Welcome

Jackson Bailey
Marketing & Program Manager
Environmental Business Council of New England
Program Overview
Purpose and What You Will Learn

Max Forsythe

Program Chair & Moderator

Business Development Manager, NRC
Health and Safety for the Ascending Professional

• Josh Fontaine, *Project Environmental Scientist*
  *Golder Associates*

• James Rossi, *Regional Sales Manager, NRC*

• William Taber, *Senior Project Manager, VHB*
Safe Practices When Working in and around Remediation Sites

ENVIRONMENTAL BUSINESS COUNCIL
WATERTOWN, MA
MARCH 6, 2019
Introduction to NRC

NRC is a global provider of environmental, industrial and emergency response services, with a staff of over 1,400 environmental professionals operating from 72 locations in 13 countries and operations in the Americas, Europe, Africa, Central Asia, the Middle East, and Far East.

NRC has been a premier provider of response and environmental services in the United States for over 25 years and is consistently ranked within the top 50 of ENR’s list of the Top 200 Environmental Firms with annual revenues of $387M.

NRC works in partnership with our clients to support their business activities worldwide, delivering comprehensive, safety-driven solutions. Our core business includes:

- Emergency Response
- Industrial Maintenance and Cleaning Services
- Waste Management and Transportation
- Remedial Construction
- Marine Services
- Fire Fighting & Rescue
- Consultancy & Training
Discussion topics for today

- Safe Work Planning
- What Impacts Safety on the Work Site?
- Challenging Sites
- Site Condition Monitoring and Analysis
- Individual PPE Requirements and Planning
- When Visiting the Job Site
- Onsite Safety Considerations
- Engineering Controls
- Summary guides
Take the Time to Plan

- Every day >>>>> the conditions change
- Every trip starts with a Work Safety Plan
- Every new day starts with a safety evaluation
  - Are we still in compliance, do we need change what we are monitoring and increase or decrease our safety planning?
- When initially visiting a site, ask ahead of the visit for guidance on what will be required, then plan for the unexpected or possible a possible change in conditions.
What Impacts Safety on the Job Site?

- Geography, terrain, elevation,
- Geology, soil condition, rock formations,
- Weather, temperature, wind, rain, snow, ice
- Access limitations, roads, walkways, fences, berms, pipes
- Wild life habitats, bees, snakes
- The work area contaminated area limitations
- On site equipment, fuel sources, electrical wiring, pumps/piping
- Other environmental conditions
  - such as dust, odors, gases, light, traffic
Work Sites that can be Challenging
On Site Condition Monitoring

- Stationary Monitoring – data collection
- Hand held monitoring – local sources
- Weather monitoring – wind direction and speed
Site Personal Protection Equipment (PPE)

**Personal protective equipment (PPE)** is protective clothing, helmets, goggles, or other garments or equipment designed to protect the wearer's body from injury or infection. The hazards addressed by protective equipment include physical, electrical, heat, chemicals, biohazards, and airborne particulate matter.

- General Industry, PPE requirements, OSHA 1910 Sub Part I
- Electrical, OSHA 1910. 269 – Special requirements
- Construction, 1926 Sub Part E
Site Personal Protection Equipment (PPE)

- Select the correct Level, A, B, C, D?

- Level D is the most common for Job Walks
  - Hard Hat, Boots, Gloves, Glasses,
    - Options, FR clothing, safety vest/jacket, flash light, hearing protection, Life vest, work coveralls, ice grippers.
Level C basically adds respiration, Coveralls, specialty gloves and boot covers.
Site Personal Protection Equipment (PPE)

- Level B and level A, normally not used on site walks or remedial projects, these levels are used for hazardous and high hazardous jobs or conditions.
Visiting the Site

- Call ahead and ask about any Safety and/or PPE requirements, contamination, physical hazards, ongoing work activity etc...

- Does the facility require visitors to have safety training, and/or attend onsite safety meetings?

- Check on the site conditions, weather, environment, plan accordingly.

- Make appointment and check in with security, bring your own gear!

- Ask prior to taking any pictures with a digital camera or cell phone.

- Level D PPE Required (Minimum)
On Site Safety Considerations

- When on site and planning the work
- Ask the experts to explain the safety requirements for the work and expectations for safety meetings/reviews.
- What will be required by the consultant or contractor based on the regulations, OHSA or other requirements.
- Communication on Safety requirements and site conditions between the site owner, consultant, and contractor will make projects run efficiently and safely and in some cases are the leading cause for projects failures.
Don’t Forget Engineering Controls

If...
You can physically change the machine or work environment to prevent employee exposure to the potential hazard,

Then...
You have eliminated the hazard with an engineering control.

- Examples...
- Initial design specifications
- Ventilation
- Substitution with less harmful material
- Enclosure of process
- Isolation of process
- Change the process
Find and use tools to keep track of how safe you are working.

- NRC uses “PAWS” – An Onsite Safety Evaluation Card
- OSHA Guidance Documents
- Project START cards
- Tail Gates Guides
- Job hazardous analysis
- Job Safety analysis
Further Discussions
Health and Safety at Remediation Sites

A CONSULTANT’S PERSPECTIVE

March 6, 2019
Today’s Objective:
Provide you with a consultant’s view on health and safety at remediation sites.
Life of a Consultant

- You are **ALWAYS** in the way
- You slow everyone down
- Inexperience with the work methods
- The client expects you to have their best interest in mind
OSHA - 2017 FATALITIES

971/4,674 FATALITIES WERE IN CONSTRUCTION

FATAL FOUR CONSISTED OF 60% OF ALL FATALITIES

- FALLS: 40%
- STRUCK BY OBJECT: 39%
- ELECTROCUTIONS: 5%
- CAUGHT BETWEEN EQUIPMENT: 8%
- OTHER: 8%
What’s the worst thing that can happen today?
What has the potential to kill me today?
GOLDER’S FATAL RISK CONTROLS

- Working around heavy machinery
- Driving
- Acutely hazardous substances/ atmospheres
- Working at heights
- Suspended loads
- Unstable ground
HEAVY EQUIPMENT

Hazards:

- Falling materials and loads
- Blind spots
- Equipment tip-over or rollover
- Mechanical malfunction
DRIVING

- Narrow Roads and blind corners
- Construction vehicles have the right of way
- Be aware of changes in traffic patterns
- Communication
Bucket Loader

Caterpillar Inc. Contract Deliverable to the Center of Disease Control and Prevention. June 2, 2004
ACUTELY HAZARDOUS SUBSTANCES / ATMOSPHERE

- Are the constituents of concern known?
- Are the constituents volatile or is dust a potential transport mechanism?
- All forms of air monitoring are not equal!

Glove Selection for Cyclohexanone

https://outdoorindustry.org/chemical-manuals/1/en/topic/face-hand-body-protection
WORKING AT HEIGHTS

- Can the work or a portion of the work be completed on the ground?
- Fall Arrest Training
- Emergency Rescue Plan
- Mobile Equipment Training
- Equipment Inspection

OSHA. Working Safely With Scissor Lifts. February 2016
SUSPENDED LOADS

- Never work under a suspended load!

- If sampling from the bucket of an excavator, request that the bucket be placed on the ground the equipment turned off

- Create a work exclusion zone

- Equipment Inspection
UNSTABLE GROUND

- Wall Stability and collapse (wall fissures)
- Falls
- Drowning
- Hazardous Atmosphere
- Mobile Equipment
- Vibrations
Expect the unexpected…
Thank you
Health & Safety

Presented by
William Taber, PE

March 6, 2019
Meet VHB

1,350 passionate professionals including engineers, scientists, planners, and designers

Founded in 1979

30 locations on the east coast

Core services
Transportation planning & engineering
Land development
Planning & design
Environmental

Markets
Transportation agencies
Real estate
County and local governments
Institutions
Federal government
Energy
Training

- OSHA 40-hour Hazwoper
- OSHA 8-hour Hazwoper
- OSHA 10-hour Construction Industry Safety Training
- First Aid/CPR Training
- Railroad Safety Training
Medical Monitoring

- Medical monitoring is a fundamental strategy for optimizing employee health.
- Medical examination requirements are based on job exposures.
- Employees that typically work at listed sites or potentially impacted sites are required to undergo medical monitoring.
Health & Safety Plans

- Field Check Lists.

- Job Hazard Analysis (JSA).

- Site Specific Health & Safety Plans.
Project/Team Manager’s (PM/TM) Responsibilities

- Conduct hazard assessment and inform employees of findings
- Provide lookouts whenever necessary
- Avoid assigning employees to tasks that isolate them from the rest of the group
- Confirm that each employee had the required training/PPE and uses the equipment correctly
- Maintain and store tools safely
- Prevent employees from working if they refuse to work safely and report the matter to your supervisor
- Review communication plan with employees (See page 14)
- Conduct tailgate safety briefing (See page 14)

Employee’s Responsibilities

- Maintain situational awareness
- Immediately notify PM/TM if any conditions are unsafe
- Complete any required training
- Maintain and keep PPE clean
- Report all violent acts, threats of physical violence, verbal abuse, property damage, security hazards, and other inappropriate activities immediately to the PM/TM
- Maintain in communication with PM/TM
Pre-Departure Checklist

Make sure you:

☐  Know your safety responsibilities
☐  Establish a communication plan
☐  Develop an emergency contact list
☐  Start a hazards assessment
   ☐  Reviewed work tasks
   ☐  Identified possible hazards
   ☐  Plan to mitigate hazards
☐  Pack the following supplies:
   ☐  PPE
   ☐  First Aid Kit
   ☐  Water
   ☐  Food
   ☐  Medications
   ☐  Powered equipment
   ☐  Charged batteries
☐  Watch the weather forecast
☐  Notify local responders of location
☐  Identify the closest hospital/clinic
VHB JOB HAZARD ANALYSIS

Date:  
Job Hazard Analysis Proposed By:  
Associated Office:  
Project Location:  
Project No.:  
Project Timeframe:  
Project Manager:  
Specific Task:  

Minimum Required PPE for Entire Task:

- Hard Hat
- Hearing Protection
- Safety Glasses
- Gloves
- Safety-Toe Shoes
- Other:
- Respirator
- Reflective Vest
- Face Shield

<table>
<thead>
<tr>
<th>TASK STEPS</th>
<th>POTENTIAL HAZARDS/CONSEQUENCES</th>
<th>CONTROLS TO ELIMINATE OR REDUCE RISK</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Additional comments/ descriptions of site or tasks:

Reviewed by:

VHB Job Hazard Analysis

Last Updated 03/06/20XX
## Table of Contents

VHS Site-Specific Health and Safety Plan ........................................... 1

- Introduction .................................................................................. 1
- General Site Information ............................................................... 2
- Site Hazard Overview ................................................................. 2
- Site Description and History ......................................................... 2
- Tasks .......................................................................................... 3
- Soil Boring Advancement ............................................................ 3
- Hazard Assessment ..................................................................... 4
  - Physical Hazards ...................................................................... 5
  - Heat Stress .............................................................................. 5
  - Cold Stress .............................................................................. 6
  - Corrosives .............................................................................. 7
  - Noise ..................................................................................... 7
- Chemical Exposures .................................................................... 7
- Volatile Organic Compounds (VOCs) .......................................... 8
- Metals, Semi-Volatile Organic Compounds ................................. 8
- Symptoms of Chemical Exposure ............................................. 9
- First Aid .................................................................................. 9
- On-Site Control ......................................................................... 10
- Monitoring Procedures .............................................................. 11
- Action Levels and Personal Protection ...................................... 11
- General Safety Requirements .................................................... 12
- Personal Protective Equipment .................................................. 13
- Decontamination Procedures ..................................................... 13
- Emergency Medical Care ........................................................... 14
- Emergency Procedures ............................................................... 15
- Signature Page ........................................................................... 16
- Site Personnel ........................................................................... 16

**Figures**

- Emergency Hospital Routes

**Hazards Substance Fact Sheet for Suspected Site Contaminants**
# PPE Selection Basics Matrix

<table>
<thead>
<tr>
<th>PPE Item</th>
<th>Biological</th>
<th>Chemicals</th>
<th>Dusts</th>
<th>Electricity</th>
<th>Falling/Flying Objects</th>
<th>Heat/Flame</th>
<th>Over/Near Water</th>
<th>Sharp Objects</th>
<th>Construction Site</th>
<th>Roadways/Traffic</th>
<th>Undeveloped or Historic Buildings</th>
<th>Wooded Areas</th>
<th>Working Outdoors</th>
<th>Using Tools</th>
<th>Working at Heights 4 Feet or More</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard Hat</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseball/Ranger Hat</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety Glasses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety Glasses w/ Side Shields</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goggles</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Face Shield</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hearing Protection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over Garments (i.e. Tyvek)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flame Retardant Apparel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fall Protection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class 2/3 Reflective Apparel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal Floatation Device</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sunscreen</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insect Repellant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dust Mask</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respirator</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leather Gloves</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neoprene Gloves</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latex/Nitrile Gloves</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage Rated Gloves</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EH Rated Footwear</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety Footwear</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
OSHA’s General Duty Clause

OSHA's General Duty Clause, found at section 5(a)(1) of the *Occupational Health and Safety Act of 1970*, states: Each employer shall furnish to each of their employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to their employees.
Panel Discussion

Moderator: Max Forsythe, NRC

Panelists:

• Josh Fontaine, Golder Associates
• James Rossi, NRC
• William Taber, VHB
EBC Ascending Professionals Program
Health and Safety on Remediation Sites
An Advanced Introduction