

LISTEN.  
THINK.  
SOLVE.

# Machinery Safety

*What EHS Managers should know about standards, technology and best practices*

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## Why Safety is Important

**2016 Indiana  
Health and  
Safety Conference**

***Because.....every 15 seconds, somewhere in the world:***

- Someone dies of a work-related accident or disease.
- 160 workers have work-related accidents.



***The cost to the global economy is a staggering \$1.25 trillion which equals 4% of the world GDP.***

Source: International Labor Organization

# Why So Many Standards

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# What Standards Apply to ME?

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- Where are you, and where will the machine / system be located?  
You are in the US and OSHA is the ultimate authority for safety. You must meet OSHA requirements and can use consensus standards to understand how. NFPA 79, ANSI Z244.1 apply.
- Is a Type C Standard Available?  
Search the ANSI webstore ([www.ansi.org](http://www.ansi.org)) and check with any industry associations (PMMI, SPI, AMT, RIA) for specific standards. If you are an OEM, be sure you ask your customer if they have any corporate safety requirements.
- Use the relevant Type A and Type B Standards  
If you can not find a Type C standard, start with ANSI B11.0 for general requirements and ANSI B11.19 for safeguarding requirements. Use international Type C standards for ideas, but ANSI takes priority. If global corporation you may want to consider ISO International Standards.

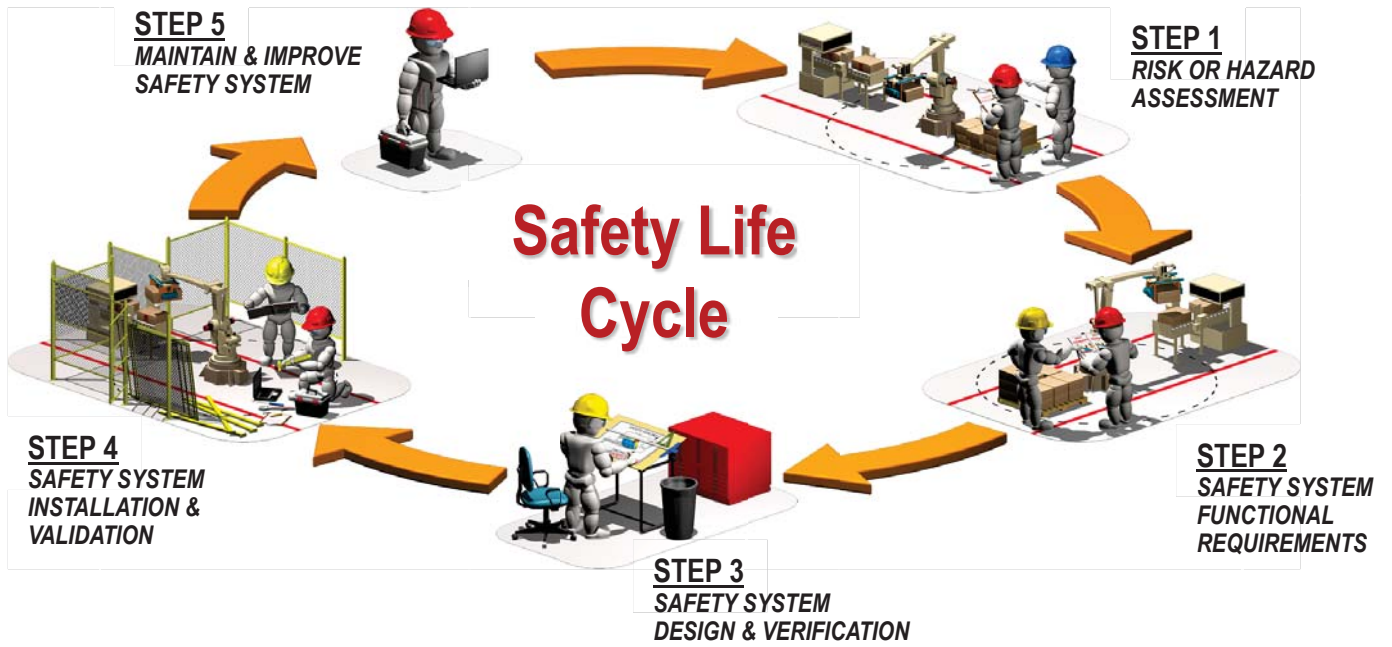
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# Machine Safety Lifecycle

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# Keeping People Safe Around Machinery

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LOTO / Isolate Hazardous Energy

Machine Guarding



# Energy Isolation vs. Machine Guarding

## Machine Maintenance

- Regulation: Lockout / Tagout or Energy Isolation
- Requirement: Release stored energy
- Tasks: Isolation of Mechanical / Electrical Equipment for Service and Maintenance

## Production Operation

- Regulation: Machine Guarding
- Requirement: Protect operators from machine production hazards
- Tasks: Operator Interaction for Regular Machine Production

*Minor Service  
Exception to Lockout Tagout*

*Must provide alternative  
Measures that offer effective protection*

## Minor Servicing Exception

- minor jams, minor tool changes & adjustments, exchange
- Regulation: Machine Guarding or alternative protection means
- Requirement: Protect operators from machine production hazards when performing minor servicing
- Tasks: Minor servicing such as clearing jams, loading parts, etc.

*Minor servicing must be **routine, repetitive and integral** to the operation of the system.*

# If machine access is required, 2 choices:

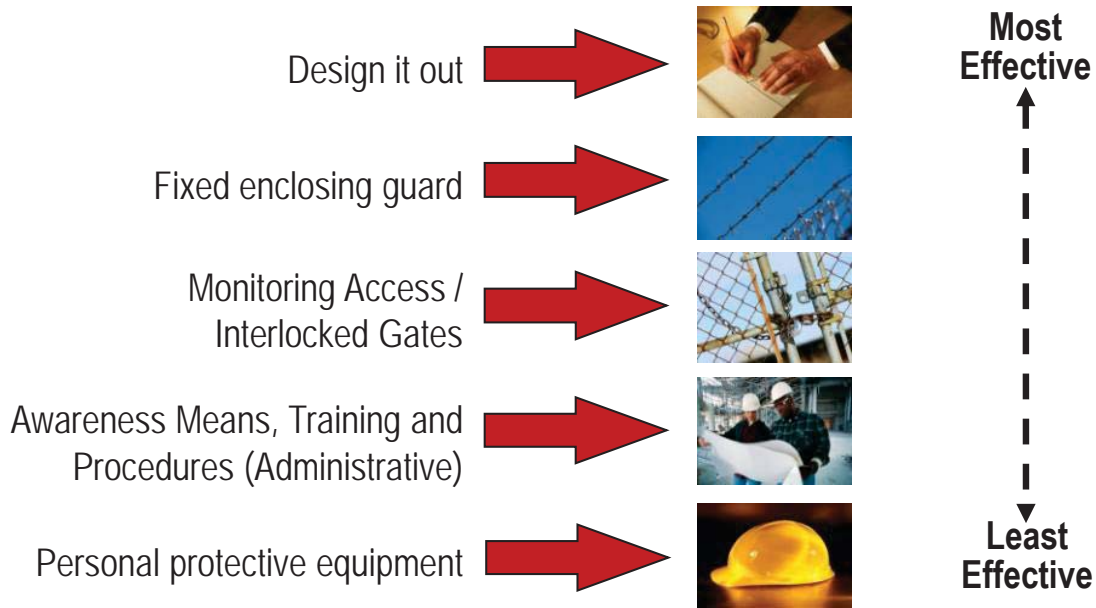
Active...



Passive...

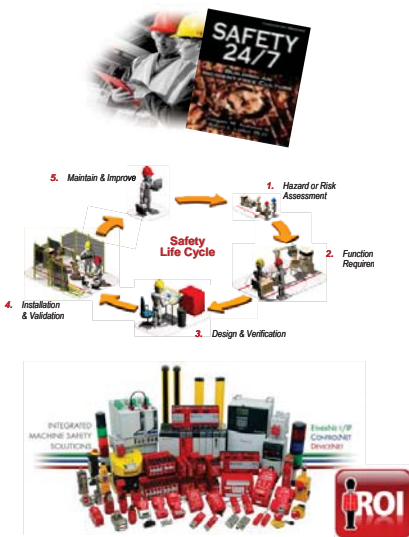


# Alternative Protective Means



# Safety Maturity

## “The 3Cs” – Culture, Compliance, Capital



- **Culture: attitudes and accountability.** The company DNA from upper management support, cross-functional safety teams, observable.
- **Compliance: use of effective processes and procedures** - Establish a formalized risk management strategy, standards and procedures to identify, prioritize and mitigate risks
- **Capital: investments in technologies** that improve both safety and productivity. Contemporary safety solutions and technologies are seen as a viable investment with an ROI.

*What differentiated Best-in-class Manufacturers from their Peers?*



# The Importance of Machine Safety

Turn to Aberdeen for Research with Results™ Aberdeen Group  
A Harris Health Company

## Defining Best-In-Class Performance

Definition of Maturity Class	Mean Class Performance
<b>Best-in-Class:</b> Top 20% of aggregate performance scorers	• 90% OEE • 0.2% Repeat Accident Rate • 0.05 Injury Frequency Rate • 2% Unscheduled Asset Downtime
<b>Industry Average:</b> Middle 50% of aggregate performance scorers	• 85% OEE • 2.4% Repeat Accident Rate • 0.9 Injury Frequency Rate • 6% Unscheduled Asset Downtime
<b>Laggard:</b> Bottom 30% of aggregate performance scorers	• 76% OEE • 10% Repeat Accident Rate • 3.0 Injury Frequency Rate • 14% Unscheduled Asset Downtime

Source: Aberdeen Group, September 2010

- 5%-7% Higher OEE
- 2%-4% Less Unscheduled Downtime
- Fewer Accidents (1/2000 vs. 1/111)
- Fewer repeat incidents

**Safety = Productivity = Profit**

# Questions?

