

Safe Science = Good Science
August 31, 2022

What is RAMP?

- **R** – Recognize Hazards
- **A** – Assess Risks
- **M** – Minimize Risks
- **P** – Prepare for Emergencies

What is considered a Hazard?

A hazard is anything in the laboratory that has the potential to harm or endanger the researcher, lab mates, or the environment.

Learning about Hazards through Literature Review:

- Safety Data Sheets
- [Pathogen Safety Data Sheets](#)
- Equipment Manuals
- Website Product Review

How do we define Risk?

Risk is the measure of the severity and likelihood of harm. Risk is a variable that changes throughout the day dependent on what procedures are being conducted in the laboratory, the experience of the individuals, and the number of hazards being utilized.

Risk Assessments

A risk assessment is a systematic process of evaluating the potential risks that may be involved in a project, activity, or undertaking. Risk assessments are conducted at multiple layers of the university. For the individual researcher walking into the laboratory, a daily risk assessment is recommended before conducting any experiment whether it is new or an experiment that has been conducted multiple times. A daily risk assessment can be conducted by asking yourself four questions before conducting, designing, or modifying an experiment or standard operating procedure.

What Are the Hazards?

It is important to identify any potential hazards that will be handled throughout the experiment. Whether the hazard is chemical, biological, radioactive, or physical (mechanical, electrical, glass, trip, or fall) hazard the researcher must investigate the potential risks including types of injuries that can occur or signs and symptoms of an exposure. Identifying and understanding hazards can be done through literature review or through formal lab specific training.

What Could Go Wrong?

It is good practice to brainstorm any potential situation that could happen during an experiment. Common incidents to be aware of:

- Spills, splashes, or aerosols
- Breaking glassware, equipment
- Needle-sticks, cuts, and minor injuries

How Can I Work Safely?

There are many ways to reduce the risk in the laboratory and work safely with your hazardous materials. **Implementing layered control measures can reduce potential exposures and incidents from occurring in the laboratory.** However, it must involve everyone's participation to effectively work safely in the laboratory.

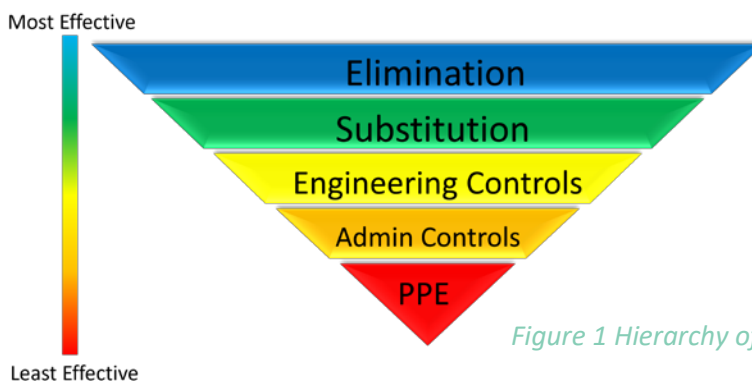


Figure 1 Hierarchy of Controls

To learn more, check out the following videos provided by the [American Chemical Society](#):

1. Rules to Risk Management
2. Chemical Safety Information
3. Assessing Risks
4. Minimizing Risks
5. Techniques to Minimize Risks
6. Emergencies in the Laboratory

Other Resources:

[Lab Safety Manual](#)

[Biosafety Manual](#)

[Laboratory Safety Self-Assessment](#)

What is a Near-Miss?

OSHA defines a near-miss as incidents “in which a person might have been hurt if the circumstances had been slightly different”. They are precursors to accidents and are opportunities to identify hazards and unsafe conditions. (Also known as “close calls”.)

Example: A researchers loose clothing gets caught on a piece of equipment, but it tears before the researcher was injured.

Report near-misses to your supervisor or PI.

For questions or concerns please call DEHS at 852-6670 or email dehsubm@louisville.edu

The Hierarchy of Controls consists of 5 methods of risk mitigation:

- **Elimination** – Remove the hazard. This can be done through inventories by annually removing expired, unwanted, or potentially contaminated materials. Remove broken glassware or equipment promptly.
- **Substitution** – Replace the hazard. Use lower concentrations of chemicals,
- **Engineering Controls** – Isolate the hazard. Utilize equipment designed to separate the researcher from the hazard such as physical barriers, fume hoods, biosafety cabinets, etc.
- **Administrative Controls** – Change the way people work. Maintain and update standard operating procedures, follow UofL policy along with state, local, and federal regulations.
- **Personal Protective Equipment (PPE)** – Wear the required laboratory attire for the experiment. Minimum PPE includes lab coat, gloves, and eye protection. Wear appropriate lab clothing such as t-shirt, long pants, and closed toed shoes.

What If It Does Go Wrong?

Be aware of the procedures in place for when an incident does occur. Your laboratory should practice routine safety drills to be prepared in the event of a chemical or biological spill, an accidental exposure, or other emergency situations. Routine safety drills can help identify hazards and potential areas of concern.

Know how to use the following in your laboratory in the event of an incident:

- Safety Shower and Eye wash station
- First Aid Kit
- Chemical and Biological Spill Kits

Reporting Incidents

All incidents, no matter the severity, should be reported to your Principal Investigator and/or direct supervisor. When reporting incidents follow your laboratories and university policies and procedures.

- For non-life-threatening incidents contact ULPD at 852-6111
- For life threatening incidents call 911 for emergency services.
- Report laboratory incidents to DEHS at 852-6670.
- For anonymous reporting of any compliance violation or suspected incident call the Compliance Hotline at 1-877-852-1167.