Integrating Performance-Based Control Guidelines with Laboratory Design

Why Is This Important?

The word "Laboratory" derives from medieval Latin’s (17th century) "Laboratorium", meaning *workshop*.

Root goals of lab design:
1. Enable safe work with hazards
2. Support the scientific method

What Are The Benefits?

1. Industrial hygiene leadership in projects
   1. Define the facility in EHS terms
   2. Provide rational guidance to designers
   3. Integrate facility with scientific & EHS processes

2. Establish defensible facility budgets
   1. Performance-based facility requirements
   2. Baseline standards for facility design

3. More Responsive Facilities
   1. Flexibility for future hires and activities
   2. Immediate availability of enhanced protection
   3. More predictable project budgets and schedules

Joe Phillips brings more than 30 years of experience as a scientist, manager and architect to facilities projects. He has helped science & technology organizations in corporate, academic, government sectors benefit from managed scientific engagement in construction projects.

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Representing scientific clients in planning, design and construction projects.

Root goals of lab design:
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Defined IH goals maintain priorities
This is the primary issue where Performance-Based Guidelines are of the greatest value…

Keeping performance goals of the facility ahead of competing project goals. They are different!
- Budget
- Schedule
- Scope
- Personal Interests

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1. Enable safe work with hazards

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Budget
Schedule
Scope
Personal Interests
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Applications
1. Organizations Building During Rapid Change
2. Projects Without Identified End-Users
3. Emerging Industries And Sciences

Remember:
Laboratories will house the organization’s prototype work for 20-30 years.

What Is Performance-Based Exposure Control?
1. Hazard classification based on risk criteria
2. Series or levels based on comparative risk and/or consequences
3. Applicable where numerical values (TLV, etc.) are not known or available
4. Define IH needs for protocols, PPE, equipment & facility

What Does This Have To Do With Lab Design?
Design & construction processes are organized around specific instructions to contractors. In the absence of clear instructions, the end result may not be what was needed.

Design & construction are time sensitive.
Time is money. Delays or “Re-Do’s” lose money. Facility is designed for a point in time, and may not acknowledge future changes or needs.

Initial programming (definition of design criteria) is the cheapest and most powerful influence of outcome.

Long Term Performance-Based Criteria Program
**Integrating Performance-Based Control Guidelines with Laboratory Design**

**Translate IH Response To Risk Into Facility Performance Specifications**

Simply (but not very common):
For each Category, there is a different quanta of facility capacity or configuration.
- Utility – HVAC, plumbing, electrical, data
- Access control & circulation protocols
- PPE support
- Equipment support – hoods, BSC’s, filtration

**Anticipate Risks. Create Categories of Response.**

- Quantum 1
- Quantum 2
- Quantum 3
- Quantum 4
- Quantum 5

**Programming Tip 1 – Benchmarking**

Benchmarking is not a design criteria.
The purpose is to identify potential project comparisons.
The Program should explain where your project will differ and where it will be similar.

**Programming Tip 2 – Benchmarking Relevance**

Most benchmarking comes from built projects.
The decisions that spawned each of those projects were unique to those projects.
The data embedded in those projects will be at least 5 years old when it is manifest in your work.
The Program should view the project through the windshield, not the rear view mirror.

**Programming Tip 3 – Define Subjective Terms**

- Clean...
- Open Handling...
- Should...
- Exposure...
- Flexible...
- State-of-the-Art...
- Etc... (as a term)
### Review of The Benefits

1. **Industrial hygiene leadership in projects**
   1. Define the facility in EHS terms
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   3. Integrate facility with scientific & EHS processes

2. **Establish defensible facility budgets**
   1. Performance-based facility requirements
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3. **More Responsive Facilities**
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This final benefit (3.3.) is the synergy sought between facility performance goals and project goals.

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My apologies for not being able to be there with details.