OARS

Office of Academic and Research Safety

&

ECOS

Environmental Compliance and Occupational Safety

Northeastern University
Academic and Research Safety

Northeastern University

AGENDA

1. **OARS Overview**
2. **OARS Team Approach**
3. **OARS Programs**
   (Learning Design, Radiation, Lab Safety, Biosafety)
4. **ECOS Overview**
5. **Q&A**

10:30-11:30 AM EST

Northeastern University
Academic and Research Safety

Office of Academic and Research Safety (OARS)

Meet the OARS Team

Andrea Voehringer

Director

Whitney Hess

Assistant Director,

Chemical Hygiene Officer

Lorena Altamirano

Biosafety Program Manager

Biosafety Officer

Christopher Bingel

Radiation Safety Officer

Peter Schneider

Senior Consultant

Tiffany Troxell

Finance & Administration Manager

Meet the OARS Team

We will have 3 new co-ops for lab safety, biosafety, & learning design for Fall 2024.

Alex Desimone

Biosafety Specialist II

Peggy Jiacheng Lei

Learning Design and Systems Support Specialist

Brian Sullivan

Building Safety Manager

Paul Muller

Building Safety Manager

Conor Donovan

Laboratory Safety Specialist II

Collin Burkhard

Laboratory Safety Specialist II

May Hulsman

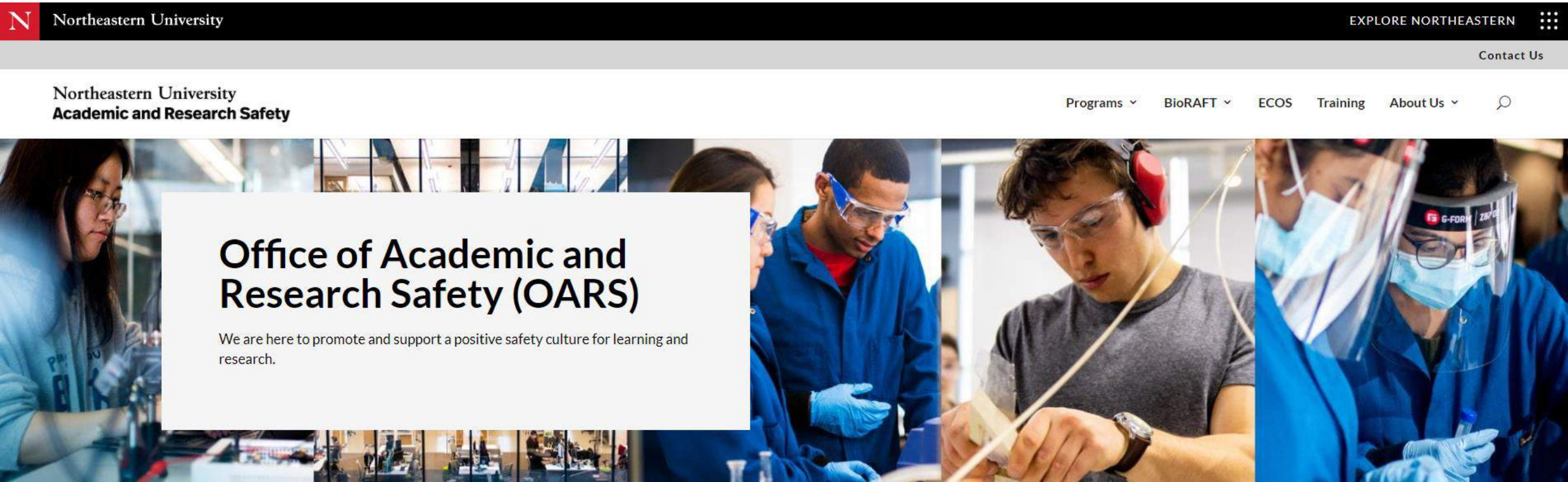
Building Safety Manager

Sebastien Gabin

Laboratory Safety Spring 2024 Co-op

Check out our website:

OARS.NORTHEASTERN.EDU



NU_OARS

We are on social media now!
Follow us on Instagram ☺

Northeastern University
Academic and Research Safety

Our Approach

Educate. Empower. Explore.

What We Do

Empower innovators through safe learning and exploration to build a better world.

Enable a resilient and inclusive community of innovative leaders who integrate our culture of safety and elevate it to higher standards.

How We Do It

We collaborate with faculty, staff, and students to:

- Advise, consult, and educate
- Address challenging problems
- Explore innovative ideas

Through our:

- Technical and regulatory expertise
- Specialized safety programs
- Practical knowledge
- Leading lab management tools
- Innovative training

Who We Are

At our core, we believe safety is our shared responsibility.

Our Staff

- **Lifelong learners**
- **Inclusive, empathetic, and self-reflective**
- **Open, service-oriented collaborators**
- **Holds expertise in safety and risk**
- **Values preparedness and resilience**

Our Office

- **Proactive, open communicators**
- **Solution-oriented**
- **Innovative**
- **Persevere through any challenge**
- **Strives for continuous**

It Takes a Village to Raise Safe Researchers.

Understanding of Risk

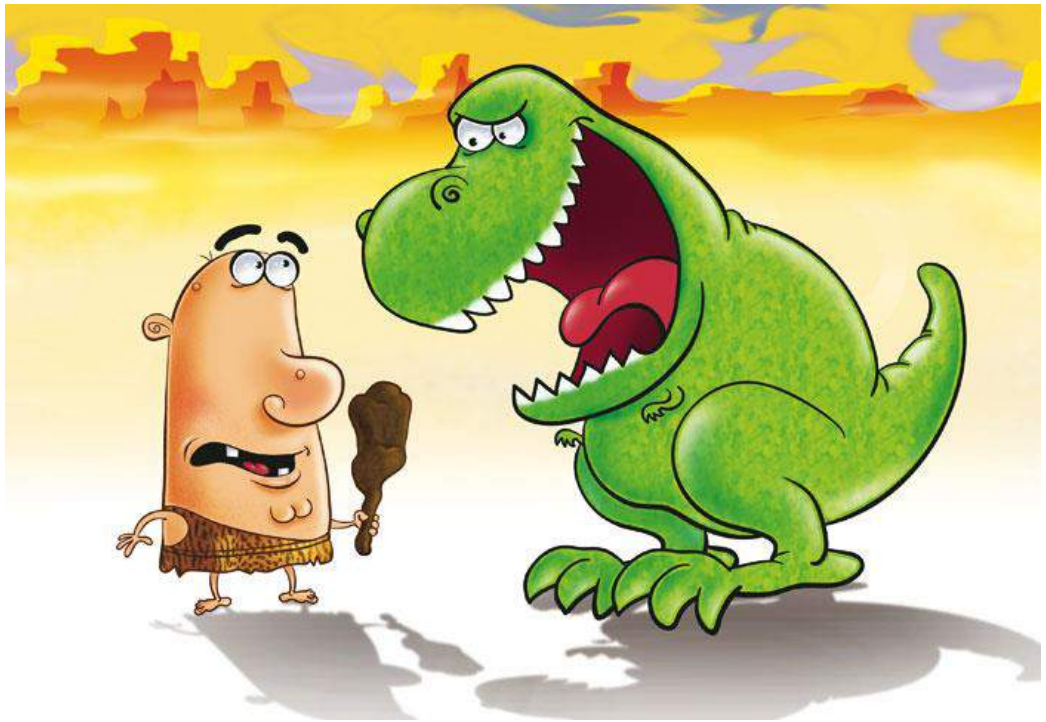
The Great Equalizer

Fundamental Difference Between Safety & Risk

Safety	Risk
• A set of actions, processes, protective items or practices • A tangible process to ensure that hazards do not cause harm • Human-centered process that only considers risk mitigation from one standpoint	• The inherent nature of the item • The potential to cause harm resulting from hazard • Occurs through it use life cycle within an organizational system

Understanding of Risk in Human Evolution

From the beginning of human time, natural selection has selected the human that takes the biggest risk, and they are able to pass on their genes.



©Minecraft Blogs, 2012

It’s Human Nature to Take Risk.

Risk manifest itself through a human behavior.

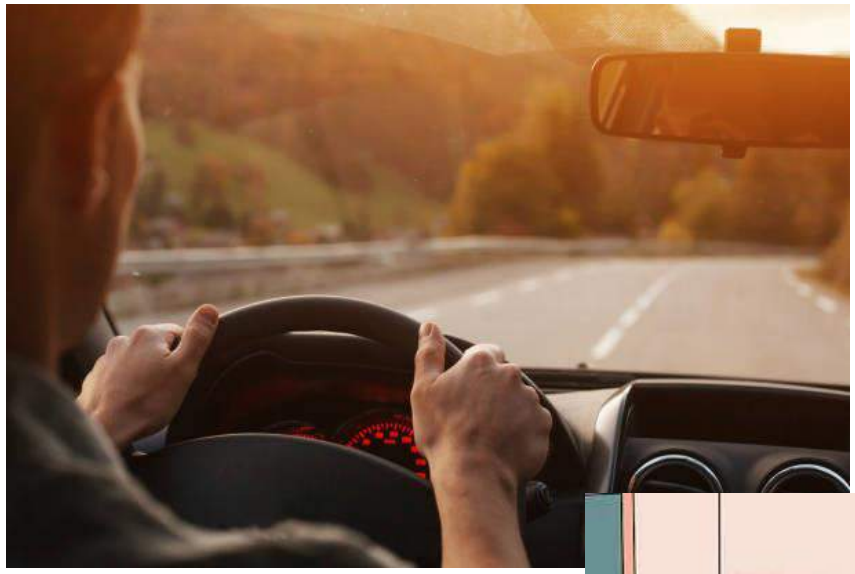
We find value in choosing risk:

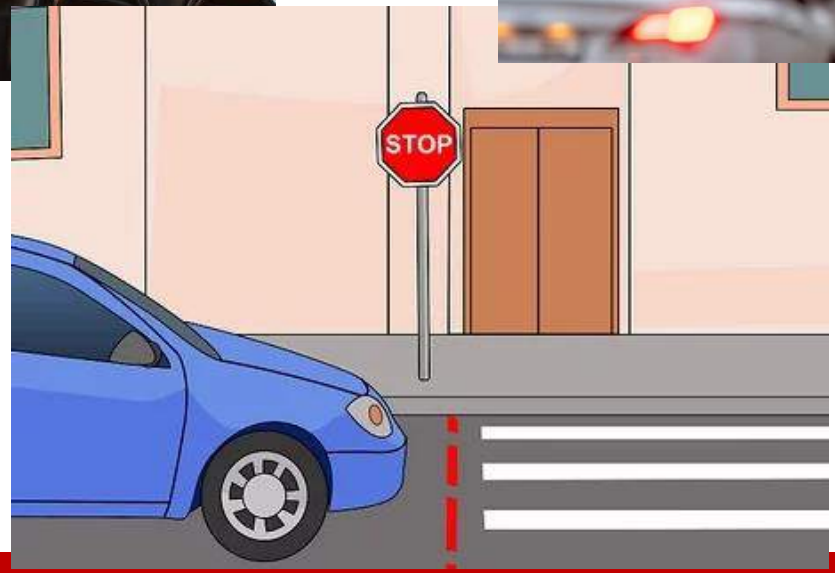
- By doing things faster.
- By finding reward in this behavior.
- By constantly being rewarded for this risky behavior throughout our lifetime.

Since we found no harm resulting from behavior:

- We repeated
- We learned there was no harm from this repeated behavior

Learning to Drive a Car...





After Driving for Years…

Why did we drive so “safely” back then, but now put ourselves at risk now?

First time violating the rule… we felt a twinge in our stomach!

No negative outcome received!

Why did we drive so “safely” back then, but put ourselves at risk now?

“Hmm…I did not have an accident because of this behavior…”

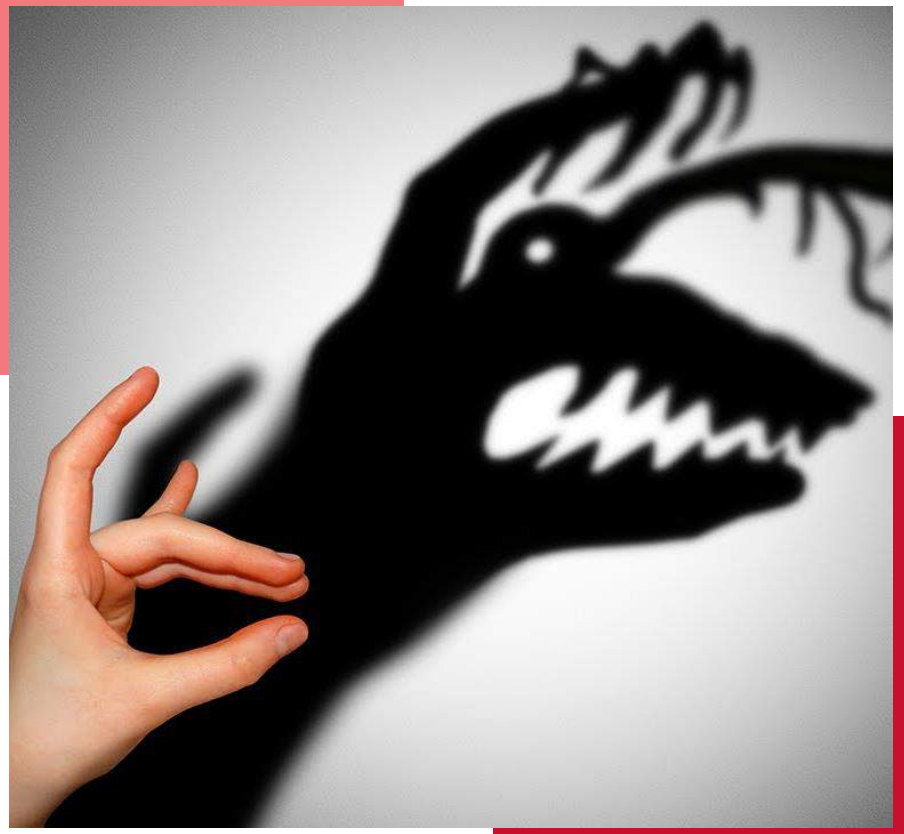
We repeat the unsafe behavior and get more comfortable…

We no longer perceive this behavior as a risk!

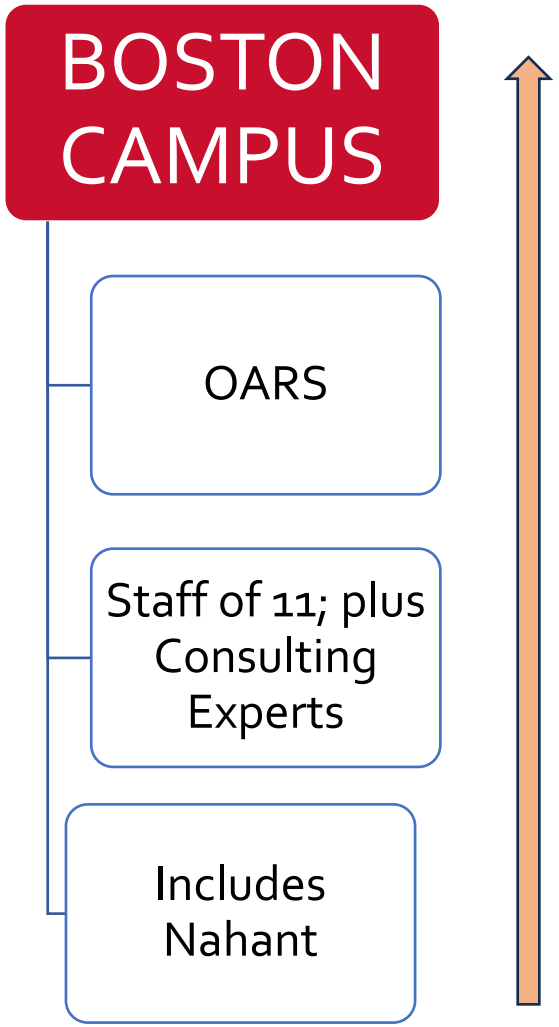

This way up
Handle with care
Fragile
Keep dry
Human Being®
100% ORGANIC
Contents may vary in colour

Skewed Perception of Risk

Life experience skews one's perception of risk.



OARS is Local; Global ERS is global



OARS:

- supports research & academic safety on the flagship BOSTON campus.
- provides technical resources to assist other campuses

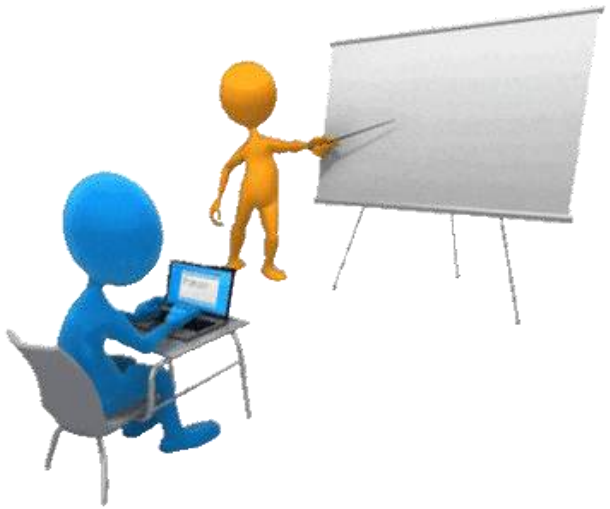
Global Campus ERS (Education and Research Safety):

- supports ALL other campuses to build their boots-on-the ground research safety programs.
- Research safety is an in-person compliance obligation globally.

Northeastern University
Academic and Research Safety

Learning Design Program

Learning Design & Training Management 2023



31 Training Courses

Online and In-person

19,000+ Person/Course Interactions

Modernized Learning Experience

Northeastern University
Academic and Research Safety

Radiation Safety Program

Radiation Safety

2023

81 Lasers

Amount for all 3 campuses

84 Radiation Workers

531 Trained in Radiation

Includes x-ray and laser training

47.3 ft^3 of Radioactive Waste Disposed

Includes amount of waste stored

Radiation Safety - Programs

2024

Radioisotopes

- Used for biomedical research: tracers and labels

Lasers

- Class IIIB and IV units; laser cutters

X-Rays

- Diffraction/Fluorescence units, electron microscopes, irradiators

Magnets

- NMR and MRI units

Radiation Safety - Programs

2024

Lab Audits

- Performed on an annual, quarterly, monthly, and weekly basis.

Training

- Virtual and Live, in classrooms and labs.

Waste Management

- Waste collection, storage, decay in storage, and disposal.

Inventory

- Radioisotopes, Lasers, X-ray devices, and magnets.
- Registration with Mass. DPH.

Northeastern University
Academic and Research Safety

Laboratory Safety Program

Laboratory Safety

2023

3,300 Trained in Lab Safety

Includes Lab Safety & Hazardous Waste training

18,000 Different Chemicals

65,000 Chemical Containers on Campus

275+ Lab Groups

7,600+ lbs. & 7,300+ gallons of

Chemical Hazardous Waste Generated

Includes Solid and Liquid Waste

SAFETY

What?

Research Focus | Process | Equipment | Chemicals | Other Hazards

Where?

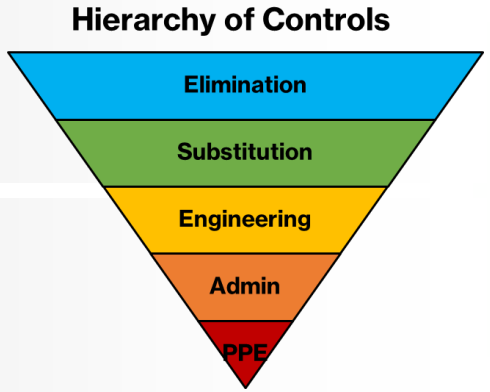
Lab Design & Construction | Temporary Space | Lab Registration

Who?

On-Boarding | SciShield | Training | Group Compliance Liaison

How?

Protocols | Hierarchy of Controls



What If?

Risk Assessment | Emergency Management

When?

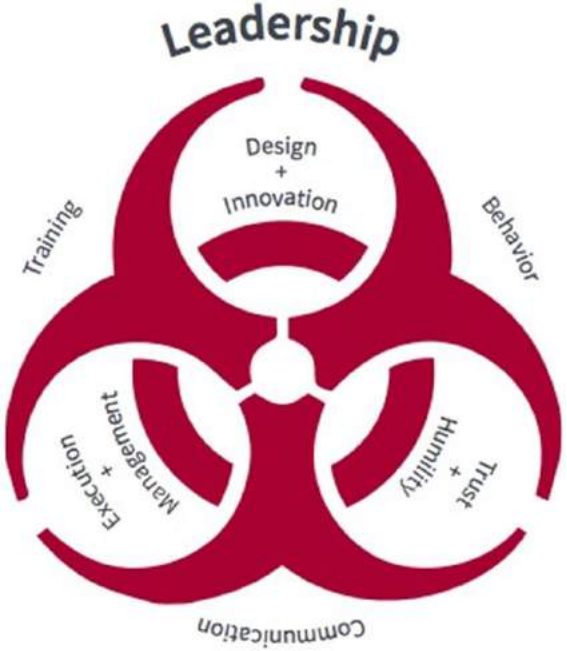
Form a partnership with us early!

We hired a new faculty that will develop the next generation of flexible, biocompatible sensors!

lab SAFETY

Northeastern University
Academic and Research Safety

BIOSAFETY PROGRAM



Biological Safety

2023

Compliance with 11 regulatory agencies

3,147 individuals trained

150 Biosafety Cabinets certified annually

Supports 10,000 square feet of Laboratory facilities

2,474 boxes (76,732 lbs.) of Biological Waste Collected

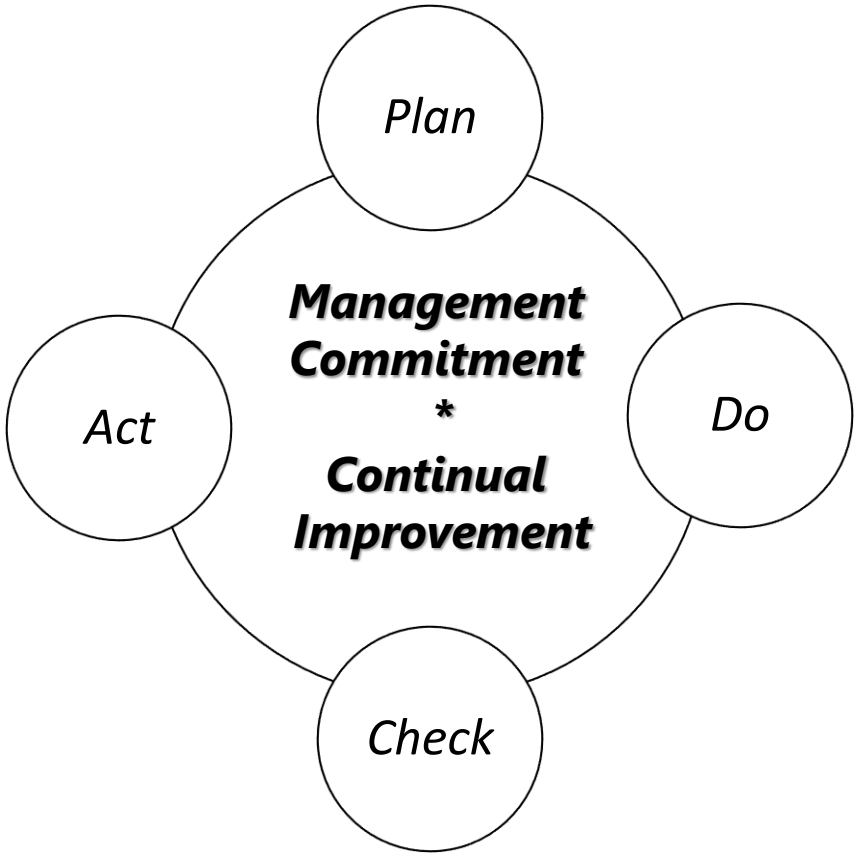
BIOSAFETY PROGRAMS & SERVICES

- Biological Waste
- Training
- Lab Design & Construction
- Animal Biosafety
- Plant Biosafety
- OSHA Bloodborne Pathogen
- Biological Toxins
- Contamination Prevention & Control
- BSC Assessment & Certification
- Autoclaves Validation and Calibration
- DEA Controlled Substances
- Shipping, Import & Export
- Biological Security
- Incident/Accident Investigation & Reporting

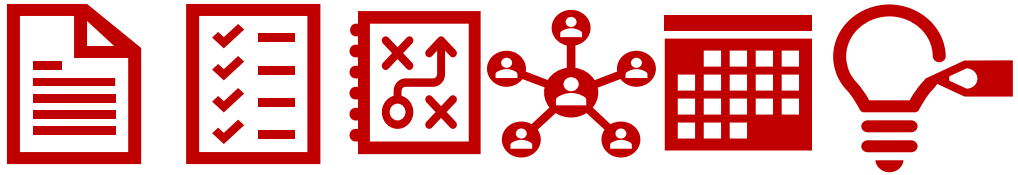
BIOLOGICAL RISK MANAGEMENT

What we do every day

IBC



Biosafety Program



Northeastern University

The Institutional Biosafety Committee

- *Established on June 3rd, 1985, has continually been led **by faculty.***
- *Provides continuous management of the NU's campus biological risk.*
- *Enforces compliance with federal, state, and local biological research regulations to permit the training of scientists and the advancement of biological, and biomedical discoveries and biotechnology.*

The cornerstone of research oversight

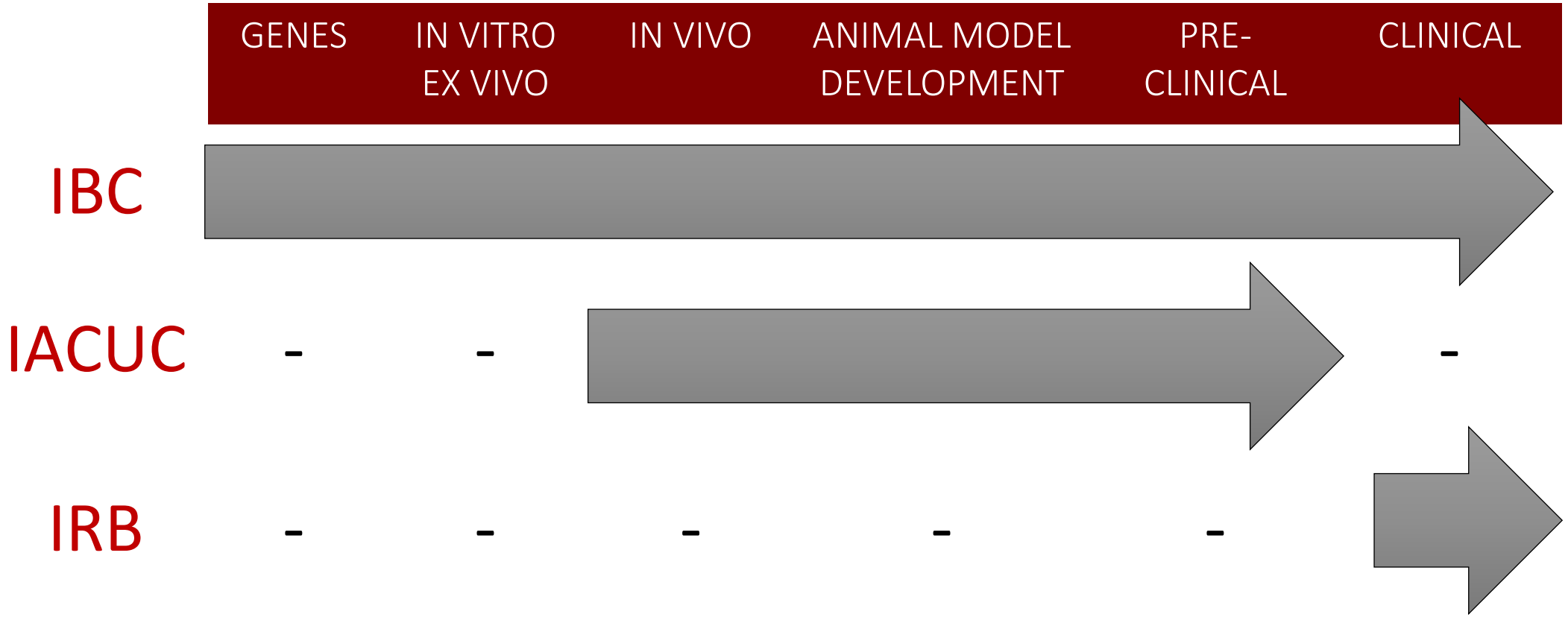
The Institutional Biosafety Committee

Review all projects proposing the use of:

- Recombinant Nucleic Acid Molecules
- Synthetic Nucleic Acid Molecules
- Genetically modified cells, microorganisms, animals, and plants (GMOs)
- Viral Vector and other vector technologies
- Nanotechnology (able to enter living cells)
- Gene Drive Modified Organisms (GDMOs)
- Non-genetically modified biological agents (pathogenic and non-pathogenic)
- Human Embryonic Stem cells (hESc), Human Induced Pluripotent Stem cells (hIPc)
- Human-sourced materials including cells, tissues, fluids, and others
- Non-human primate materials including cells, tissues, fluids, and others
- Select Agents and Toxins
- Regulated biological agents
- Infectious proteins

A Collaborative Approach To Research Oversight

The IBC Scope Under The NIH Guidelines



NIH Guidelines

Roles and Responsibilities

NIH-Office of Science Policy

NIH Guidelines

CONFORMITY

CAMPUS OVERSIGHT

ADVICE
MONITORING
REPORTING

FULL COMPLIANCE

Environmental Compliance & Occupational Safety (ECOS)

Gina Kerwin

Director of Environmental Compliance & Occupational Safety

Collaborative Partnerships

Supporting departments through a collaborative approach.

Supporting PREF and Northeastern

Risk Register Development

- Task Identification
- Risk Assessment
- Prioritization & Improvement

Safety Committee Initiation

- Initiate Safety Committee
- Communication Improvements
- Hierarchy Utilization

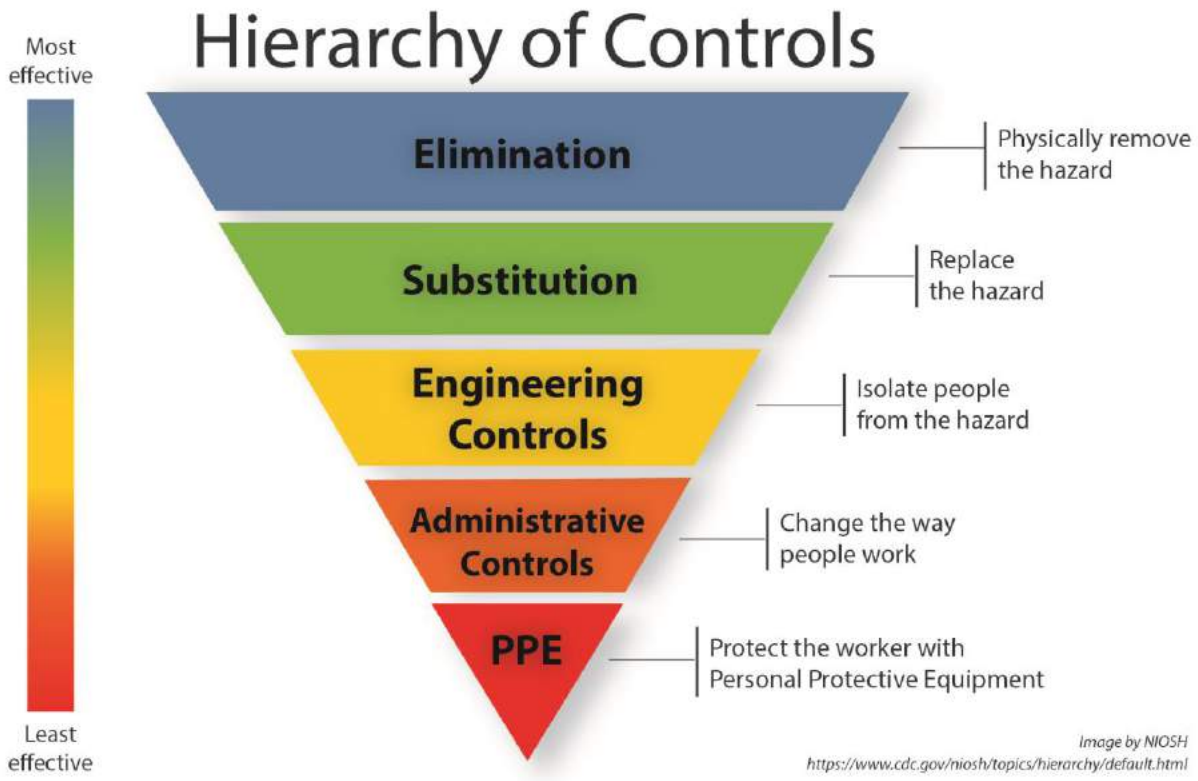
Training Improvements & Resources

- OSHA Training Overhaul
- New Hire Orientations
- Specialized Group Training

Compliance Resource for Projects

- ECOS Compliance Expertise
- Early Project Involvement
- Centralized Documentation

Identifying Risks & Opportunities



Non-Compliance with Environmental Permits

- Potential for NOVs, Fines, Increased Regulatory Inspections

Major Releases to the Environment

- Unwanted press, Fines, Major cleanup costs

Improper Handling of Hazardous Waste/Materials

- Major liability, Potential for NOVs, Fines, Poor relationship with Regulatory Agencies

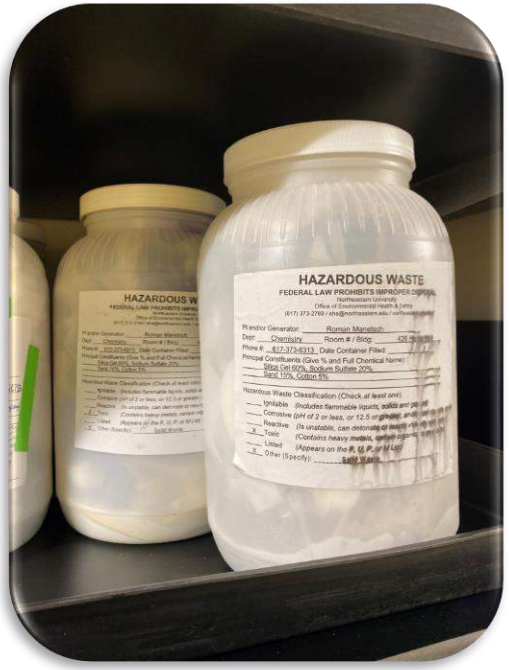
Major Injuries/Fatalities

- OSHA Reportable Incidents, OSHA visits, Unwanted press, Civil Lawsuits

Supporting Northeastern Research Labs

Compliance in Labs

- Wastewater regulations through MWRA permits
- Hazardous Waste Generation, Inspection and Storage
- Spill Prevention, Countermeasures and Control



Occupational Health & Safety in Labs

- Eyewash/Shower Inspections and Maintenance
- Rooftop Access and Safety Training
- General Occupational Hazards and Concerns

Departments Initiating Change

Smoking Concerns – **Carpentry/Sign Shop**

Addressed Blocked Egress – **Electrical/Fire Safety**

Improved PPE - **Horticulture & Grounds**

Unknown Odor Concerns – **Suburban Campuses**

Rooftop Safety – **Access Control/Zone Management**

Compactor/Tipper Improvements – **Materials & Recycling**

Thank you for listening!

NU_OARS

Any Questions for Us?