Case Studies: When Waste and Safety Meet, Challenges in Healthcare

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Outline

- The setting
- Relationships
- Waste
- Safety
- 4 Case Studies
- Wrap-up
- Your case studies
- Questions

The Setting

- Multi building campus
- Satellite locations
- Several 10+ story buildings
- ~37000 employees
- 15 million sq ft
- 1.3 million Mayo patients/yr
- ~200 research labs
- 96 clinical labs
- 3000 clinical lab test menu options
- 23.2 million clinical lab tests/yr

Relationships (Stakeholders?)

- Mayo Department of Laboratory Medicine and Pathology
- Mayo Safety
- DLMP Safety
- Mayo Waste Management
- Mayo Facilities project services (new construction)
- Mayo Facilities operations (maintenance)
- Regulators
- Mayo senior administration
- Infection Prevention And Control
- Emergency Management
- Linen and Central Services
- Accrediting agencies

Regulatory/Accreditation Groups

CAP College of American Pathologists	**NYS** New York State	**CLIA** Clinical Laboratory Improvement Amendments
COLA Commission on Office Laboratory Accreditation	**FDA** Food & Drug Administration	**OSHA** Occupational Safety and Health Administration
AABB American Association of Blood Banks	**FACT** Foundation for Accreditation of Cellular Therapy	**CDC** Centers For Disease Control
TJC The Joint Commission	**EPA** Environmental Protection Agency	**Fire/Building Codes**
ISO International Standards Organization	**CMS** Centers For Medicare & Medicaid Services	**NRC** Nuclear Regulatory Commission
FAA Federal Aviation Administration	**DOT** Department of Transportation	**State & Local**


Stool
Sample

What makes healthcare so challenging?

- Perceived as “safe”
- Patients present
- Multiple waste streams
- Lots of intelligent people
- Biohazards
- Chemicals
- Contractors
- For Mayo, size and interdepartmental relationships

Waste

- Wide range of wastes
  - Trash
  - Recycling
  - Regulated Medical Waste
  - Industrial Solid Waste
  - Sewage
  - ***Low Level Radioactive Waste***
  - ***Hazardous***
  - ***Medications***
- Infrastructure
- Convenience
- Impacts
  - Environmental
  - Expenses
  - Permits
- Compliance
  - HW
  - DOT
  - NPDES
  - Sanitary sewer
  - SPCC
  - Building codes
  - Local codes

Safety

- Employee safety
- Identify hazards and concerns
- Risk assessment
- Behavior
- Cost and effectiveness
- Hierarchy of controls

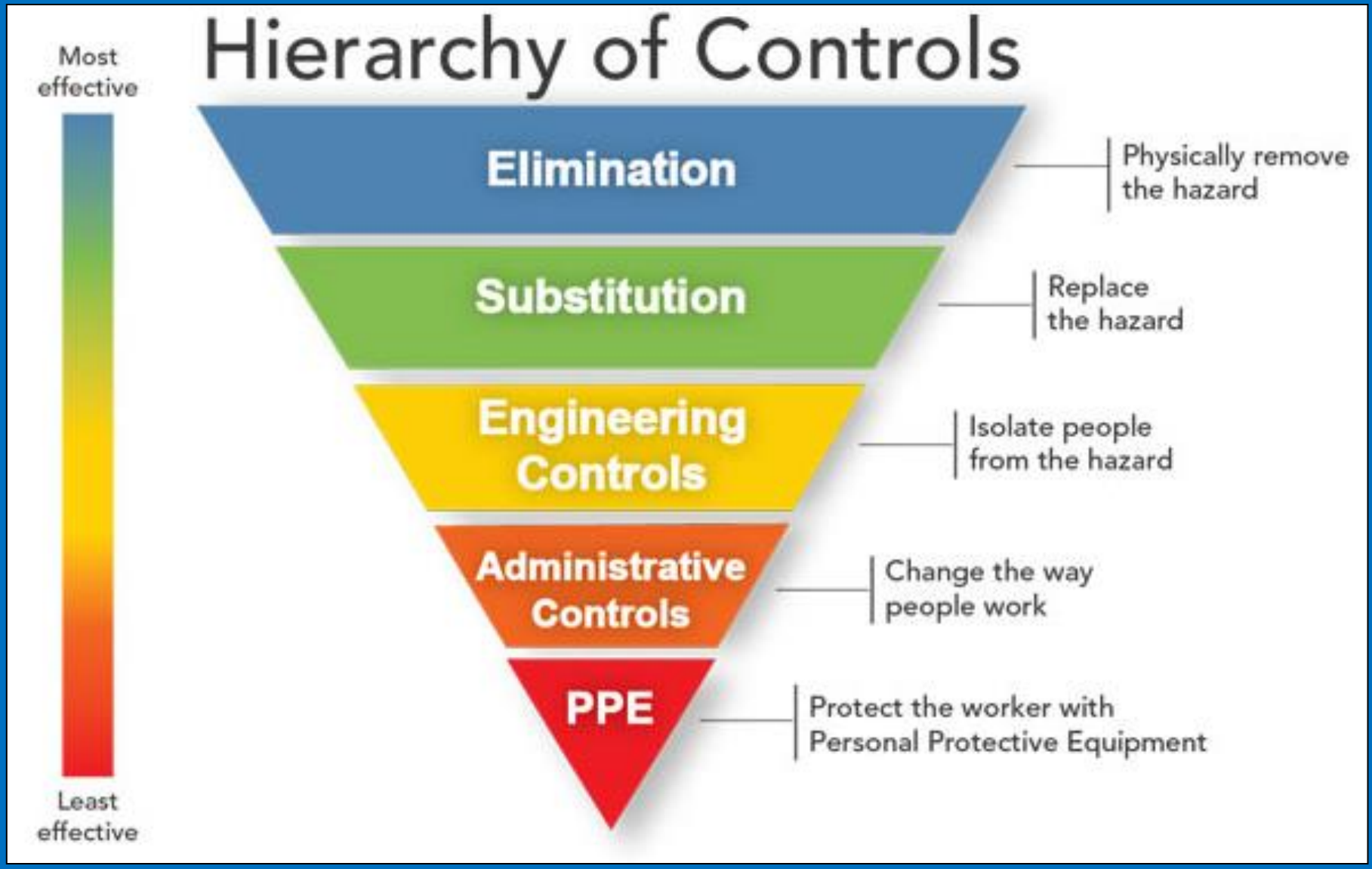

Hierarchy of Controls
Most effective
Least effective
Elimination
Physically remove the hazard
Substitution
Replace the hazard
Engineering Controls
Isolate people from the hazard
Administrative Controls
Change the way people work
PPE
Protect the worker with Personal Protective Equipment

Chart: NIOSH

Safety

- What is the right balance?

CASE STUDIES

(Ours)

Case Studies

1. G-Whiz
2. Methanol vials
3. Audits
4. Instrument waste

What Would You Do?
Case #1

- Regulated Medical Waste (RMW) container tripping radiation detector at contracted RMW processor facility.
  - Went years without any incidents
  - Suddenly jumped to 1-2X/mo

Case #1 Concerns

Safety

- Employee safety
- Training

Waste

- Compliance
- Inconvenience

Things to Consider?
Case #1

- Source?
  - Urine collection containers
- Isotope?
  - In-111
- From a Nuclear Medicine (NM) test?
  - Yes, cross reference patient ID on container to NM records
- Regulatory issue?
  - No from rad waste view
    - It's excreta from patient so it is RMW
  - Exposure
    - Performed measurements
    - No
- Worker perceptions
- Why did it happen?
  - Urine collection post NM administration
  - Urinalysis lab does not screen for radioactive material

Things to Consider?
Case #1

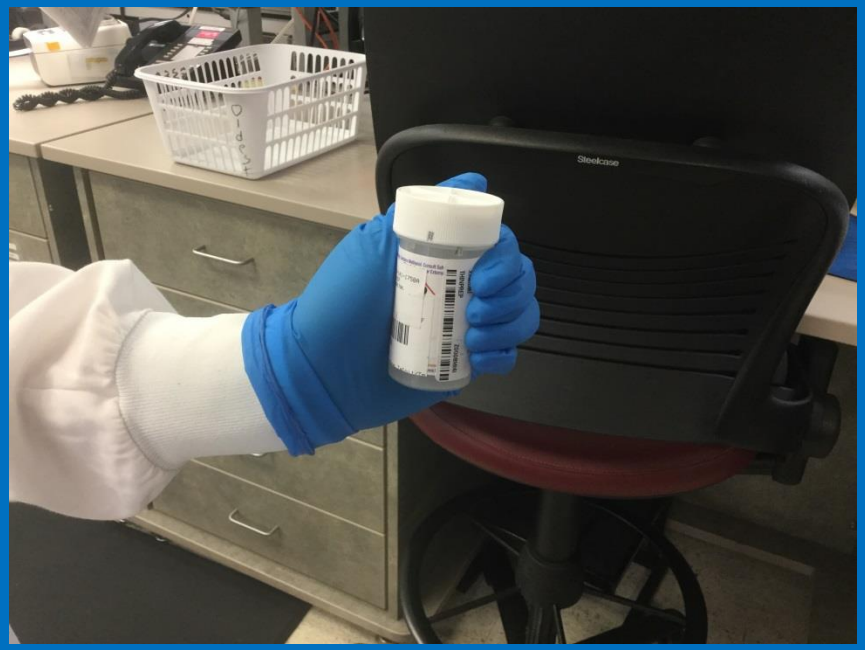
- Does anything need to be fixed?
  - Yes
    - Contractor not willing to accept any radioactive
- What did we do?
  - Set up lab with appropriate radiation detector for waste screening
  - Training
  - SOP updated
  - Talk with patient scheduling
    - Can urine be collected before NM study?
    - In many cases, yes
- Result?
  - No repeats in 2 years

Lessons Learned

- What is the real issue?
- Perception matters.
- Learn to “play” with others.

What Would You Do?
Case #2

- Lab techs manually emptying screw top vial of methanol
  - 300 vials/day



What Would You Do?
Case #2

- Lab techs manually emptying screw top vial of methanol
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  - Employee complaints
    - Odor
    - Splash

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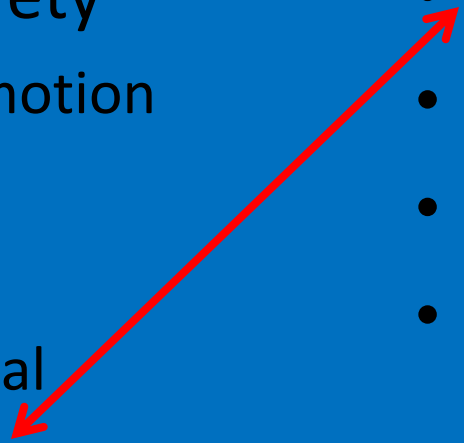
- Lab techs manually emptying screw top vial of methanol
  - 300 vials/day
  - Employee complaints
    - Odor
    - Splash
    - Repetitive motion concerns
  - Time consuming

Case #2 Concerns

Safety

- Employee safety
  - Repetitive motion
  - Splash
  - Inhalation
  - Spill potential
- Flammability



Waste

- Ignitability
- Compliance
- Time
- Cost

Things to Consider?
Case #2

- Why empty the vials?
  - Reduces volume & cost for disposal as HW
  - Flammable liquid load is limited at this height
    - Lab is on 10th floor
    - Low amount of flammable liquid allowed (48 gal/control area)
- What are the concerns of emptying the vials?
  - Employee exposure concerns
    - Splash
    - Inhalation
  - Ergonomic concerns
  - Life safety

Things to Consider?
Case #2

- Can something be changed?
  - Sure
- What are the options?
  - Nothing
  - Mechanical process?
  - Collect full, closed vials rather than empty them
    - Collect in a drum for shipment
    - New process
    - Impact to user
    - Space
- Doesn't that cost more?
  - For disposal, yes
  - In the big picture, it's worth it as other risks are eliminated

Lessons Learned

- More than one way to do something.
- Spend here, save there.
- Big picture – can’t focus on one aspect of the situation.
- Sometimes it is simple.

What Would You Do?
Case #3

- Labs are subject to regulatory agencies and industry accreditation (i.e.- CAP, NYS, CLIA, AABB, FDA, OSHA, EPA, CDC)
- Labs have lots of questions about waste evaluation and handling
- How do we know labs are complying with the various requirements?

Case #3 Concerns

Safety

- Are labs ready for accreditation and regulatory surveys?
  - Don't know?
  - How do we find out?
- Consistent processes?

Waste

- Compliance
- Time
- Cost control
  - Fines
  - Correct waste stream

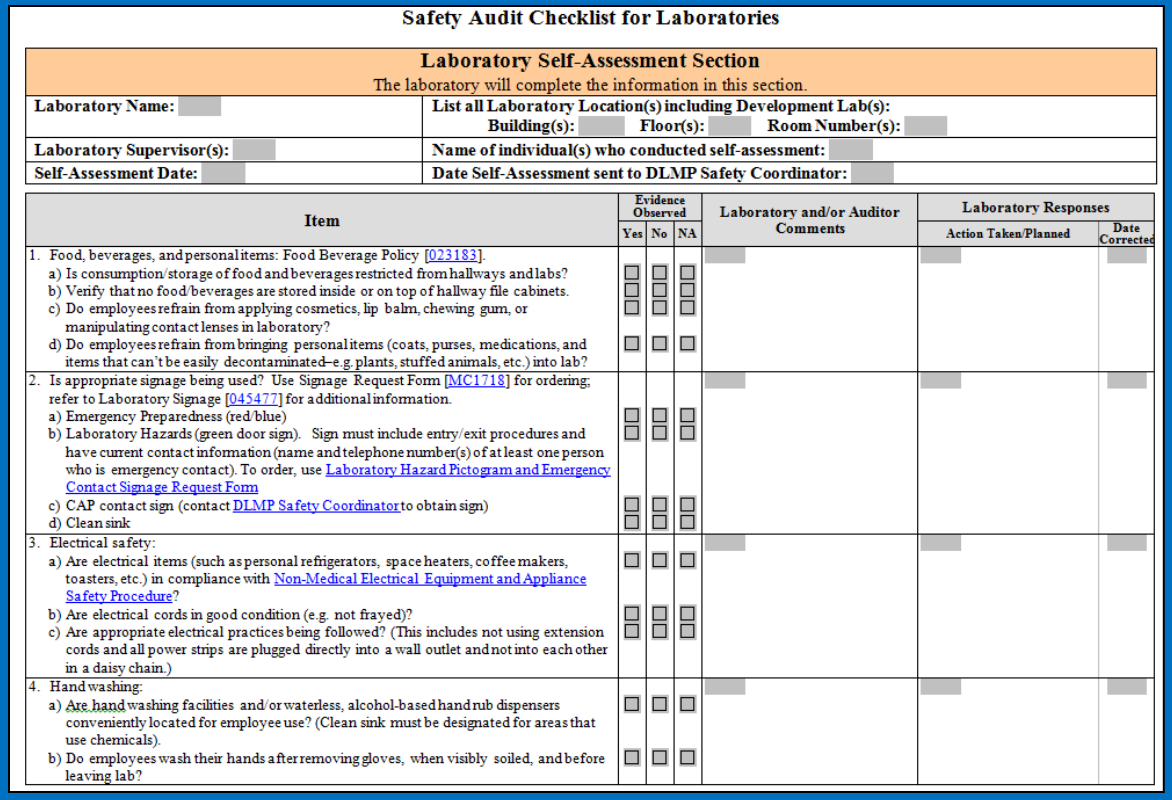
Audits anyone?

Things to Consider?
Case #3

- Perform audits of labs
  - DLMP Safety does not have the staff to audit all 96 labs
  - Subject Matter Experts needed (SMEs)
  - Safety Committee
- How can we do audits?
  - Use key lab personnel for peer audits
- Shouldn't we cover waste management since we will be there?
  - Of course we should
  - How?
  - Bring them in to do audits
- We still don't have all SMEs needed
  - Look to other departments
    - Safety
    - Waste Management

Things to Consider?
Case #3

- Form team to oversee auditing program
  - Checklist
    - Self audit
    - In-lab audit
    - Interviews
    - Training records
    - Waste
  - Auditor training



Safety Audit Checklist for Laboratories

Laboratory Self-Assessment Section

The laboratory will complete the information in this section.

Laboratory Name:	**List all Laboratory Location(s) including Development Lab(s):** **Building(s):** **Floor(s):** **Room Number(s):**
Laboratory Supervisor(s):	**Name of individual(s) who conducted self-assessment:**
Self-Assessment Date:	**Date Self-Assessment sent to DLMP Safety Coordinator:**

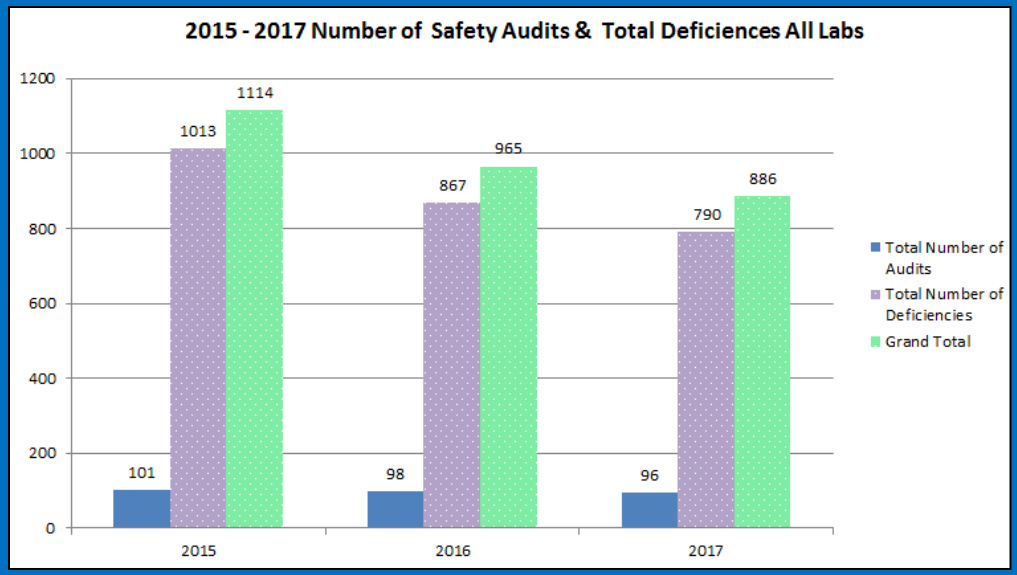
Item	Evidence Observed			Laboratory and/or Auditor Comments	Laboratory Responses	
	Yes	No	NA		Action Taken/Planned	Date Corrected
1. Food, beverages, and personal items: Food Beverage Policy [023183]. a) Is consumption/storage of food and beverages restricted from hallways and labs? b) Verify that no food/beverages are stored inside or on top of hallway file cabinets. c) Do employees refrain from applying cosmetics, lip balm, chewing gum, or manipulating contact lenses in laboratory? d) Do employees refrain from bringing personal items (coats, purses, medications, and items that can't be easily decontaminated–e.g. plants, stuffed animals, etc.) into lab?	☐ ☐ ☐ ☐	☐ ☐ ☐ ☐	☐ ☐ ☐ ☐			
2. Is appropriate signage being used? Use Signage Request Form [MC1718] for ordering; refer to Laboratory Signage [045477] for additional information. a) Emergency Preparedness (red/blue) b) Laboratory Hazards (green door sign). Sign must include entry/exit procedures and have current contact information (name and telephone number(s) of at least one person who is emergency contact). To order, use Laboratory Hazard Pictogram and Emergency Contact Signage Request Form c) CAP contact sign (contact DLMP Safety Coordinator to obtain sign) d) Clean sink	☐ ☐ ☐ ☐	☐ ☐ ☐ ☐	☐ ☐ ☐ ☐			
3. Electrical safety: a) Are electrical items (such as personal refrigerators, space heaters, coffee makers, toasters, etc.) in compliance with Non-Medical Electrical Equipment and Appliance Safety Procedure? b) Are electrical cords in good condition (e.g. not frayed)? c) Are appropriate electrical practices being followed? (This includes not using extension cords and all power strips are plugged directly into a wall outlet and not into each other in a daisy chain.)	☐ ☐ ☐	☐ ☐ ☐	☐ ☐ ☐			
4. Hand washing: a) Are hand washing facilities and/or waterless, alcohol-based hand rub dispensers conveniently located for employee use? (Clean sink must be designated for areas that use chemicals). b) Do employees wash their hands after removing gloves, when visibly soiled, and before leaving lab?	☐ ☐	☐ ☐	☐ ☐			

Things to Consider?
Case #3

- Perform the audits
  - Document findings
  - Follow-up
  - Correct the bad
  - Praise and learn from the good

Things to Consider?
Case #3

- Is once enough?
  - Nope
  - Things change
  - Repeat annually
- How do we know if we did any good?
  - Compare findings year to year
  - Compare accreditation survey results
  - Look at injury stats
  - Compliance?
  - Communication



Lessons Learned

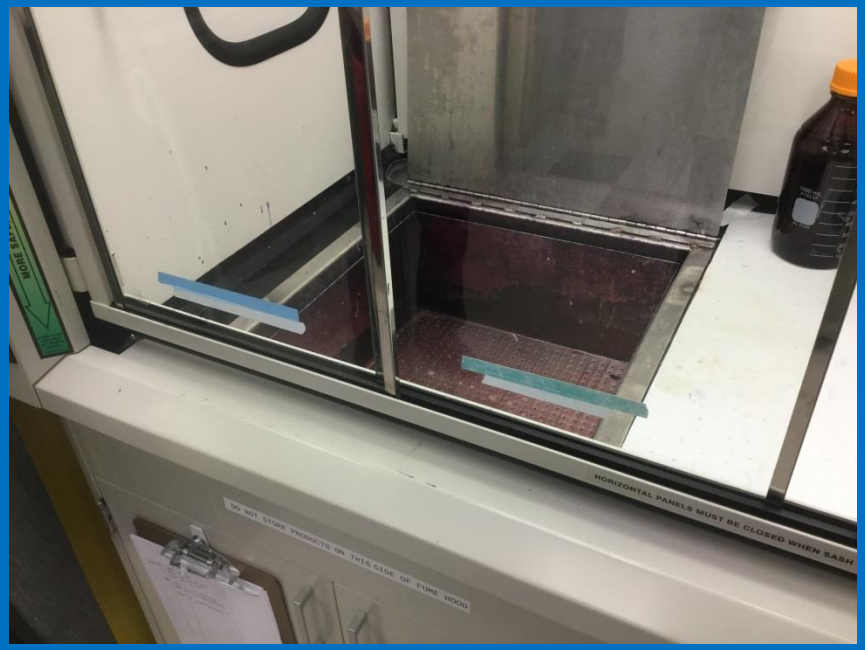
- What you don’t know can hurt you.
- You can’t know everything.
- You can’t do everything.
- Getting to know folks goes a long way.
- You are on the same side.
- Don’t keep secrets.
- Multiple birds, one stone.

What Would You Do?
Case #4

- Solvent waste collected at instrument

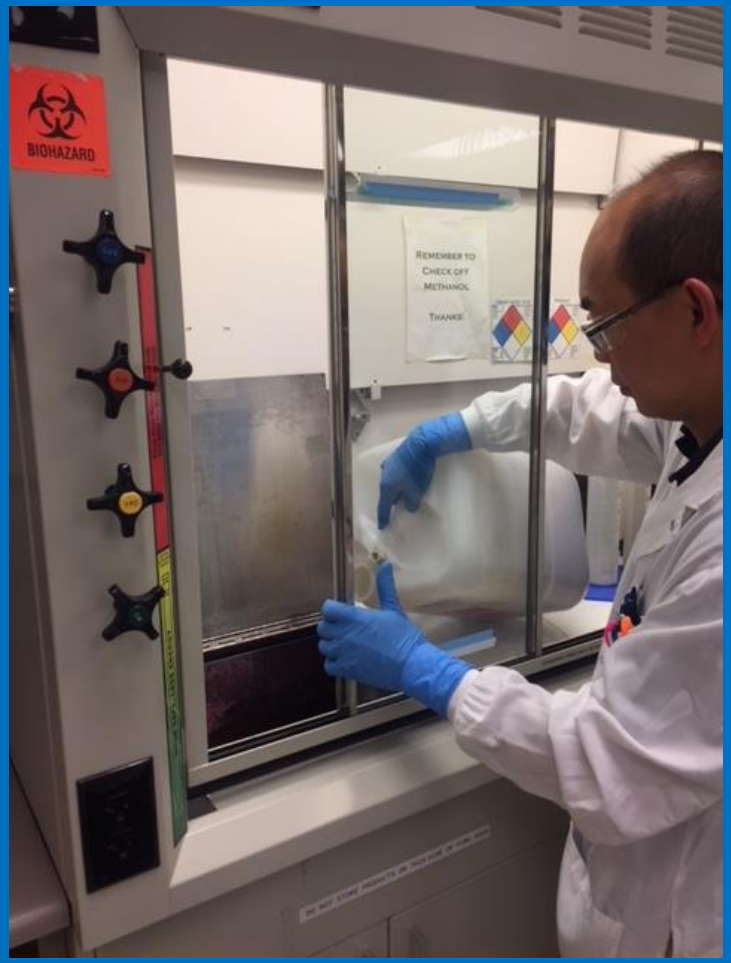
What Would You Do?
Case #4

- Solvent waste collected at instrument
- Solvent dump station is across the room



What Would You Do?
Case #4

- Solvent waste collected at instrument
- Solvent dump station is across the room
- Strong staff opinions



Case #4 Concerns

Safety

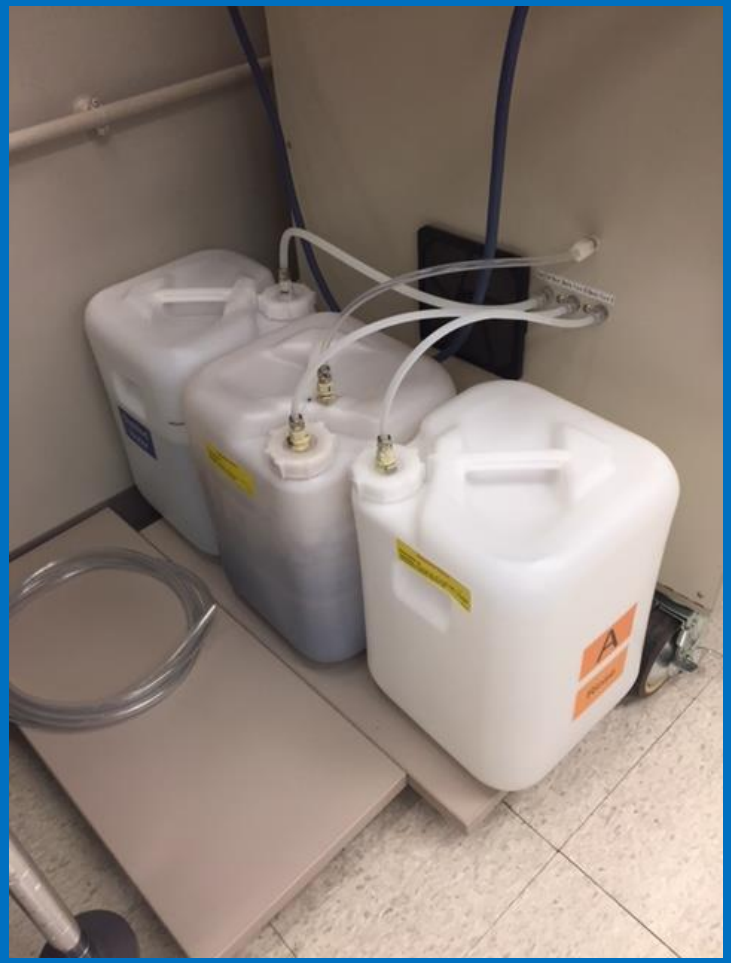
- Ergonomics
- Exposure (splash/vapors)
- Spills

Waste

- Proper disposal through solvent collection system
- Spills

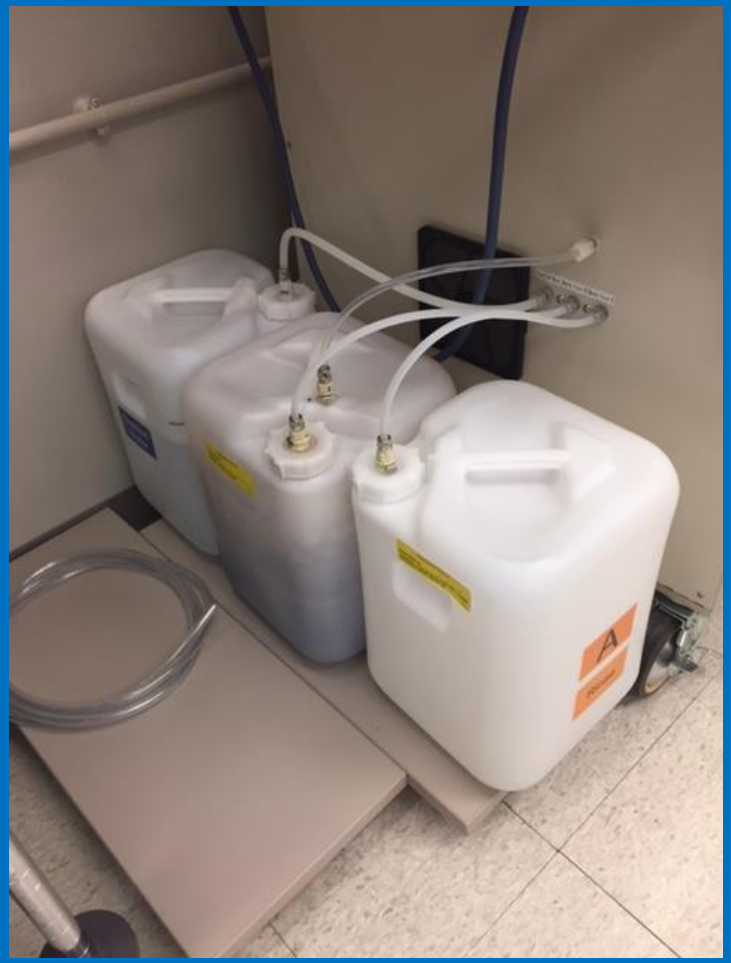
Things to Consider?
Case #4

- Why are the generation and disposal locations far apart?
  - Lab layout doesn't allow them to be closer
- How do you get the waste solvent across the room?
  - Carry it in manufacturer provided waste collection container



Things to Consider?
Case #4

- Is that the right kind of container?
  - Flam rating
  - Self-closing
  - Difficult to empty
  - No, it isn't



Things to Consider?
Case #4

- Is that the right kind of container?
  - Flam rating
  - Self-closing
  - Easy to empty
  - No, it isn't

Things to Consider?
Case #4

- Is that the right kind of container?
  - Flam rated
  - Self-closing
  - Heavy
  - No, it isn't

Things to Consider?
Case #4

- What would the right one look like?
  - Size/weight
  - Handle
  - Method of emptying
  - Flam rated

Things to Consider?
Case #4

- Pump (Future)
  - From container to solvent collection system

Lessons Learned

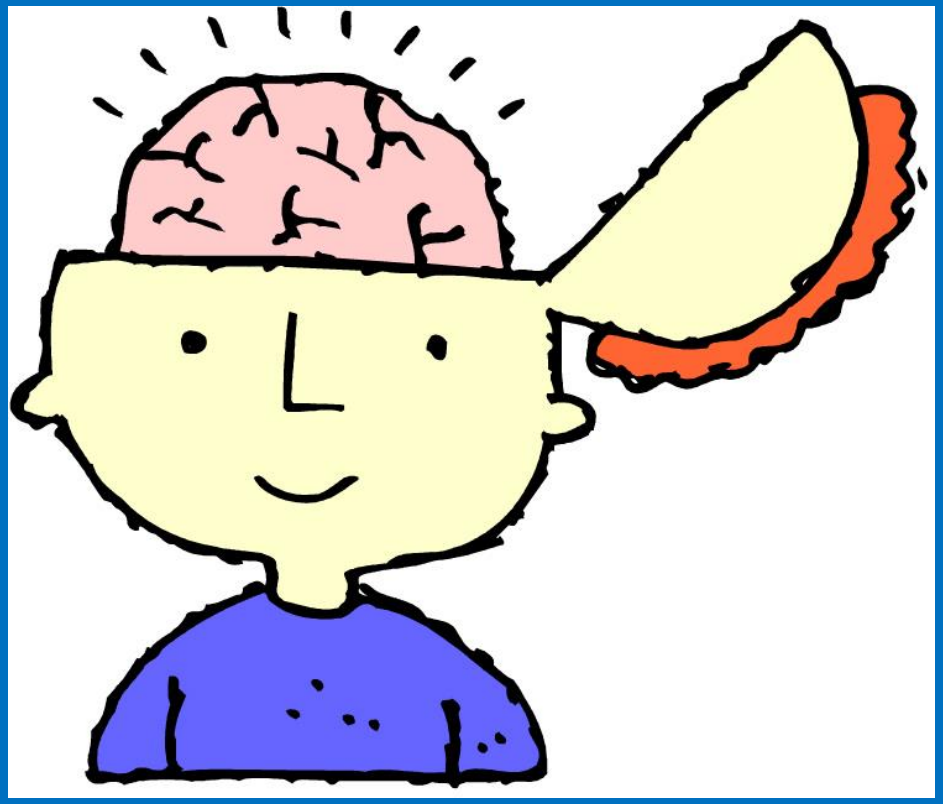
- Listen to the workers.
- Design for the whole process.
- Early involvement.
- Interim solutions are OK.

Wrap

- Team effort
- May be multiple departments or it may be just you
- You can’t know everything
  - SMEs are needed
    - Find them
    - Raise or buy ones you need but don’t have
    - Become one

Wrap (cont)

- Know your resources:
  - Internal
  - External
  - “Hire” what you don’t have
- Have an open mind



CASE STUDIES

(Yours)

Questions?
Comments?