



# Materials & Specimens Core Business Process

CRADLE TO GRAVE MANAGEMENT OF MATERIALS

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**Pacific Northwest**  
NATIONAL LABORATORY

*Proudly Operated by **Battelle** Since 1965*

# About PNNL

# Pacific Northwest National Laboratory

## *Battelle-managed and Mission-driven*

### Our mission

We transform the world through courageous discovery and innovation

### Our vision

PNNL science and technology inspires and enables the world to live prosperously, safely, and securely

- ▶ Operated by Battelle since 1965
- ▶ Unique S&T strengths and capabilities
- ▶ Mission-driven collaborations with government, industry and academia



# 300 Area

**(DOE-EM)**

325 Upgrade  
(Line Item)

312

318

331 Lab Mod.  
(GPP)

361

350

318

**(DOE-SC)**

**(Horn Rapids Triangle)**

SDL  
(Line Item)

PSF  
(Line Item)

**Leased Facilities on Battelle Land**

EMSL North Lab/Office  
(Line Item)

EMSL Rad Annex  
(Prog GPP)

EMSL Machine Shop  
(IGPP)

BSF/CSF  
(Lease)

**Leased Facilities on Battelle Land**

**Other Leased Facilities**

EMSL Comp. Rm. /  
South Elec. Expansion  
(Prog GPP)

NSL  
(GPP)

**Battelle Owned**

# Richland Campus

Note: Portions of Richland North Campus are not shown

# Taking a look at PNNL and our *Lab Agenda*

## FY2011 Facts & Figures

**\$1.1B** Operating Budget

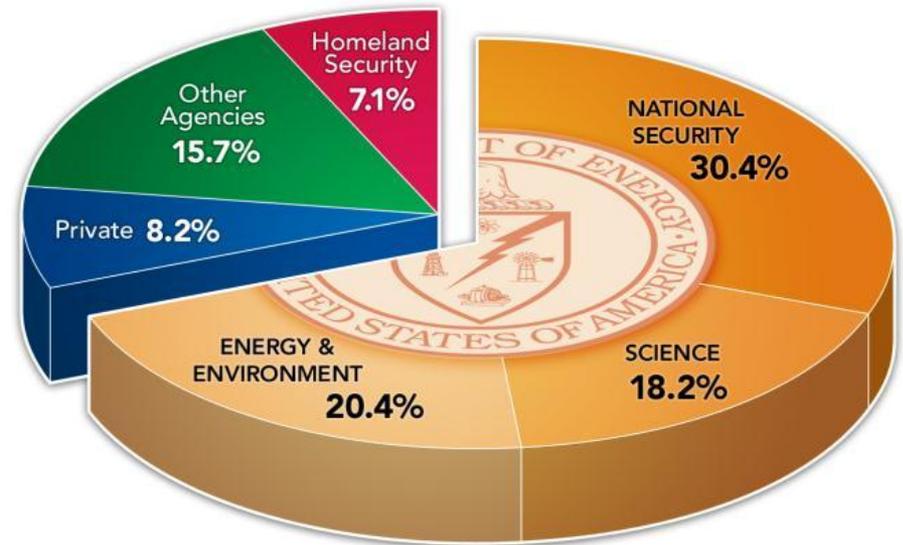
**4,841** Scientists, Engineers, and Staff

**994** Peer-Reviewed Publications

**252** Invention Disclosures

**49** Patents Issued

**2** R&D 100 Awards





# **Transforming Silos of Excellence**

## **into**

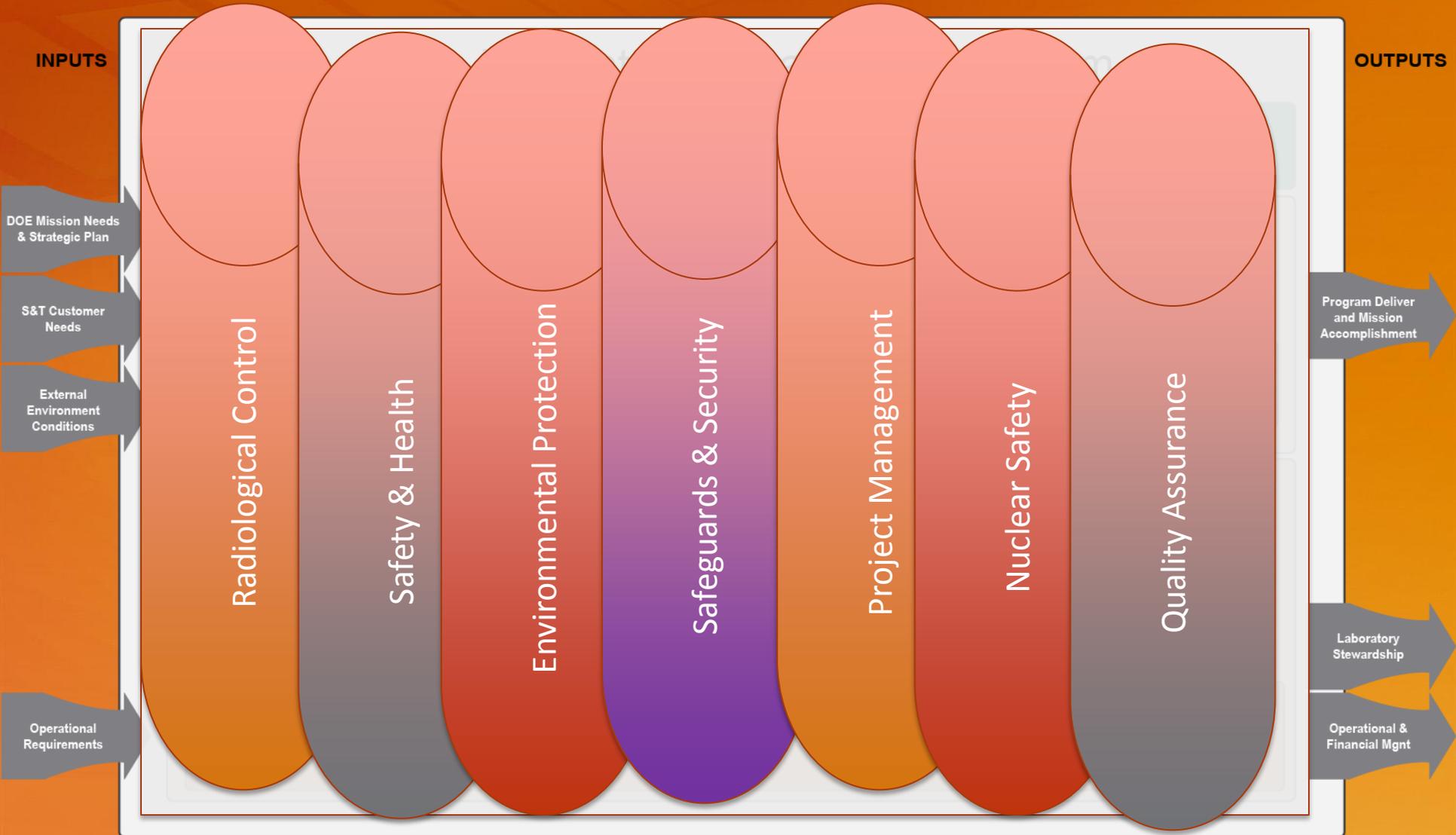
# **Project Focused Business Processes**

# Historical Approach – “Silos of Excellence”

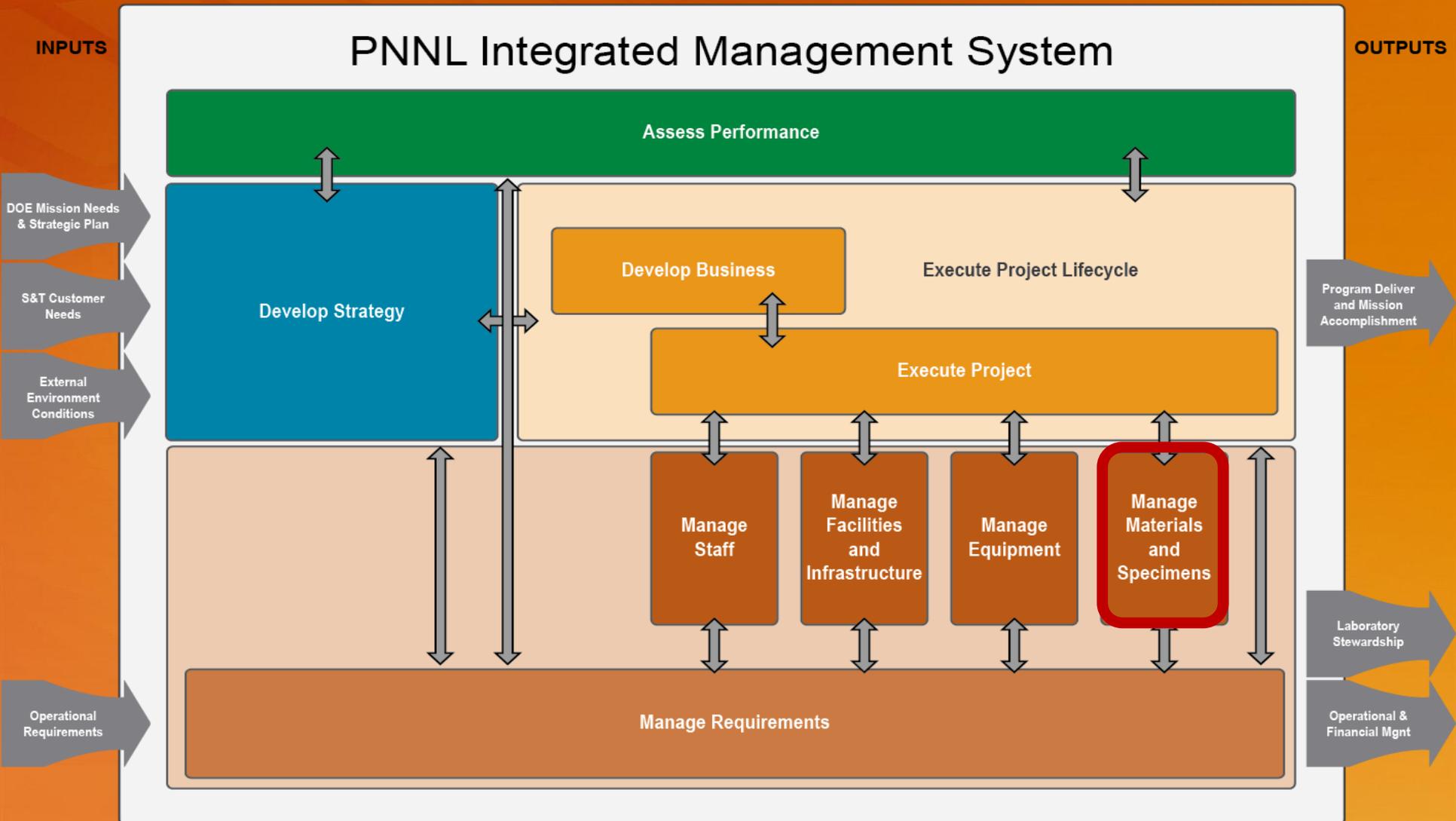


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# Project Focused – Core Business Processes



## **Mission:**

Steward the efficient, compliant, and business focused management of materials & specimens at PNNL

## **Vision:**

Simplify and seamlessly integrate the processes and tools used to manage materials & specimens at PNNL within the Integrated Management System.

# Key Objectives:

- ▶ Provide focused leadership to drive efficient and effective management of materials & specimens
- ▶ Make it simple for researchers to inventory materials & specimens
- ▶ Eliminate “stove-pipe” approach to the numerous management aspects of materials & specimens



# What are we doing differently?

# Materials & Specimen CBP Accomplishments to Date

- ▶ Created new field services role of Materials & Specimen Representative (MSR)
  - Field Deployed to serve R&D staff
  - Sole focus is on lifecycle management of materials (very little waste management)
  - No net increase in head count – Reassigned waste management staff
  
- ▶ Developed Risk Based Strategies for Materials Management
  - Based on Hazards; Regulations and Strategic Value of Materials
  
- ▶ Deployed new IT system service to deliver MSDS to laboratory staff



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# FY 2012 Improvement Actions

# Key Improvement Actions Planned for 2012

- ▶ Develop chargeback model to recover lifecycle management costs of chemicals
  - Potential benefit: Creates financial incentive to keep the smallest required inventory
  
- ▶ Establish a Central Chemical Receiving Facility
  - Improve quality of inventory data
  - Manage costs from gas bottle demurrage
  - Economy of scale for inventory management
  
- ▶ Implement a risk based approach to chemical tracking
  - Focus staff and management attention on the most important materials based on Hazards; Strategic Value; Compliance Requirements
  - Improved compliance; Reduced Negative Events; Reduced Transactions



# Risk Based Approach to Chemical Management

# What's Important?

- ▶ Acute risk to human health and/or the environment
  - Poison Inhalation Hazards
  - Explosives
  - Peroxide Formers
- ▶ Regulatory Risk
  - Inventory limits based on Fire Code
  - EPCRA Reporting
  - Air Emissions inventory (e.g., GHG)
- ▶ Monetary or strategic value
  - Precious Metals
  - High purity standards



# Operational Significance Categories

## Chemical

OS Level	Count and Percentage of Inventory	General Description	Examples
High 	1,800 Items (3%)	<ul style="list-style-type: none"> <li>• Low FUA Limits</li> <li>• Time Sensitive</li> <li>• Controlled Substances</li> </ul>	<ul style="list-style-type: none"> <li>• TNT</li> <li>• THF</li> <li>• Methadone</li> </ul>
Medium 	45,000 Items (67%)	<ul style="list-style-type: none"> <li>• Have an FUA Limit</li> <li>• Environmental Reporting</li> <li>• Safety and Health (toxins, carcinogens, sensitizers)</li> <li>• Precious Metals</li> <li>• Valuable to Research</li> </ul>	<ul style="list-style-type: none"> <li>• 2-propanol</li> <li>• pH Buffers</li> <li>• DMSO</li> <li>• Silver, Gold</li> </ul>
Low 	20,000 Items (30%)	<ul style="list-style-type: none"> <li>• Not High or Medium</li> </ul>	<ul style="list-style-type: none"> <li>• Pump Oil</li> <li>• Calcium Chloride</li> <li>• Glucose</li> </ul>



# ChemAgain – An Improvement Success Story

# ChemAgain Overview

## ▶ What:

- Unused chemicals in original container
- Materials removed from Lab ; managed in central location
- Prohibitions:
  - No Radioactive material
  - No PIH; Explosives; Time / Shock Sensitive Materials

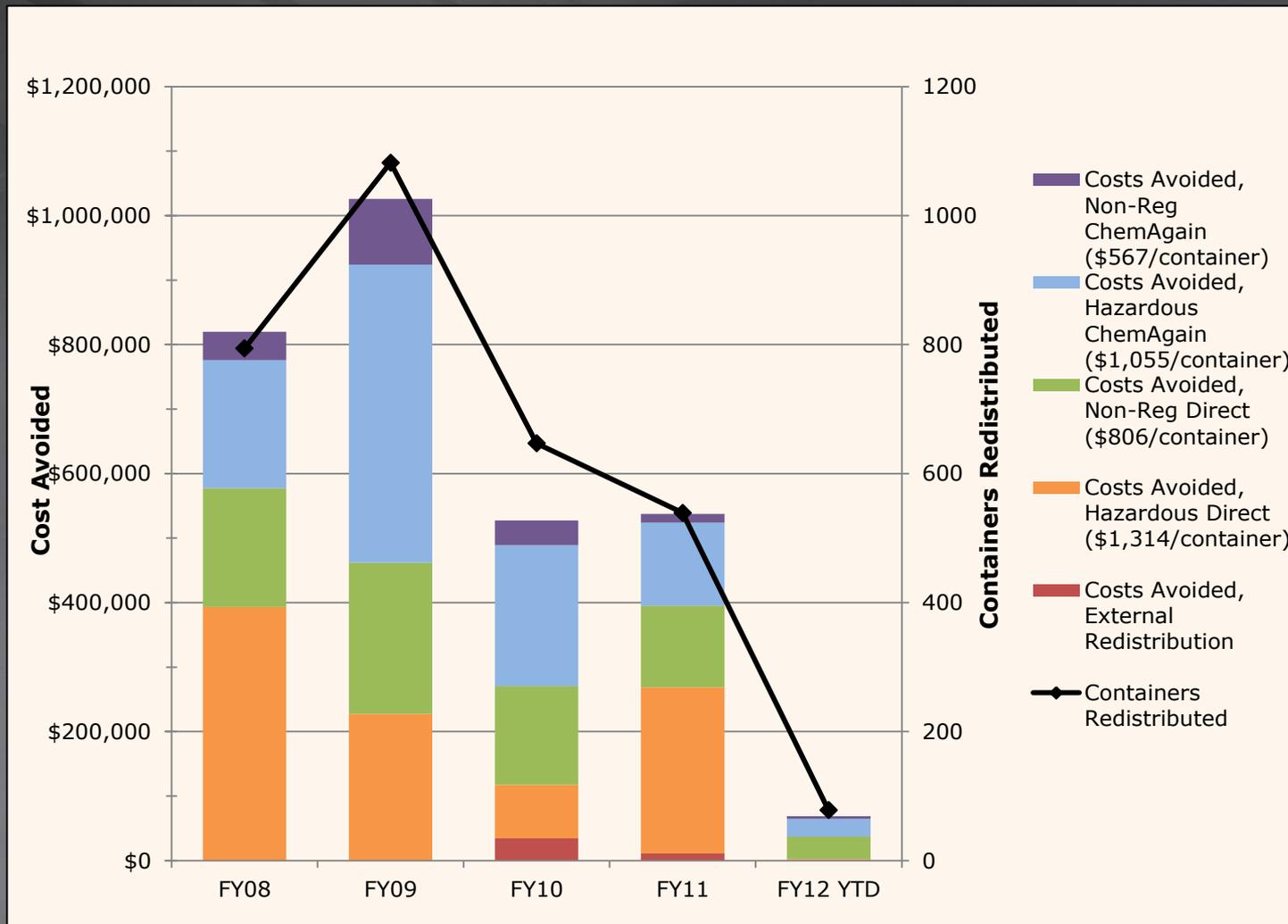
## ▶ Who:

- Internal R&D
- Other DOE sites
- External Orgs (industry and universities)

## ▶ Resources:

- Disposal liability for ChemAgain recovered as part of Waste Service Center (eliminates financial barrier to right size inventory)
- < 0.5 FTE of technician time to manage inventory and fulfill requests for materials (overhead funded)
- ~ 400 square feet of storage space

# ChemAgain – Performance



## ChemAgain Reduces Waste

Scientist Mike Schweiger uses the surplus chemicals to make glass for his research projects and for scientific demonstrations to students and teachers.

“I’m glad we are using what we have resourcefully. Over the years I’ve had to go down the phone list to see who has extra chemicals,” said Schweiger. “The ChemAgain redistribution center makes it so easy!”



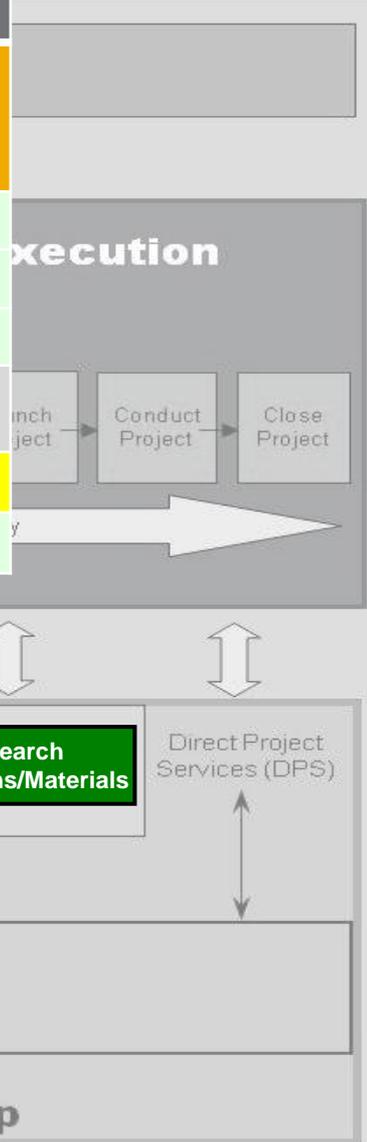


# Materials & Specimens CBP Performance Metrics

# Materials & Specimens CBP



Materials & Specimens Business Process Performance Measures	Target	FY10	FY11	FY12
Materials & Specimens Risk Index: (Roll-up of several sub-measures including materials-related data/inventory accuracy, 2400 calls, ORPS events, major spills, regulatory findings, FUA exceedances, unfunded waste, and results of IOPS walkthroughs)	≤ 1.0	0.34	0.68	0.09
% of High-Risk/Strategic Items in Inventory	-	2.7%	3.1%	3.1%
% of High-Risk/Strategic Items in Inventory Stewarded by Projects	-	43.8%	42.0%	42.6%
Disposal Liability	-	\$8.9M	\$7.0M	\$8.5M
Lifecycle Unit Cost (to include IT systems; staff resource; mgmt. & disposal costs)	TBD	TBD	TBD	TBD
Disposal Cycle Time (Complete Waste Pick-Up in < 50 Days)	≥ 85%	93%	81%	77%
Research Productivity Sentiment Survey (annual survey - M&S question)	≥ 3.6	3.78	3.76	-



## Performance Observations:

- The Risk Index remains satisfactory due to low numbers of materials and specimens related events and issues.
- % High-Risk/Strategic items in inventory remained the same as FY11.
- % High-Risk/Strategic items Stewarded by Projects increased by 0.6% from FY11.
- Disposal Liability decreased by \$1.5M over FY11. The increase is primarily due to the increase in waste rates.
- Disposal Cycle Time less than target due to PNNL staff vacancies and CH-PRC staff reductions.
- The change in mean score for the Research Productivity Sentiment Survey materials and specimens question is insignificant.

**BP Stewards: Simpkins/Andersen**

# Materials & Specimens CBP



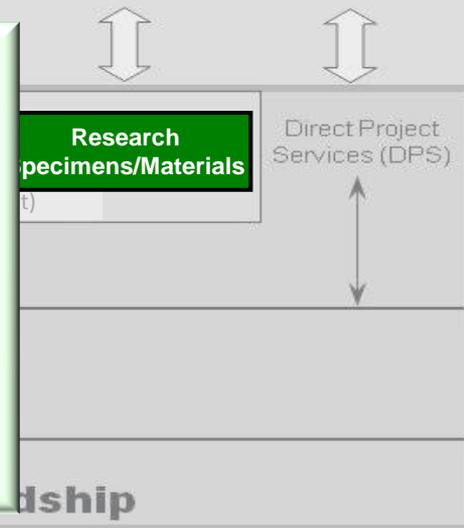
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Compliance  
Strategic Alignment  
Lifecycle Cost  
Customer Satisfaction

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BP Stewards: Simpkins/Andersen



- ▶ Past improvements in materials management have been driven from the bottom up (grass roots), via silos of excellence
  - Slow to mature
  - Difficult to integrate across Management Systems
  
- ▶ Future improvements will be planned and executed at the enterprise level
  - Will provide adequate funding, and as appropriate, span multiple budget cycles
  - Integrate across Management Systems using process and IT information systems built with the end user in mind
  - Enable fundamental changes to business process (e.g., staff alignment; infrastructure; cost recovery models)

