

Integrated Safety Management System as the Basis for Work Planning and Control for Research and Development

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**Pacific Northwest Site Office (PNSO)

ISM Champions Workshop

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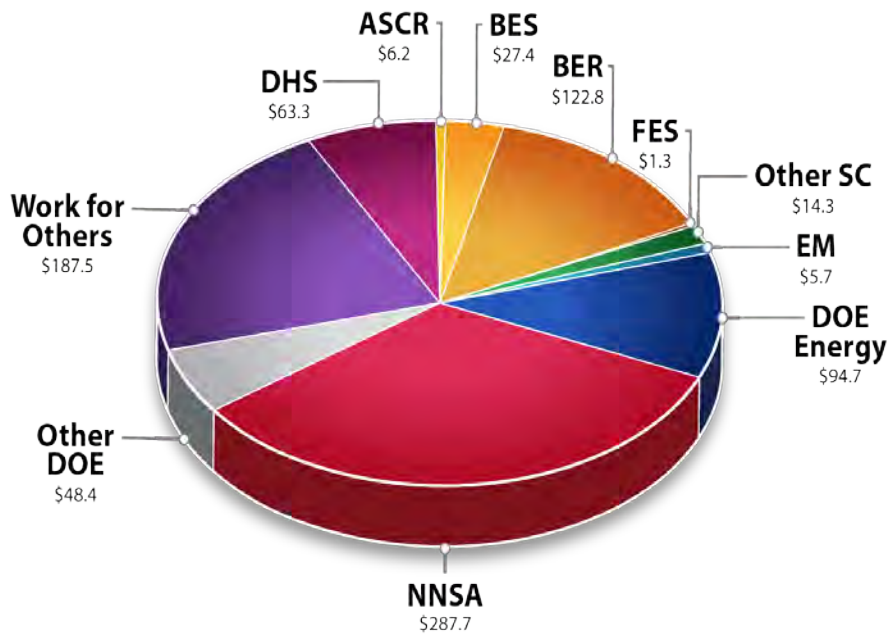
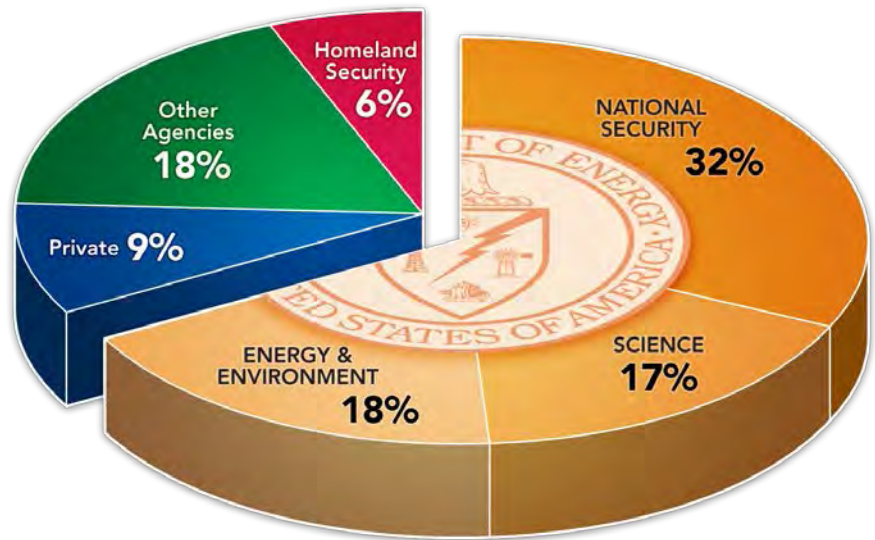
- ▶ Introduction to PNNL – scope of work
- ▶ Integrate Safety Management System Overview
- ▶ R&D Activity-level Work Planning and Control
- ▶ Discussion - Continuous Improvement
- ▶ Summary

- ▶ Work Planning and Control (WP&C) is essential to assuring the safety of workers and the public regardless of the scope of work
 - Research and Development (R&D) activities are no exception.
- ▶ Integrated Safety Management System (ISMS) implements WP&C
 - Approach is developed to match the work and needs site-by-site
- ▶ PNNL has developed and refined attributes of WP&C for application to R&D activities as part of our ISMS
 - Treating hazards while simultaneously enabling R&D mission delivery
 - Increasing WP&C rigor at Hazard Category 2 Nuclear Facility



PNNL has a diverse portfolio of R&D

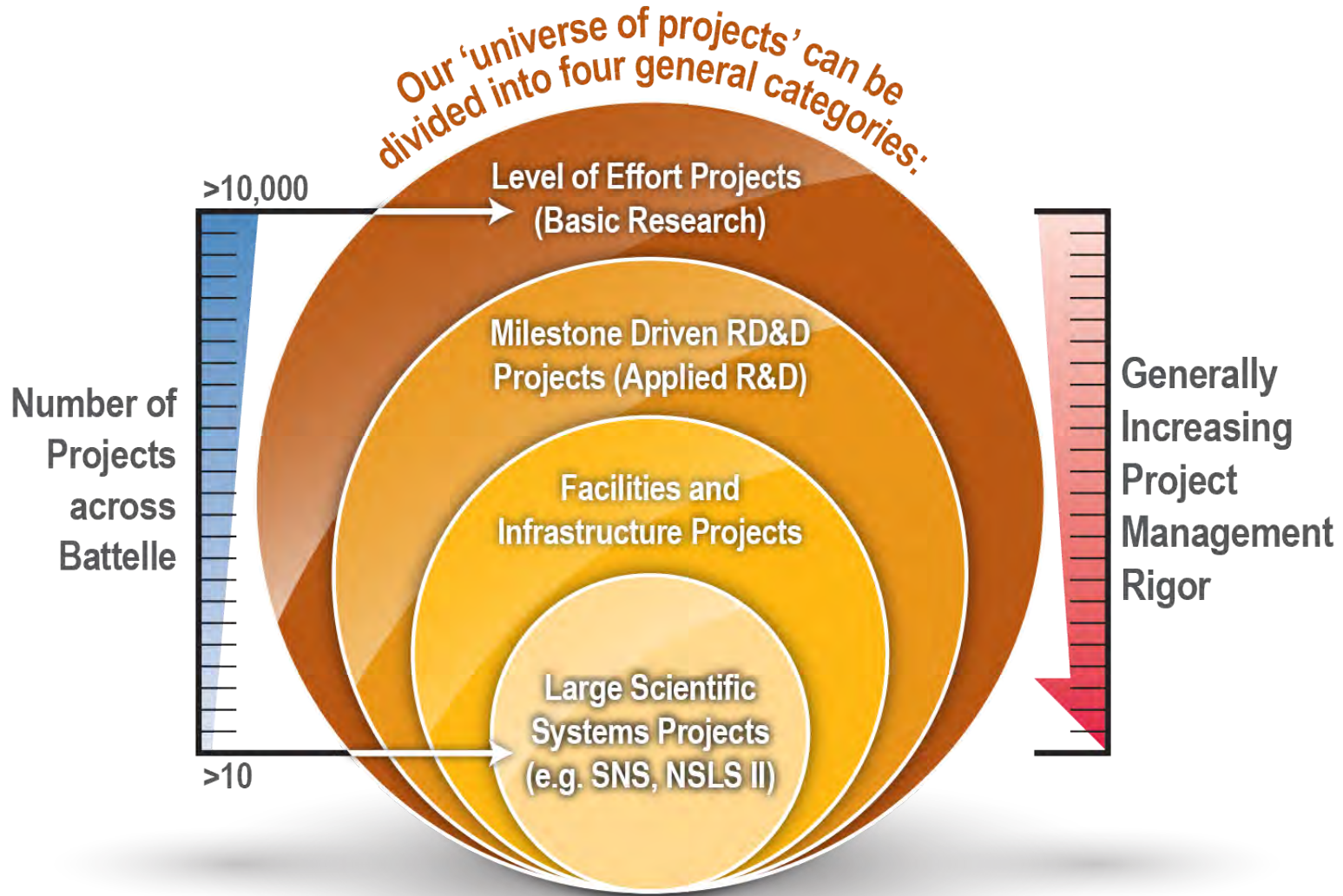
FY 2012 Cost: \$859M



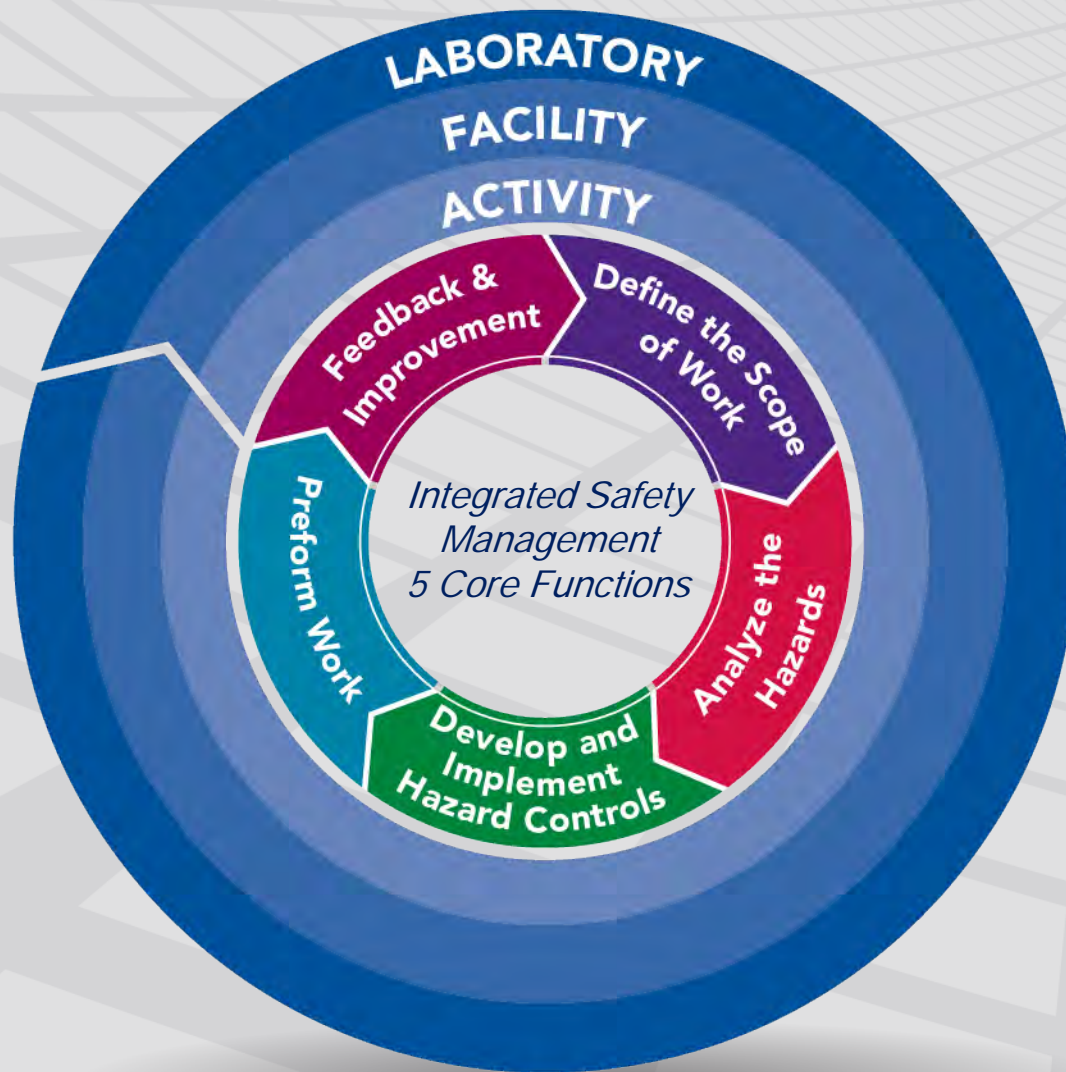
FY 2008 — FY 2012

- ▶ 4,689 peer-reviewed papers
- ▶ 14 R&D 100 & 11 FLC awards
- ▶ 537 U.S. and foreign patents

PNNL R&D Mission divided into 2000 projects spanning Basic Research to Scientific Systems



PNNL has three focus areas where we apply the five core functions of ISM



R&D projects make us productive, and safety is integrated into the productivity process

Define the Scope
Of Work

Analyze the
Hazards

Develop &
Implement Hazard
Controls

Perform Work

Feedback &
Improvement



PNNL has (900) project managers responsible for risk management across (2000) projects

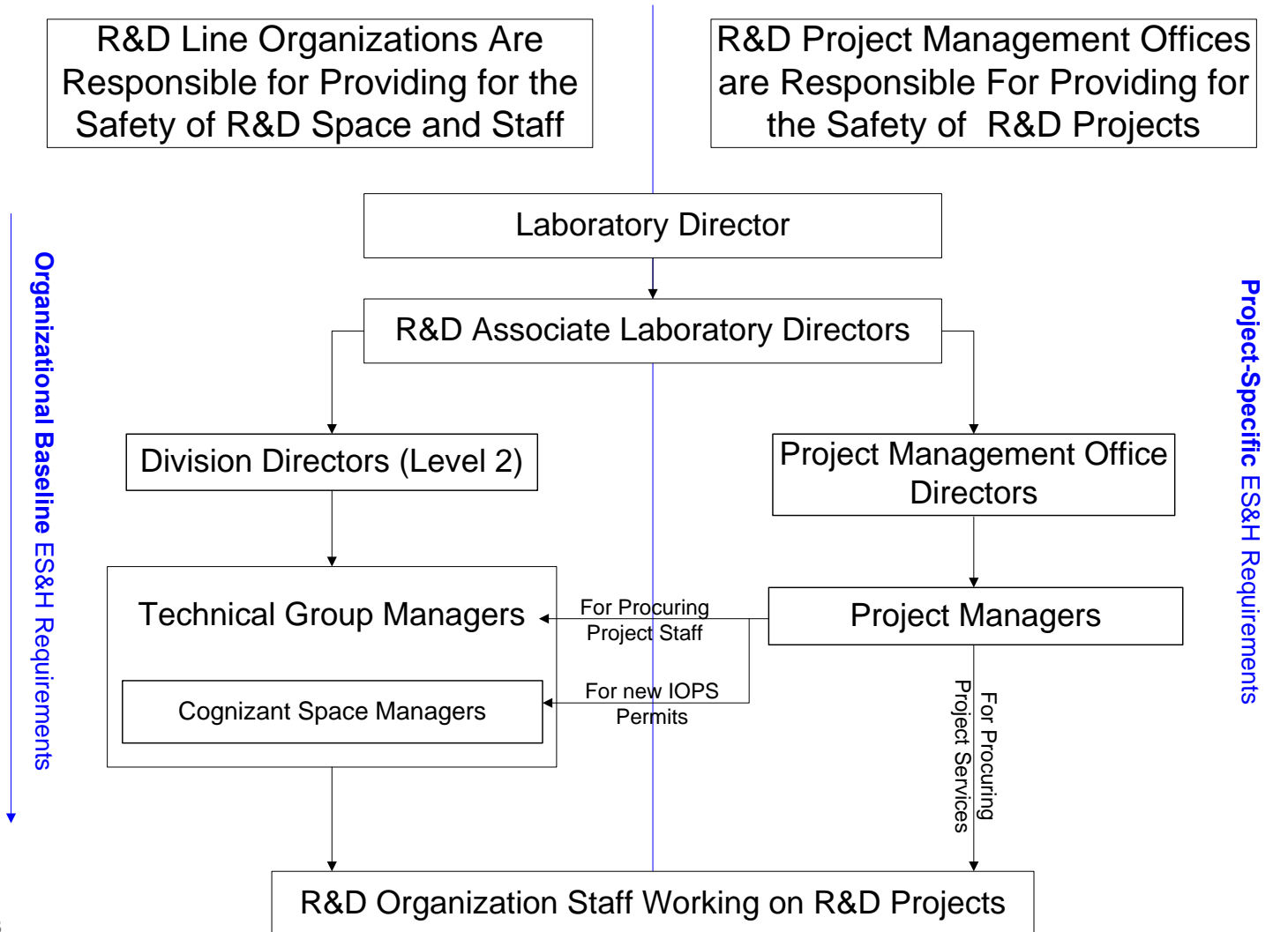


References:

1. ISO 21500, Guidance on Project Management
2. ISO 31000, Risk Management – Principles and Guidelines

We have defined roles and responsibilities to manage project risk and hazards

R&D Line Responsibility for ES&H

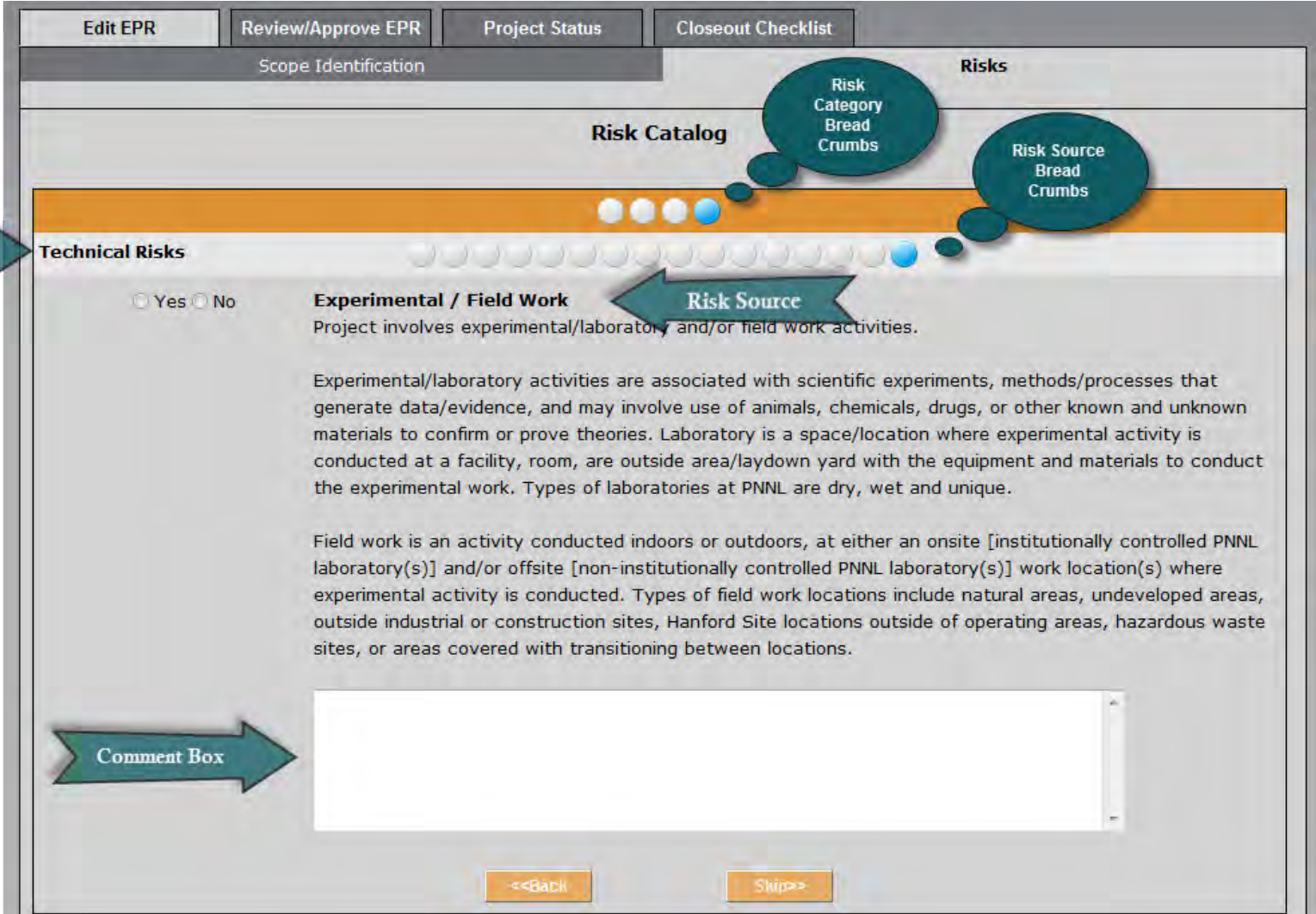


We enable all R&D projects by deploying a systematic approach to WP&C

- ▶ **System for every project:** Electronic Prep and Risk System (EPR)
 - Risk identification
 - Risk analysis
 - Risk evaluation
 - Risk treatment - Identifies and delivers Work Controls
- ▶ **System for every lab space:** Integrated Operations System (IOPS)
 - R&D project can rely on IOPS for laboratory work under an establish and approved routine operating envelope

R&D Projects use a Risk Catalog to Systematically Analyze Risks/Hazards

Electronic Prep and Risk (EPR) System



The screenshot displays the EPR system interface. At the top, there are navigation tabs: "Edit EPR", "Review/Approve EPR", "Project Status", and "Closeout Checklist". Below these is a "Scope Identification" section. The main area is titled "Risk Catalog" and features a horizontal breadcrumb trail with several circular indicators, one of which is highlighted in blue. A callout bubble labeled "Risk Category Bread Crumbs" points to this trail. Another callout bubble labeled "Risk Source Bread Crumbs" points to a specific item in the catalog. A large teal arrow labeled "Risk Category" points to the "Technical Risks" section. Below this, there are radio buttons for "Yes" and "No". The selected risk is "Experimental / Field Work", with a teal arrow labeled "Risk Source" pointing to its description. The description includes two paragraphs: one for "Experimental/laboratory activities" and one for "Field work". At the bottom left, a teal arrow labeled "Comment Box" points to a large white text area. At the bottom center, there are two buttons: "<<Back" and "Skip>>".

Edit EPR | Review/Approve EPR | Project Status | Closeout Checklist

Scope Identification

Risks

Risk Catalog

Risk Category Bread Crumbs

Risk Source Bread Crumbs

Risk Category

Technical Risks

Yes No

Experimental / Field Work ← Risk Source

Project involves experimental/laboratory and/or field work activities.

Experimental/laboratory activities are associated with scientific experiments, methods/processes that generate data/evidence, and may involve use of animals, chemicals, drugs, or other known and unknown materials to confirm or prove theories. Laboratory is a space/location where experimental activity is conducted at a facility, room, are outside area/laydown yard with the equipment and materials to conduct the experimental work. Types of laboratories at PNNL are dry, wet and unique.

Field work is an activity conducted indoors or outdoors, at either an onsite [institutionally controlled PNNL laboratory(s)] and/or offsite [non-institutionally controlled PNNL laboratory(s)] work location(s) where experimental activity is conducted. Types of field work locations include natural areas, undeveloped areas, outside industrial or construction sites, Hanford Site locations outside of operating areas, hazardous waste sites, or areas covered with transitioning between locations.

Comment Box

<<Back | Skip>>

Project Managers depend on IOPs for WP&C in onsite laboratory spaces



Discussion – More Recent Observations and Continuous Improvement

- ▶ We are further enhancing project risk management
 - Launched a new Electronic Prep and Risk (EPR) System
 - Subject Matter Experts more directly engaged with project risk mgmt
- ▶ We are focusing more on people (highly variable population)
 - Historically overemphasized process – need people, process, & systems
 - Working to better understand the contribution of people networks
- ▶ We are actively engaged in WP&C working groups
 - Advocating ISMS for WP&C in R&D Environment
- ▶ Continuous Feedback and Improvement (5th Core Function)
 - Research Productivity Sentiment Survey, Federal Burden Survey
 - Suite of performance measures – Integrated Management System
 - Contractor Assurance is foundational

- ▶ Work Planning and Control (WP&C) is essential to assuring the safety of workers and the public across the entire Department of Energy (DOE) regardless of the scope of work or nature of facility.
 - Research and Development (R&D) activities are no exception.
- ▶ Integrated Safety Management System implements WP&C
 - Approach is developed to match the work and needs site-by-site
- ▶ Each DOE organization has developed a way to implement WP&C through their tailored Integrated Safety Management System
- ▶ PNNL has developed and refined attributes of WP&C for application to R&D activities as part of our ISMS
 - Built WP&C into our business – mission delivery through R&D projects



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Questions?

PNNL is managed and operated according to the *Integrated Management System*

