li>• Contract Appendix F</li> <li>• Director's Central Safety &amp; Security Committee</li> <li>• TYCSP</li> <li>• Operation Efficiency</li> <li>• Line Mgmt. Self Assessment</li> <li>• Semi-annual ES&amp;H Self Assessment</li> <li>• P2 Quarterly Reports</li> <li>• 10 yr Waste Mgmt Plan</li> </ul>	<ul style="list-style-type: none"> <li>• EMS Objectives &amp; Targets</li> <li>• NNSA Report</li> <li>• Contract Performance Based Incentives</li> <li>• TYCSP</li> <li>• P2 Quarterly</li> <li>• Director's Portfolio Review</li> </ul> <p style="color: red; text-align: center;">Used slightly different metrics leaving room for debate on performance</p>	<ul style="list-style-type: none"> <li>• EMS Objectives &amp; Targets</li> <li>• Contract Performance Based Incentives</li> <li>• Director's Portfolio Review</li> </ul> <p style="color: red; text-align: center;">All use identical metrics</p>

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