

# Operational and Manufacturing Excellence Webinar Series



## Safety First! Best Practices in Environmental, Health and Safety

American Coatings Association Webinar | October 17, 2023

Watch  
Webinar



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# Operational and Manufacturing Excellence

## American Coatings Association Webinar Series

Thursday, June 22

Process Optimization & Overall Equipment Effectiveness

Tuesday, July 25

Optimizing Plant Operations Including Design Considerations for Growth

Tuesday, September 19

Optimizing Supply Chain to Increase the Bottom Line

Tuesday, October 17

**Safety First! Best Practices in Environmental, Health and Safety**



*actionable insights for success*

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# The ChemQuest Advantage: Navigating the intersection of strategy, markets, operations, and technology

## Four Pillars of Expertise

Deliver distinctive, thorough, actionable, confidential, and professional work and support our clients in every aspect of sustained, profitable growth, including:



**Business Strategy & Transformation**



**Technology Development**



**Operational & Manufacturing Efficiencies**



**M&A Advisory Services**

**100%**

All of our work is proprietary, offering a full portfolio of services under NDA.

### Extensive Industry Relationships and Knowledge

Stakeholders across the value chain trust our thought leaders:

- **Team is more than 130 minds strong**, including ~ 48 Ph.D. chemists.
- **Senior personnel** each have a minimum of 25 years of experience in specialty chemicals and materials.
- **Extensive roster** includes former senior managers from major manufacturers, business owners, and senior technical managers.

### Our Mission is Enabling Our Clients to:

- **Build enterprises** that challenge established thinking and drive transformation.
- **Gain competitive advantage** through distinctive, targeted, and substantial improvements that sustain profitable growth.
- **Unlock new and hidden insights**, empowering an organization's smart risk-taking, catalyzing innovation excellence and value creation.
- **Be successful** — because our success emanates from yours.

## Start thinking beyond compliance

World-class companies realize environmental, health and safety (EHS) is **not only about being in compliance.**



EHS performance is just as important as profits, production, QC, costs, etc.



Safety is the first among equals.









### Management Responsibility

Leadership must plan, establish expectations, be engaged, and champion EHS efforts, as well as measure performance.

Additionally, they mentor and develop all personnel within the organization to support EHS activities.

## Safety needs to be prioritized accordingly!

-  Safety leadership MUST include senior management commitment
-  Behavioral safety
-  Employee engagement
-  Safety management systems
-  Process safety
-  OSHA requirements and standards

## OSHA's Mission



Established by Congress in 1971 to ensure that employees work in a safe and healthful environment by setting and enforcing standards and by providing training, outreach, education, and assistance.

# OSHA Requirements



## Annual OSHA 300 Log

Know your NAICS code for comparison



## Process Safety Management (PSM)

- Many companies are required by law to comply due to exceeding the minimum threshold of hazardous/flammable material(s) on their site.
- Very comprehensive, if applicable
- 14 elements within PSM that overlap with some EPA regulations
- World-class companies typically adopt PSM for best practices.



### Annual Required Training

- Hazards communication (HazCom)
  - Safety data sheets (SDS)
  - Labeling
  - Employee training
- Personal protective equipment (PPE)
  - Respirator program
- Blood-borne pathogens
- Emergency action plans
- Incident investigation
- Fork truck
- LOTO (lockout/tagout procedures)
- Electrical safety



## OSHA Requirements *continued*



### Annual Required Training *continued*

- Hot work
- Fall protection
- Fire extinguishers
- Chemical hygiene program (labs)
- Specific OSHA Toxic and Hazardous Substance Standards (if present)
  - Asbestos
  - Acrylonitrile
  - Lead
  - Chromium

## OSHA Requirements *continued*



### General Duty Clause - 29 USC 654 5 (a) (1)

- Very powerful tool

Understanding the critical nature of safety and health in the workplace is fundamental for all workers, managers, and business owners.

## EPA's Mission



Created by Richard Nixon in 1970  
to protect human health and the  
environment.

# EPA Requirements



## Clean Water Act

- National Pollutant Discharge Elimination System (NPDES)
- Storm Water Pollution Prevention Plan (SWPPP)



## Clean Air Act

- Title V
  - Air operating permit
  - Pre-construction permits
- Risk management planning (RMP)



## Air Emissions Reporting Requirements (AERR)



## EPA Requirements *continued*



### Resource Conservation and Recovery Act (RCRA)

- Haz waste generator status



### Toxic Substances Control Act (TSCA)

- All substances produced or imported must be listed
- Premanufacture notification (PMN)
  - Low volume exemptions

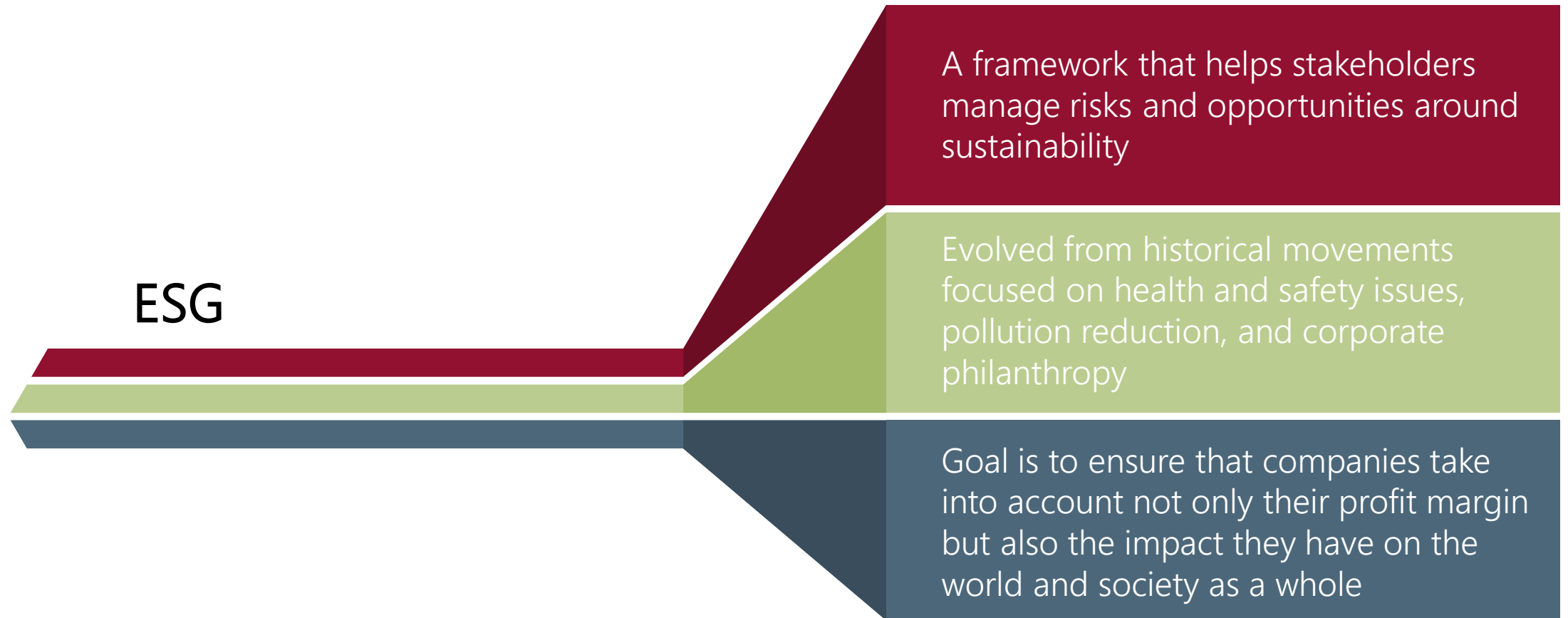
## EPA Requirements *continued*



- ✓ Emergency Planning and Community Right to Know Act (EPCRA)
  - TRI reporting (form R)
- ✓ Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or "Superfund")
- ✓ Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)
- ✓ Noise at your property boundary

## Environmental, Social and Governance (ESG)

As far back as the 1980s, companies in the U.S. were considering how to regulate and manage pollution reduction produced in the pursuit of economic growth.



# Environmental, Social and Governance (ESG)

## Environmental

A company's environmental impacts and risk management practices related to:

- Greenhouse gas emissions
- Stewardship over natural resources
- Climate change
- Flooding
- Fires

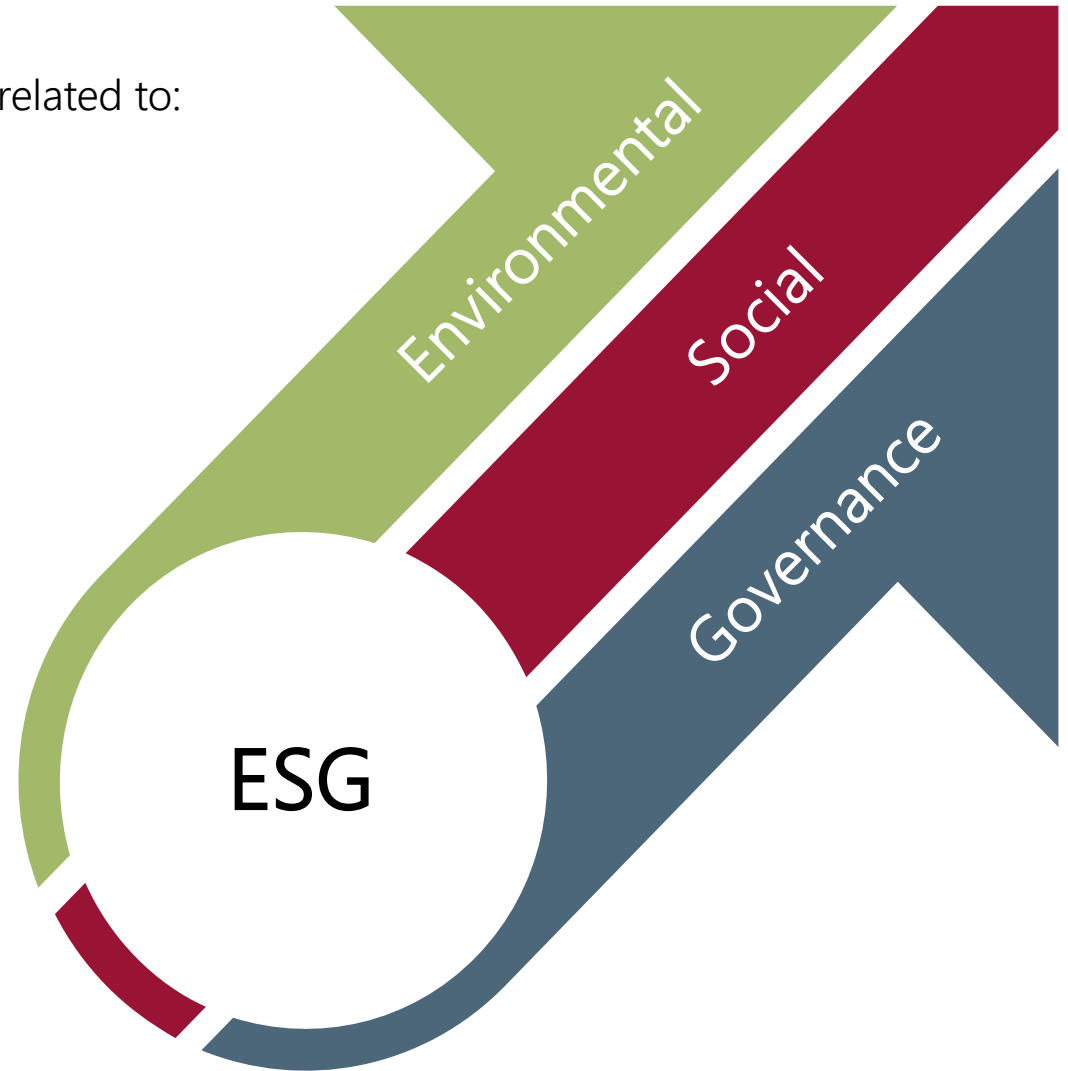
## Social

A company's relationships with stakeholders

- Human capital management (HCM)
  - Fair wages
  - Employee engagement
- Community outreach

## Governance

A company's conduct by its ownership and management





## Other Agencies and Programs

### Other Agencies

- **Homeland Security**
  - Chemical Facility Anti-Terrorism Standards (CFATS)
- **Department of Transportation (DOT)**
  - Hazardous material shipments (land, sea, and air)
- **National Fire Protection Association (NFPA)**
- **State and local regulations**

### Voluntary Programs

- **ISO14001**
- **Responsible Care RC14001**
- **LCA**  
(life cycle assessment)
- **ISO45001:2018**
- **OSHA Voluntary Protection Program**  
(VPP or Star)

## A safe work environment makes for a sound business

EHS management systems must be geared toward **providing environmental/health/safety programs** to prevent accidents, injuries, illnesses, and even deaths in the workplace.

➔ Some of the goals and expected outcomes of an effective safety management system (SMS) program:

- Engagement from the workforce
- Prevention of injuries and illnesses
- Improvement in regulatory compliance
- Enhanced social responsibility among employees
- Reduction in costs, including workers' compensation insurance
- Increased productivity across the overall business



## Study after study shows it's possible to see a correlation between employee engagement and the reduction of injuries.

- Engage employees with safety through:
- Commitment from everyone – management to operators
  - Extensive communication
  - Feedback and recognition
  - Opportunities for growth and learning
  - Consideration of mental health situations



### Develop Corporate Safety and Environmental Policies

- Policies signed by the president or CEO demonstrating support for compliance and beyond
- Policies that are posted at every site where employees, contractors, and visitors can see and read them

## Pay attention to key metrics

➔ Safety and environmental activities are like all other key metrics. They must:

- Be measured
- Be data driven
- Include employee involvement
- Have specific goals

➔ Several tools can be utilized to gather data:

- Job safety analysis (JSA)
- Safety meetings
- Safety committees
- Huddles/toolbox talks
- Audits/inspections
- Safety observations
- Contact with employees
- "What if" drills
- Key performance indicators (KPIs)



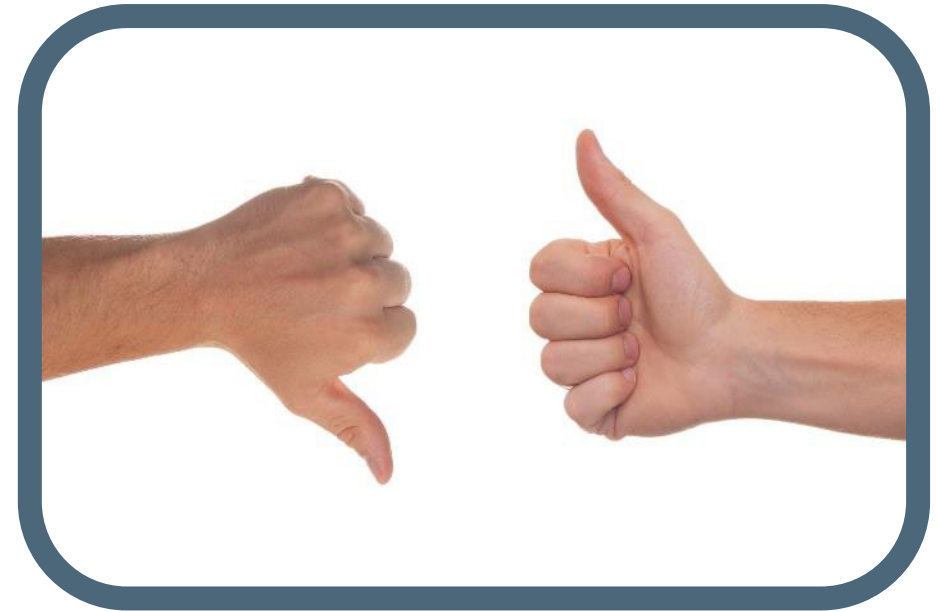


## Behavior-based safety (BBS) requires complete trust and cooperation between leadership and employees.

A BBS program is a **behavioral intervention program** that aims to equip employees with feedback, reinforcement, and recognition.

➔ From a pure micro approach to BBS, the following steps are recommended:

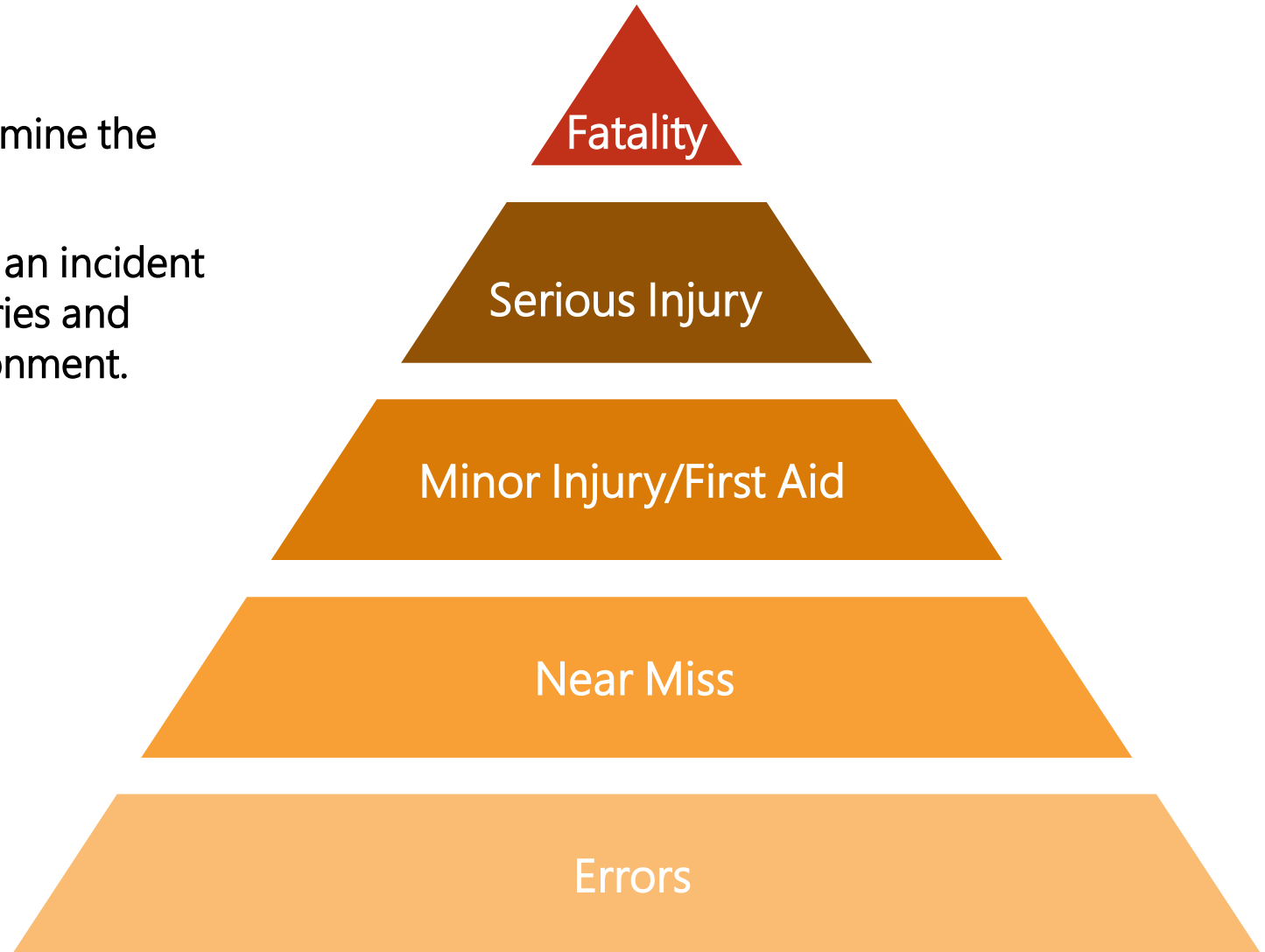
- Gather data about unsafe and risky behavior
- Develop corrective actions
- Evaluate the effectiveness of corrective actions
- Develop processes to address unsafe behavior
- Put the processes into action
- Evaluate the data and develop plans to monitor and promote continuous improvement



The macro approach to BBS targets permanent change in the culture and should be applied throughout the organization.

## Heinrich's Triangle – the relationship between safety behaviors, errors, and incidents

- ➔ Baseline actions and conditions determine the probability of incidents and injuries.
- ➔ Focusing on removing errors prior to an incident occurring leads to a reduction in injuries and contributes to a healthier work environment.



## 4 types of safety culture

Training is provided by all levels of the organization. Employees lead the training and programs, with supervisors, staff, and management attending and participating.

**Engaged**

Training for employees is provided by the safety person or area supervisor. There is interaction, but with a ceiling.

**Involved**

Safety is policies and procedures. Every time an incident occurs, a new or revised procedure needs to be developed.

**Protective**

Safety is enforced or driven through the use of threats and punishments. This is the "got you" approach.

**Forced**

## Example of Engagement – Weekly Plant Safety Audits/Inspections





- ➔ The site developed a checklist of general items for the production area, like:
  - Tripping hazards
  - Safety showers
  - Eye wash stations
  - Fire extinguishers
  - Housekeeping
  
- ➔ And performed the audits with a two-person approach, as below:
  - The production person was the lead (on their shift, in their area)
  - The second person (e.g., supervisor, office worker, sales, management, executive) performed the inspection with the production person



This approach leads to conversations, questions, interaction, and a real involvement by all levels/areas of the organization.



## Final Thoughts

-  Safety is not top-down driven.
-  It is not the safety professional's responsibility alone to manage safety.
-  Management needs to SUPPORT safety, but it needs to be owned by EVERY employee – from the person on the floor, through the office, sales, to the executive office.
-  EHS performance is as important as profits, production, QC, costs, etc.

World-class companies realize EHS is not only about being in compliance. It is about the employees, their families, neighbors, and the general public.



Thank you!  
Questions? Feel free to reach out:

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# Appendix



# Benefits of Process Safety Management (PSM)

Process safety can be described as a widespread net covering the company's operations as well as the community.

- ➔ Many companies are required by law to comply because they store a minimum threshold of a hazardous/flammable material on their site.
- ➔ 14 elements within PSM overlap with EPA and OSHA regulations:
  - Employee participation
  - Process safety information
  - Process hazard analysis
  - Operating procedures
  - Training
  - Contractors
  - Pre-startup safety review
  - Mechanical integrity
  - Hot work
  - Management of change
  - Incident investigation
  - Emergency planning and response
  - Compliance audits
  - Trade secrets - cybersecurity



## Hazard Communication Standards (HCS or HazCom)

HazCom is intended to make it easier for people to get information and know the proper handling of chemicals, either in the lab or the manufacturing environment.



- HazCom and personal protective equipment (PPE) are driven from safety data sheet (SDS) and Globally Harmonized System (GHS) information
- Threshold limit value (TLV)-total exposure limit (TEL) measurements
- Product stewardship (creation of SDS)
- Industrial hygiene requirements



# Material Transportation

Take the transportation of materials into consideration in terms of EHS concerns as driven by the hazardous classification or packing group dictated by the SDS.

- The U.S. Department of Transportation (DOT) system includes almost 4 million miles of public roads and 2 million miles of oil and natural gas pipelines, as well as railroads, waterways, and public-use airports under its jurisdiction.
- Many companies must also ship by ocean or air freight, adding to the complexity of packaging or quantities.
- Employee training on the handling of hazardous materials is crucial to performance as it relates to DOT/shipping.

