

Engaging Senior Management to Improve the Safety Culture of a Chemical Development Organization thru the SPYDR (Safety as Part of Your Daily Routine) Laboratory Visit Program

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San Diego ACS Meeting
Chemical Health and Safety

Bristol-Myers Squibb: Our Mission



To **discover, develop** and **deliver**
innovative **medicines** that help patients
prevail over serious diseases.

WHO ARE *YOU* WORKING FOR?

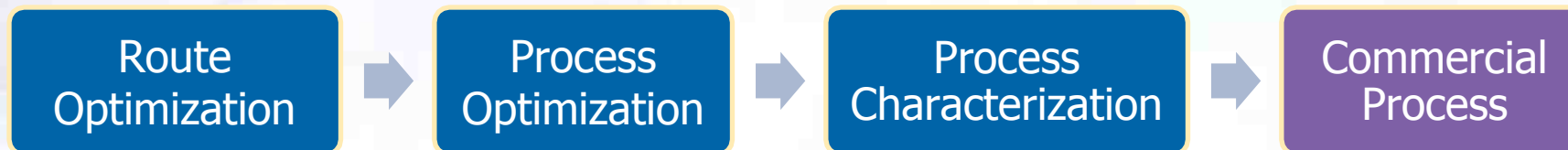
Chemical & Synthetic Development

To design and develop chemical processes for the manufacture of
Active Pharmaceutical Ingredients (APIs) which are:

- ◆ Safe
- ◆ Efficient
- ◆ Sustainable
- ◆ Cost-Effective

“We spend time with molecules, fully understand their science and reactivity, invent innovative routes, discover novel transformations, enable creative process invention and look for cool ways to characterize our processes. Kinetics, mechanism and exceptional synthesis are keys to our role. We focus on developing the best science to support the portfolio...”

Designing a Commercial Process



What is the optimal sequence of steps to arrive at API?

Step Count
Stability
Cost

How can each step be improved?

Yield & Purity
Unit Operations
Efficiency

How can each step be made "unbreakable"?

Mechanism
Impurity Control
Robustness

Ideally, a description of the chemistry that can be run anywhere, by anyone, on any scale, with guaranteed success

SPYDR Lab Visits

- Purpose
- Structure & design
- Flow of the process
- Success stories

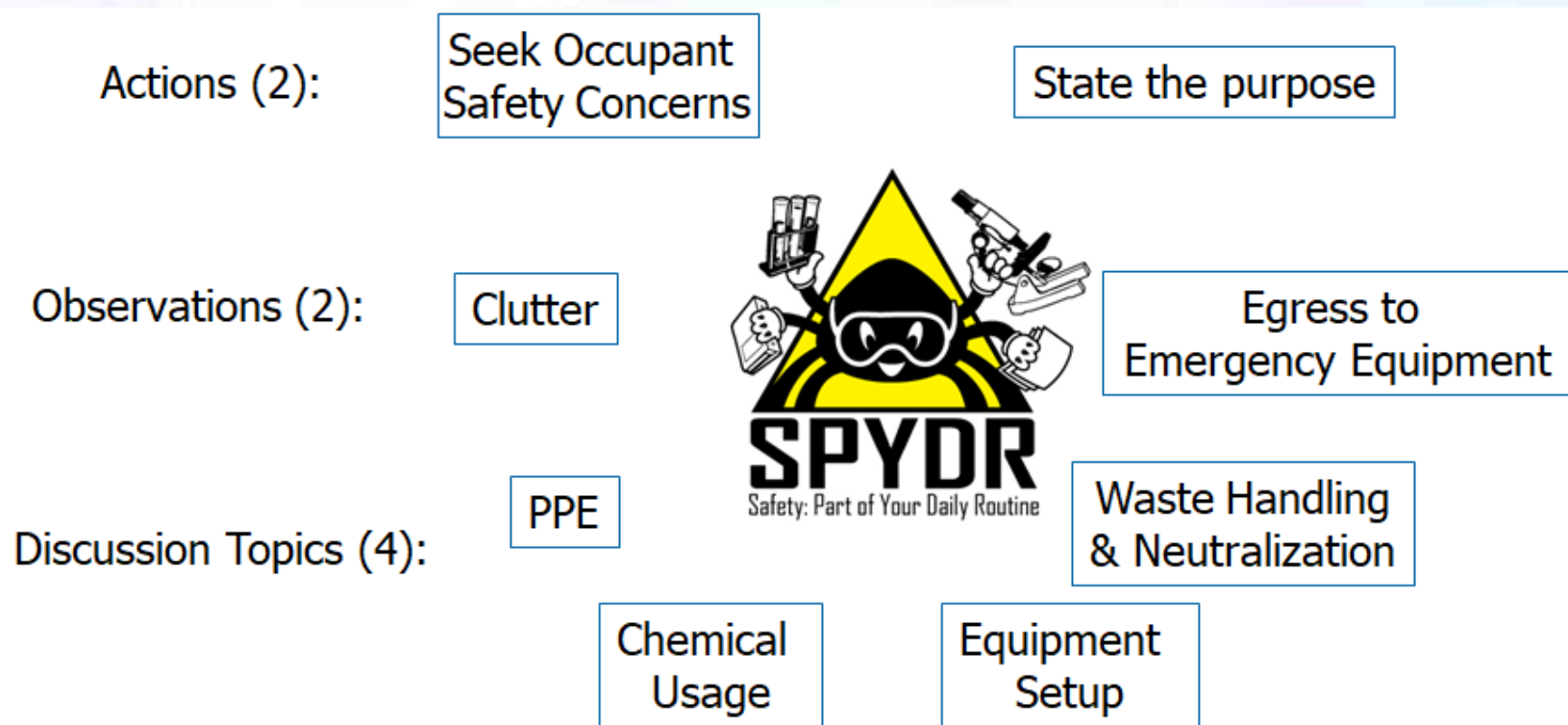


Management & Safety Concepts

- Engagement at the top is a critical component of our safety programs
- Managers have a unique responsibility for safety
- Avoid the perception gap
 - Set the example
 - Be actively involved in laboratory safety

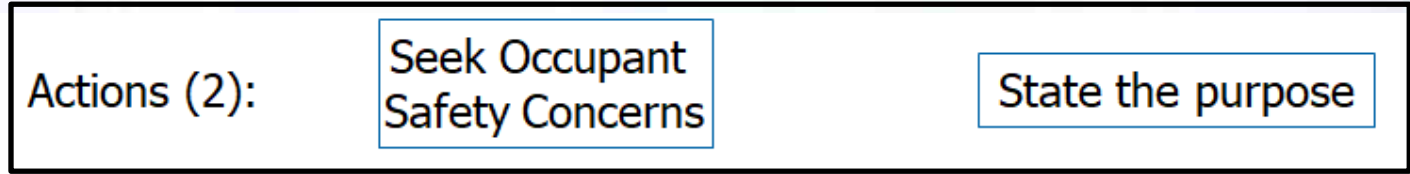
Safety Part of Your Daily Routine

- **Laboratory Visit Program**
 - 8 Legs to build a program
 - 2 Legs are core actions
 - 2 Legs are observations
 - 4 Legs are suggested discussion topics
 - Discussion topics evolve
 - Scheduled meeting times
 - In laboratory settings



Laboratory Visit Actions:

- State your purpose
 - Engagement program to take an active interest in laboratory safety
- Seek safety concerns
 - Not a lab inspection
 - Probing questions to entice lab occupants to share concerns



Observations (2):

Clutter



Egress to Emergency Equipment

Discussion Topics (4):

PPE

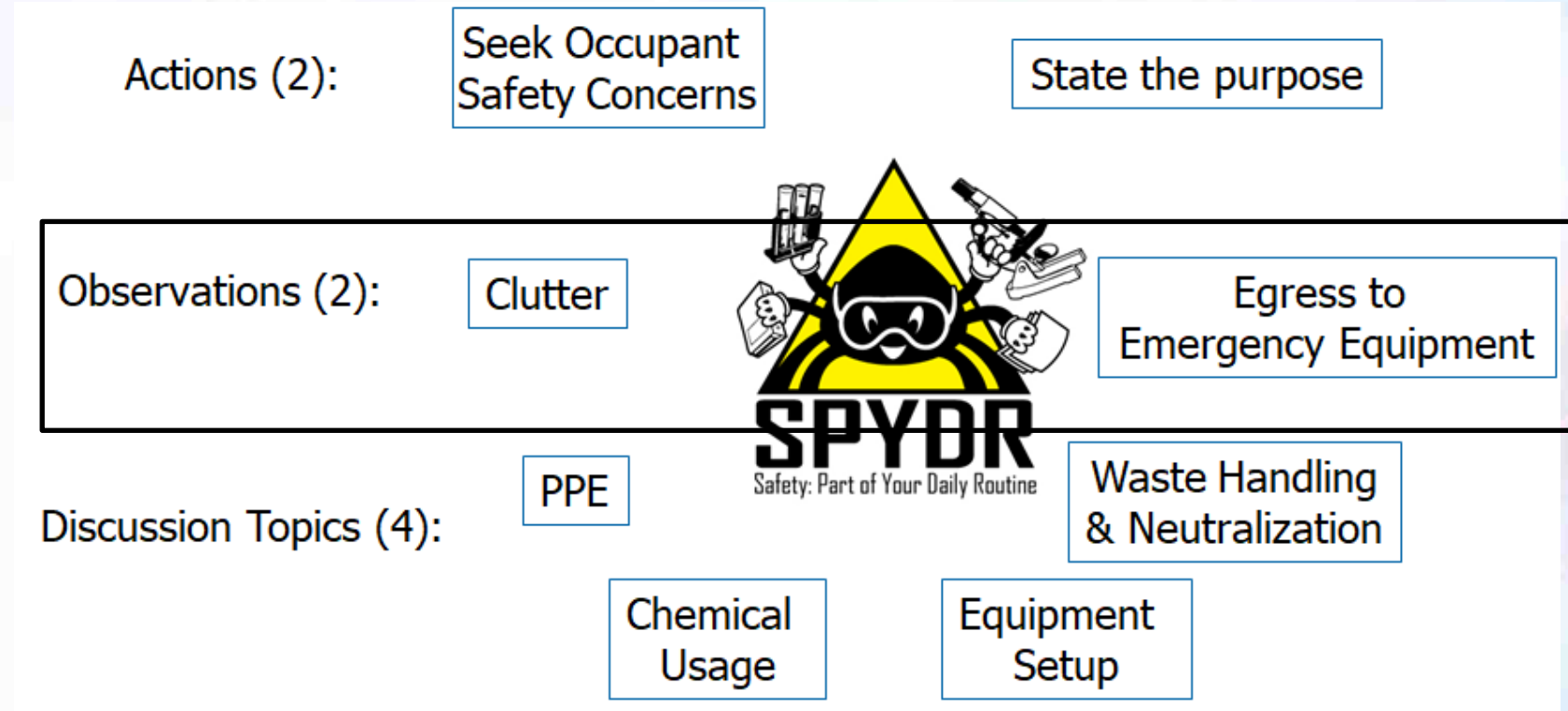
Waste Handling & Neutralization

Chemical Usage

Equipment Setup

Laboratory Visit Observations

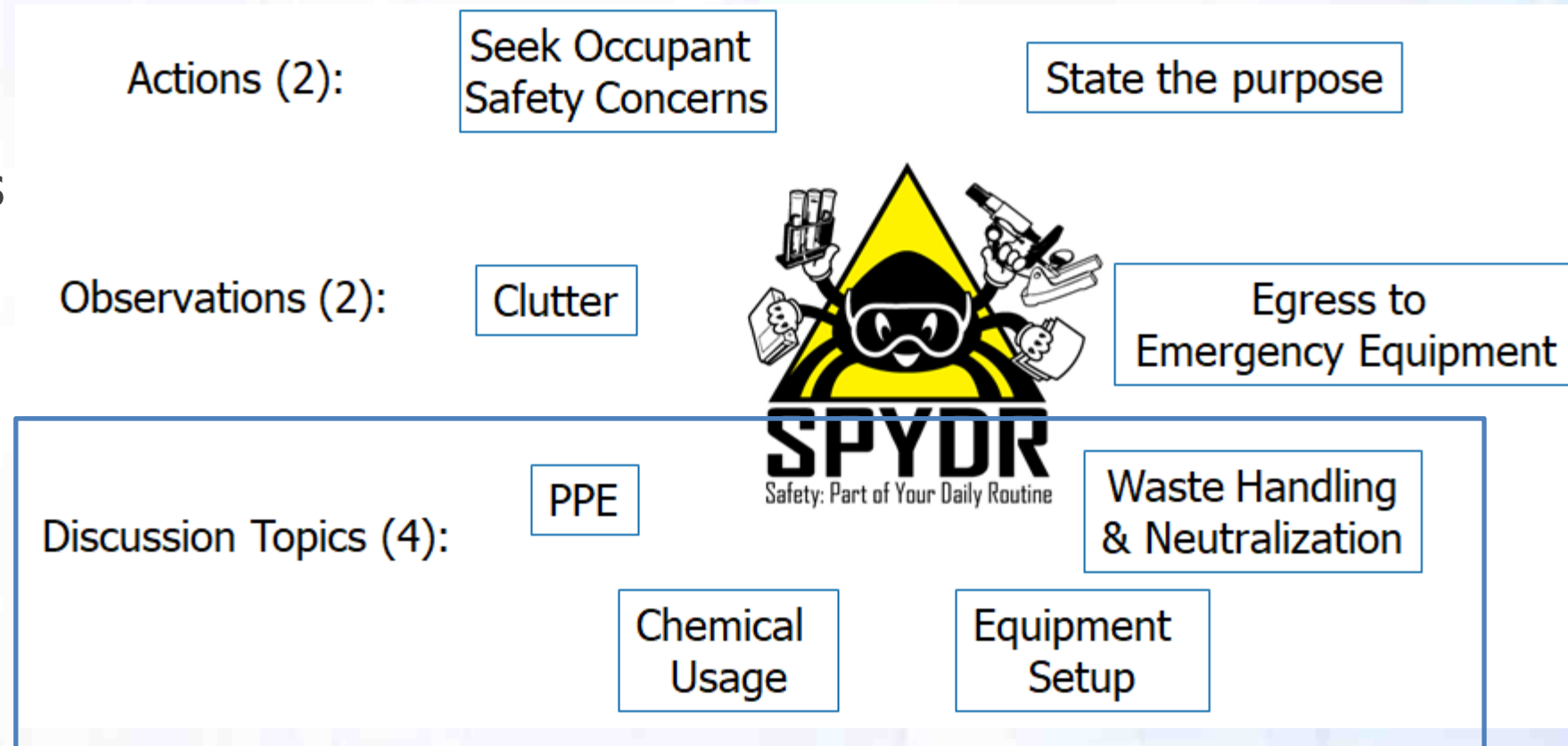
- Egress to safety equipment
- Clutter



Laboratory Visit Discussion Topics:

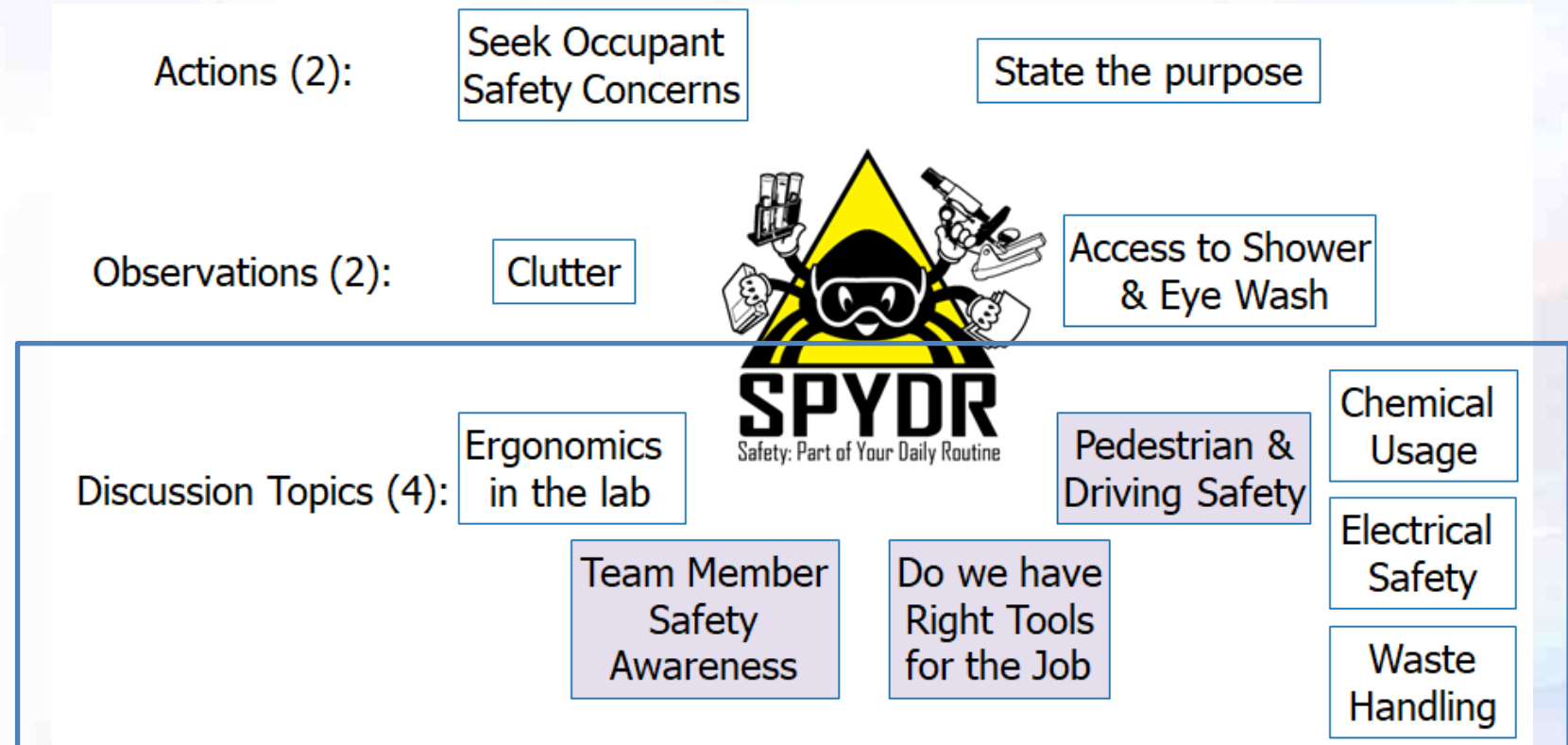
- Discussion Topics

- Informal suggestions
- Occupants are encouraged to bring up any topic



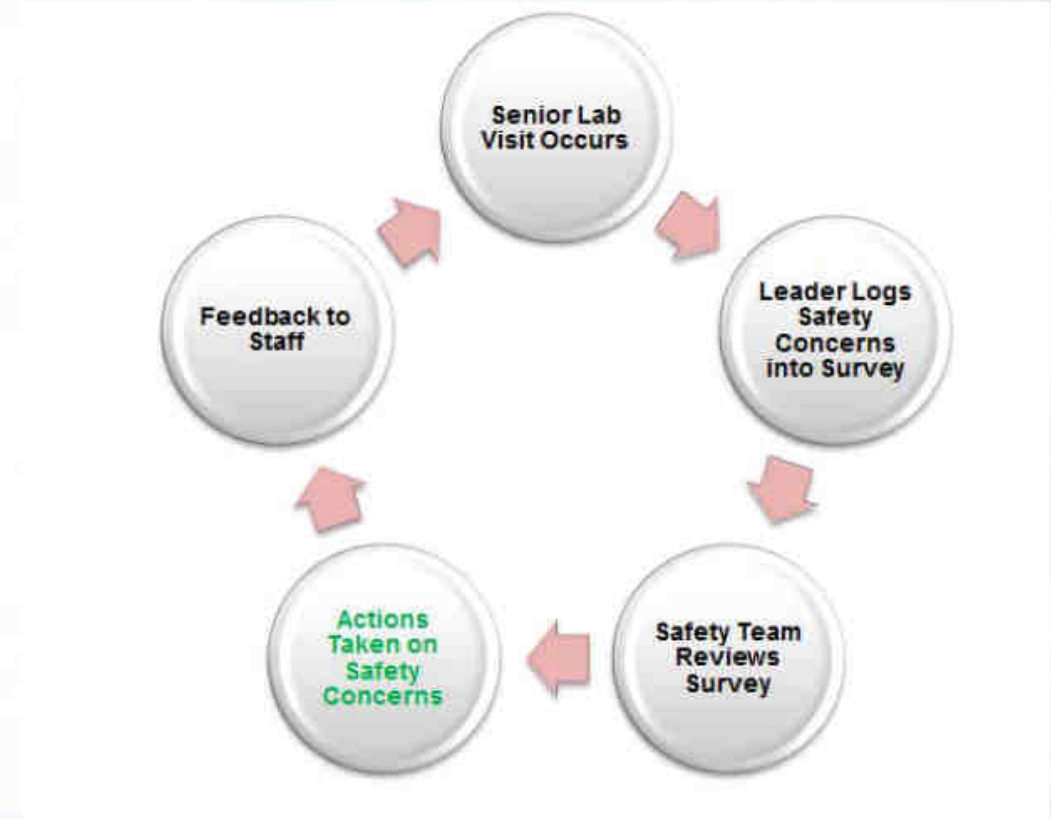
Laboratory Visit Discussion Topics Evolved:

- Discussion topics
 - New entries bring up new concerns
 - Evolved with time
- Utilized for grouping of concerns



Feedback Collection Process

- Feedback Survey provides safety concerns to the Safety Culture Team
- Address concerns and provide feedback to staff
- Program Derailers
 - “No Show” for laboratory visits
 - Not addressing safety concerns



Laboratory Visit Feedback Survey

Senior Lab Visitor	Scientists that were visited
<input type="text"/>	<input type="text"/>
Laboratory Visited	
<input type="text"/>	
Laboratory Occupant Safety Concerns	
<input type="text"/>	

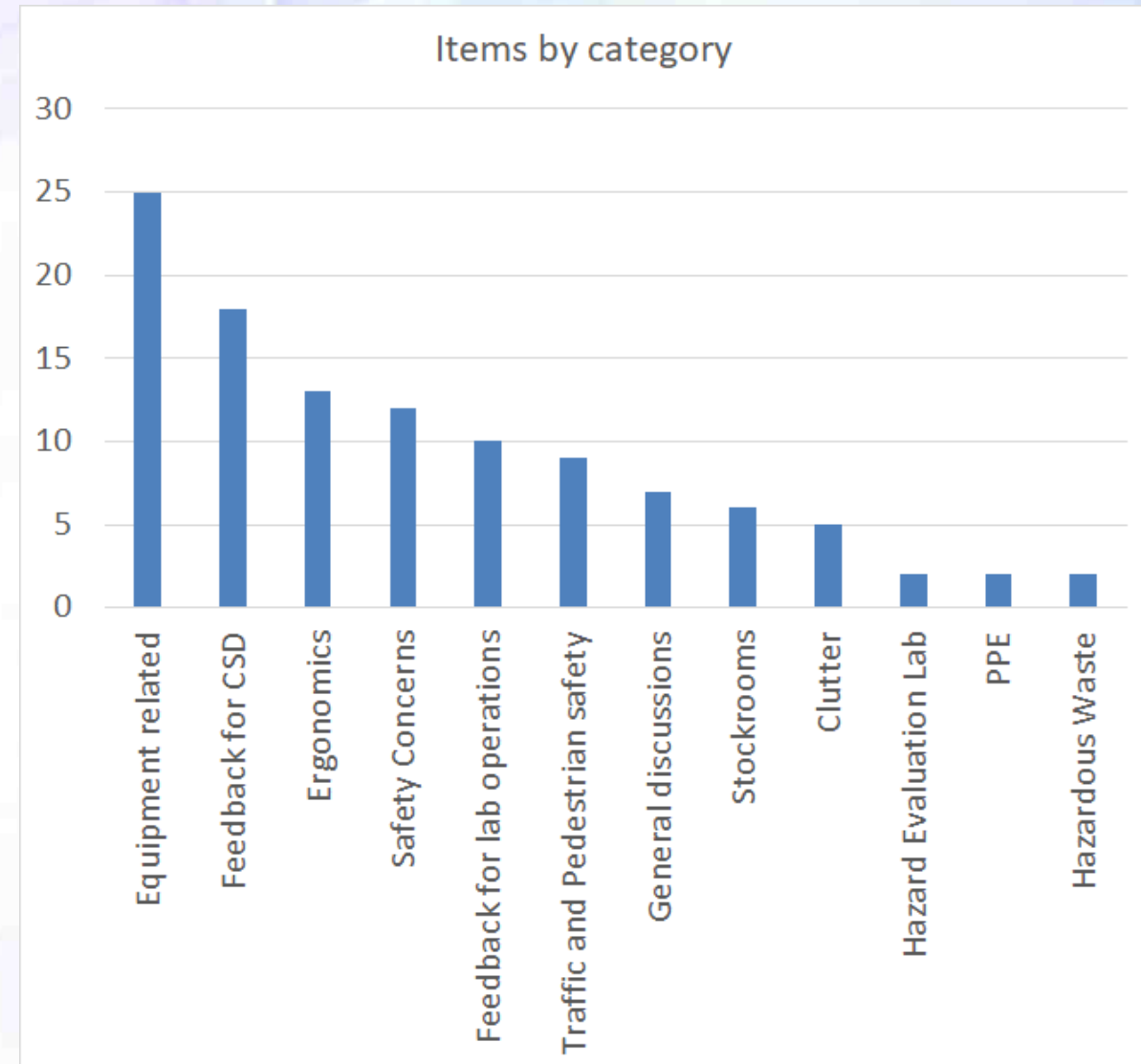
Your Ratings on SPYDR Leg Topics				
	Excellent (Role Model)	Average	Needs Improvement	Not Applicable
Laboratory Clutter				
Access to Safety Equipment				

Beyond lab occupant safety concerns, were any of the following topics specifically discussed?

- | | |
|--|--|
| <input type="checkbox"/> Ergonomics in the lab | <input type="checkbox"/> Electrical Safety |
| <input type="checkbox"/> Pedestrian & driving safety | <input type="checkbox"/> Waste handling |
| <input type="checkbox"/> Team member safety awareness | <input type="checkbox"/> Site Infrastructure |
| <input type="checkbox"/> Do we have the right tools for the job? | <input type="checkbox"/> Science/Technology/Project Related Discussion |
| <input type="checkbox"/> Chemical Usage | <input type="checkbox"/> Other |

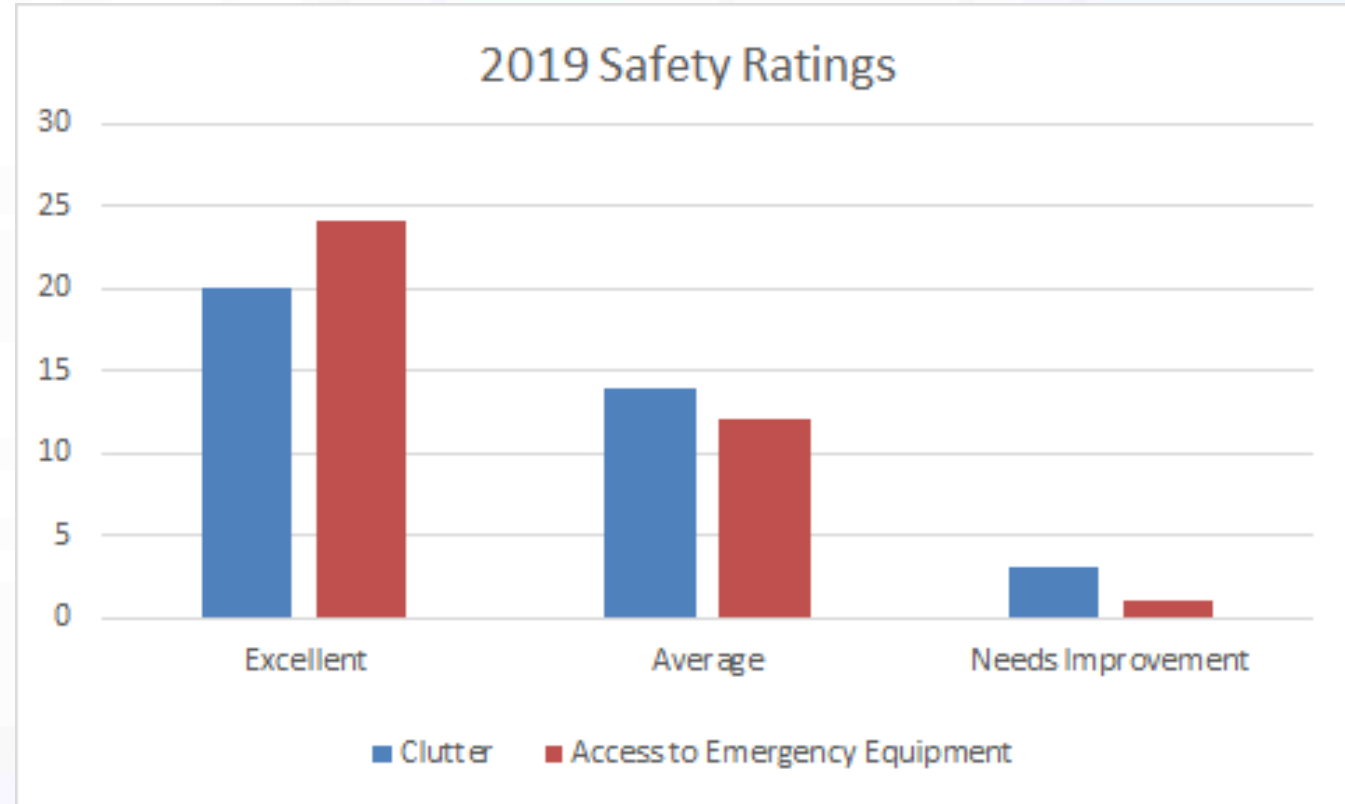
2019 Safety Concerns

- Lab Visits Spring 2019
 - 22 Leaders completed 38 visits
 - 100% completion rate
 - 110 scientists visited
 - 112 items logged
- Top Safety Concerns
 - Diesel odors
 - Clutter & egress from a special purpose laboratory



Review of 2019 Survey Ratings

- Ratings Collections
 - Clutter
 - Emergency Equipment



Success Stories

- Clutter
 - Lab clean outs
 - purging of old equipment
 - Sample storage initiative
 - Chemical inventory reduction



Success Stories

- “Visiting Scientists”
 - Best practices guide
- CPR/AED training

Host: Best Practices

- Provide a non-cluttered working environment
- Have sufficient sample labels nearby
- Coordinate usage, repair and cleaning issues with the Reactors
- Remind users of timelines for cleanup and engage project leadership as needed

Guest: Best Practices

- Communicate: Speak with lab occupants and get their approval to run the planned experiment
- Calculate volume of waste streams and ensure sufficient waste containers are available
- Fill out signage for instrument
- Properly label all samples
- Use safe working Habits!!!

Conclusions

- SPYDR laboratory visits improves the safety culture
 - Active management engagement
 - Draws out safety issues (not an inspection)
 - Vast improvements with respect to clutter
 - Positive feedback polls
 - Scientists find value in the interactions
 - Not just a safety program
 - Social interaction program to drive safety culture
 - Highly valuable with reorganizations
 - Ease of introduction of new programs
 - Positive intervention

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