

Integrated Operations System (IOPS)

*a tool for integrating operational functions
into research activities*

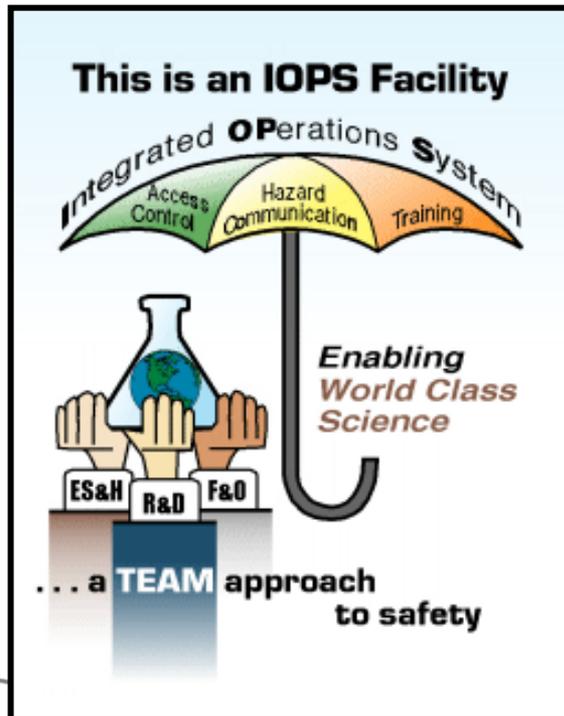
Pat Wright, *PNNL Work Processes & Controls*

Introduction

- ▶ The IOPS approach for enabling research
- ▶ Key IOPS roles
- ▶ IOPS processes
- ▶ The IOPS workflow
- ▶ Integration of operational functions into research activities
- ▶ Integration of IOPS with other automated systems
- ▶ Achieving a safe work environment
- ▶ Performance management & assurance
- ▶ Continuous improvement

What is Integrated Operations? (IOPS)

*PNNL's approach for implementing
bench-level controls in laboratory facilities*



***IOPS enables
laboratory workers to work
safely –
more efficiently & effectively***

The Approach

- ▶ **Enabling vs. Controlling**
- ▶ **Flexibility based on Accountability**
- ▶ **Tailored Work Controls**

Key IOPS Roles

▶ Line Manager of workspace

- Line management responsibility for safety
- Delegates the Cognizant Space Manager

▶ Cognizant Space Manager

- Implements and monitors configuration of the workspace

▶ IOPS worker

- Accountable for performance
- Trained in work controls
- Performs work within limits

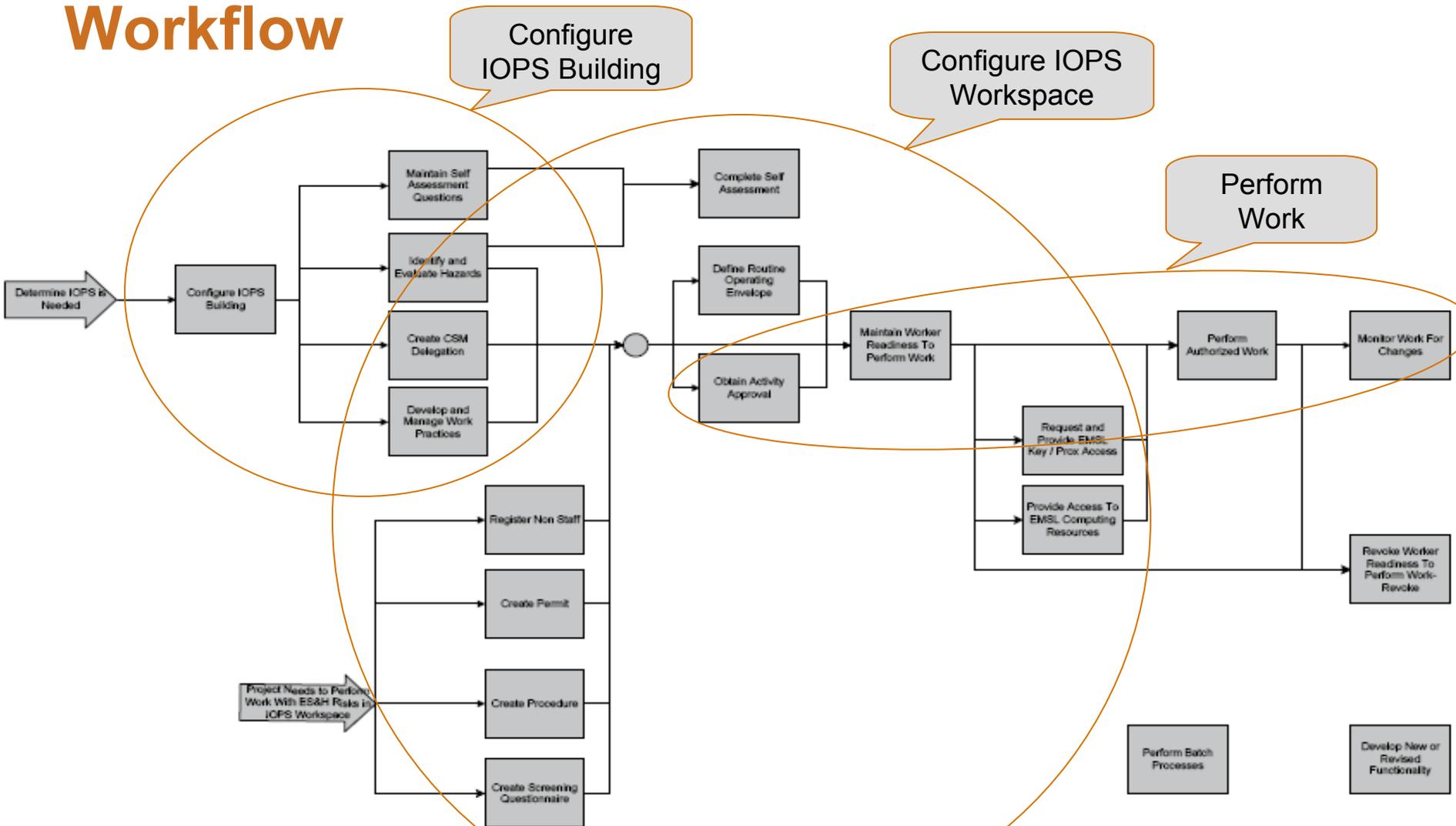
▶ Support staff

- Field-deployed support staff - Safety & Health, Environmental Compliance, Radiological Control, Waste Management
- Training Coordinator, Self-Assessment Admin, Access Control, Operations/Quality Manager

IOPS Processes

- ▶ Building Configuration
- ▶ Workspace Hazard Identification
- ▶ Access and Activity Authorization
- ▶ Hazard Communication
- ▶ Tailored Hazard Controls
- ▶ Role-based Self-Assessment

Workflow



Integration of Management System Functions

Support staff work with researchers to integrate functional requirements into key elements of IOPS workflow processes

Elements of IOPS Workflow Processes

- ▶ Development of Work Practices
- ▶ Development/review/approval of activity-specific work permits
- ▶ Self-assessment
- ▶ General support/consulting



Support staff

- ▶ Safety & Health Rep
 - Industrial Hygiene
 - Occupational Safety
- ▶ Environmental Compliance
- ▶ Waste Management
- ▶ Radiological Engineer
- ▶ Biological Safety Officer
- ▶ Pressure Engineer
- ▶ Electrical Safety AHJ

System Integration

SBMS Standards-Based Management System

Functional Management Systems

Workspace

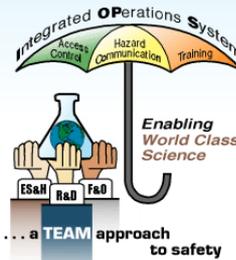
Project

Facility Information System

ATS
Assessment Tracking System

Staff

Electronic Prep & Risk



PeopleSoft.

Enterprise Learning

Data Warehouse



IOPS is effective because it is Comprehensive and Worker Focused



Tailored Self-Assmt Checklists

Dynamically-generated checklists based on hazards

Job-Specific Training

Training tailored to individual's work requirements

Process Work Permits

Activity-specific Controls

Provide Std Work Practices

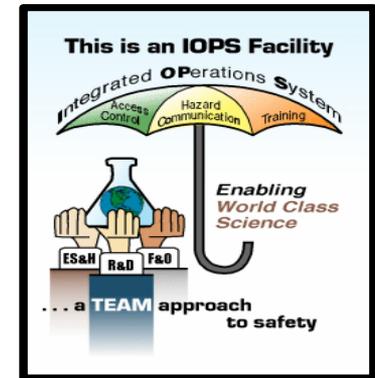
Facility-specific Content

Integrate Risk ID & Mitigation

Integrated with other key information systems

Engage Workers

Interactive application environment using a collection of flexible web-based tools



IOPS
Home
Michael Howard
Research

▶ Role:
CSM

Must Do
Action Status

▶ Shortcuts
▶ Reports
▶ User Guide
▶ Other Tools
▶ Feedback
▶ Preferences

Top of Page

Hazard Identification

[Printer-Friendly Page](#)



Workspace: 331 102
Workspace Name: Biogeochemistry Lab
Workspace Phone Number: 376-1520
Cognizant Space Manager: [Redacted] Phone: [Redacted]
CSM Delegate: [Redacted] Phone: [Redacted]

Identify the hazards in 331 102 by selecting the appropriate buttons. Click Continue (at bottom of page) when complete. Contact the Health and Safety Representative, Tedi Criscuolo (FSD), John A. Piatt (ETD) ([Tedi Criscuolo](#) or [John A. Piatt](#)) with questions.

Yes No

- Chemicals hazards that pose significant risk to humans or the environment, such as toxic materials, flammable liquids and solids, peroxide formers, pyrophorics, carcinogens, corrosives, explosives, or other hazardous materials:
 - OSHA regulated chemicals, compounds, and carcinogens, (aka [SBMS OSHA regulated list](#));
 - assigned a threshold limit value by the American Conference of Governmental Industrial Hygienists, Inc.; or
 - determined to be cancer causing, corrosive, toxic, an irritant, a sensitizer, or has damaging effects on specific body organs.

- Is work with microorganisms that require Biosafety Level 1 (BSL1) precautions done in this workspace?
Note: does not include bloodborne pathogens or other potentially infectious material

- Is work with biological materials that require greater than biosafety level 1 (BSL1) precautions done in this workspace?

IC
it
a

Manager Dashboard and Reports

Manager Dashboard



Reading

Total: 109754
Overdue: 276



Self-Assessment

Total: 1481
Overdue: 80



Must Do

Total: 114658
Overdue: 82



Delegation

Total: 3162
Needed: 180

Permit Needed

Total: 381

- ▶ Real-time gauges for every manager's org
- ▶ Drill-down reports

The table below lists the reading overdue for Fundamental Science Dir.

Cost Cd ▲	Dept Cd	User	Building	Room	Reading Assignment	Date Assigned
D7E54	PE350		RTL520	236	Hazard Awareness Summary	26-jun-2007
D7E74	PE460		622		Practice: General Requirements & Guidelines for 622	18-jun-2007
D7E74	PE460		622		Practice: General Requirements & Guidelines for 622	18-jun-2007
D7E74	PE460		622		Practice: Tower Access	18-jun-2007
D7E74	PE463		331		Practice: Lock-Out/Tag-Out	28-jun-2007
D7E74	PE464		622		Practice: General Requirements & Guidelines for 622	18-jun-2007
D7E82	PE530		331	169	Hazard Awareness Summary	06-apr-2007
D7E82	PE530		331		Practice: Cryogen Use	01-feb-2007
D7E87B	PE572		331	147	Permit: 331-147-LUP-6571	17-oct-2005
D7EC0	PE100		331	302	Hazard Awareness Summary	28-jun-2007
D7EC0	PE100		LSL	1412	Hazard Awareness Summary	29-jun-2007

Total: 11

Future Directions

- ▶ Full integration of work practice delivery with PNNL Requirements Management System
 - Process-oriented requirements to enable research
 - Reusable Content
 - “Push” work practices based on hazard interactions and work activities
 - Verification of comprehension and retention
- ▶ Continue to improve integration of operational functions with work processes and controls
 - Greater integration of quality and security into IOPS processes
 - Enhanced use of IOPS workflow data for performance management and assurance
 - Continuously improve process efficiency and effectiveness

Conclusion

- ▶ IOPS provides PNNL with an integrated set of processes to **enable efficient and effective research**.
- ▶ IOPS establishes a **strong foundation for PNNL's *Integrated Safety Management System*** by implementing the guiding principles at key stages of the core functions related to the research workflow in laboratory workspaces.
- ▶ IOPS encourages **worker accountability** for safety, and **partnership between researchers and subject-matter experts**

IOPS Efficiently & Effectively Adds VALUE to Our Business

PNNL

- ⇒ Efficient Operations
- ⇒ Effective Research
- ⇒ Reduced Risk: Work within Authorization Envelope
- ⇒ Integration with other Tools
- ⇒ External Validation



Workers

- ⇒ Empowers Researchers to do Science SAFELY

**Achieve
Mission
Success!**

