Moving Forward in Safety Thinking

- ANSI B11.TR3 - Provide an understanding of what it is and why it's significant.

- Provide an overview history to put the Technical Report in perspective, why it came about.
ANSI B11.TR3
What it is and why it’s significant.

- A technical report that provides procedures and methods to reduce risks associated with machine design, construction, care and use.
  - Written to offer guidelines for B11 standards.

- Calls for Risk Assessment and Reduction of Risk through a systematic review process because...
ANSI B11.TR3

What it is and why it’s significant.

- Many machine hazards are missed during design because task identification and risk assessment are not part of the process.

- Current OSHA Regs
  - Provide no methodology to address machine hazards and risks.
ANSI B11.TR3
What it is and why it’s significant.

- *Puts responsibility on machine manufacturers and users.*
- *Will enter industry through the standards process.*
ANSI B11.TR3
What it is and why it’s significant.

- Application will significantly enhance machine safety.

- It brings U.S. standards in line with European/International standards.
European Standards come out and incorporate “risk assessment” (1993).

1995 ANSI Sub-Committee formed to look at “risk assessment” process.

Appellate courts change what constitutes whether a machine is reasonably "safe as designed".
Overview History

- **ANSI B11.TR3 came out in late 2000.**
Not Required

- **No industry or government requirement mandates that the content of ANSI B11.TR3 be followed.**

  Plans are to incorporate into ANSI standards.

- **Risk Assessment is already part of Robotic. ANSI/RIA - 1999 Industrial Robots and Robot Systems**
Intended Use

- New or modified machines.

- Can be used to evaluate existing equipment.

- To be incorporated in to B11 ANSI Standards as they come up for 10 year review. (all will be done over next 4 years).
Benefits Recognized

- Experiments conducted by TR3 Committee.

- Members were convinced of superior value in hazard identification.
Hierarchy Of Hazard Controls

- **Eliminate**, by design.
- **Control**, access to exposures by safeguarding.
- **Provide other safety measures**, like awareness barriers, signals, etc.
- **Administrative Controls**, procedures and **PPE**
The Guiding Thoughts

- **Zero Risk can not be achieved.**

- **Reduce risks to an acceptable or “tolerable” level.**

- **Clearly identify and communicate remaining risk to the user.**
Hazards need to be identified for each machine task using a risk assessment process.
Task Based Risk Assessment and Reduction Involves the following:

1. Determine the machine limits.
2. Identify all machine tasks.
3. Identify hazards associated with each task.
   - Rate the severity.
Task Based Risk Assessment and Reduction Involves the following:

4. **Rate the probability for each hazard.**
5. **Determine the level of “risk”.**
6. **Eliminate the hazard or reduce its’ severity.**
7. **Determine the type of safeguarding and performance level of the system necessary to achieve the desire “risk” level.**
Tolerable Risk

- **Risk Reduction** is complete when protective measures consistent with the standard are achieved and “tolerable risk” is achieved.

- **Tolerable Risk**: Risk that is accepted for a given task and hazard combination (hazardous situation).
Why do this if not technically required?
Hurt at Work

- You've carefully thought out all the angles.
- You've done it a thousand times.
- It comes naturally to you.
- You know what you're doing, it's what you've been trained to do your whole life.
- Nothing could possibly go wrong, right?
Think Again.
Risk Assessment

- Identify the hazard.
- Determine the worst case severity.
- Determine the frequency of exposure.
- Determine probability?
  - Is injury certain, or can it be avoided.
Ratings

- Severity: Evaluate the hazard and determine the most severe injury that could happen. Assume the accident has happened.
Severity

- **Rate the severity.**

  - **(10) Fatal**
    - Normally irreversible, permanent disability, i.e. loss of sight, amputation.

  - **(6) Major**
    - Normally reversible, cuts, broken bones, burns.

  - **(3) Serious**
    - Bruising, cuts, first aid care.

  - **(1) Minor**
Frequency

- (4) Frequent  Several times per day
- (2) Occasional  Daily
- (1) Seldom  Weekly or less

Rate frequency.
Probability of Injury

- What is the probability of injury?
  - (6) Certain
  - (4) Probable
  - (2) Possible
  - (1) Unlikely
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