Improving Your Incident Investigations

Ten Common Mistakes to Avoid

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Background

- 34 years
- Over 200 deaths cases
- Certified Safety Professional
- OSHA 1983-2012
- Founding Member of ANSI Z359
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What Is An Near Miss?

Unplanned and unwanted event which disrupts the work process OR has the potential of resulting in injury, harm, or damage to persons or property.

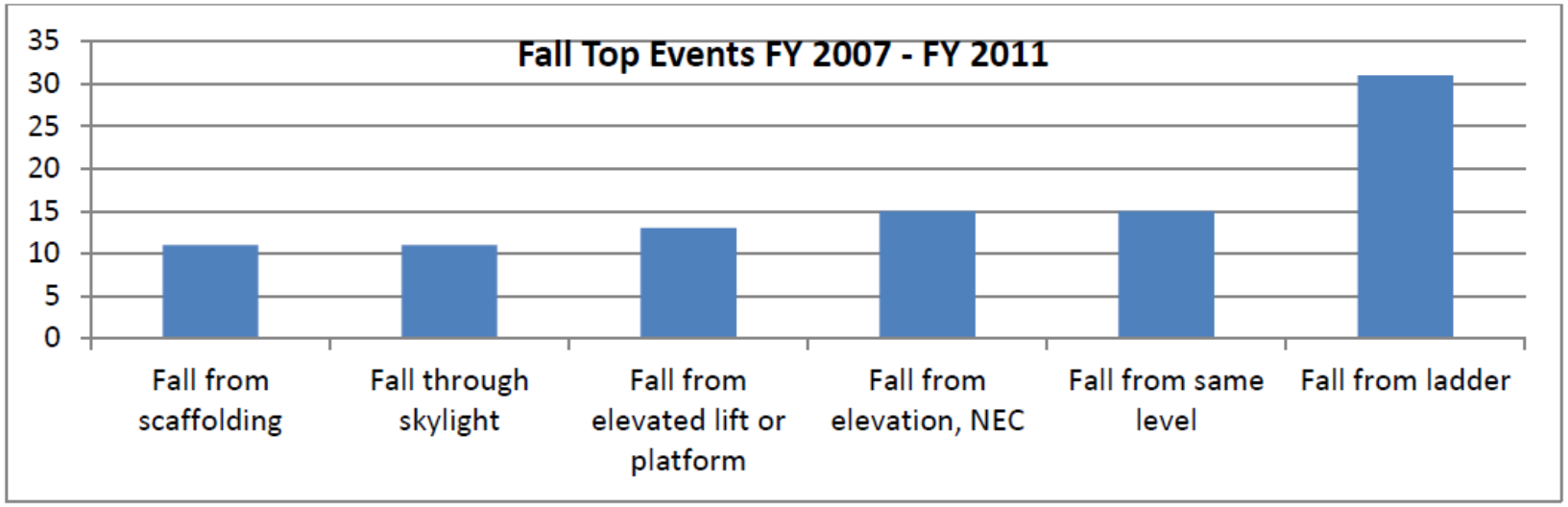
Near Miss

- The only difference between most near-miss experiences and an injury is timing or a few inches.
- Searching for root causes of near-miss experiences and following up with corrective action will certainly lead to lower injury rates.

First Key – Root Cause

- Event Date: 01/27/2009
- On January 27, 2009, Gerald Holland was walking across an aircraft hanger to exit the building for lunch.
- Ice and sleet had been blowing through gaps in the hanger doors, creating slippery conditions on the adjacent floor.
- Gerald slipped and fell, striking his head on the concrete floor. He was hospitalized for severe head trauma and later died.

Fall Sources



Near Miss Problems

- People don't like to do it.
- It's usually inconvenient to fill out a "near-miss investigation form.
- It's convenient and sometimes less stressful to just forget the near miss ever happened.
- Who wants to report a personal experience that reflects at-risk behavior, inattention and carelessness, and maybe an irresponsible attitude?

"You know what's boring?Writing out lengthy 'near-miss' accident reports."

Near miss?

What is an Incident?

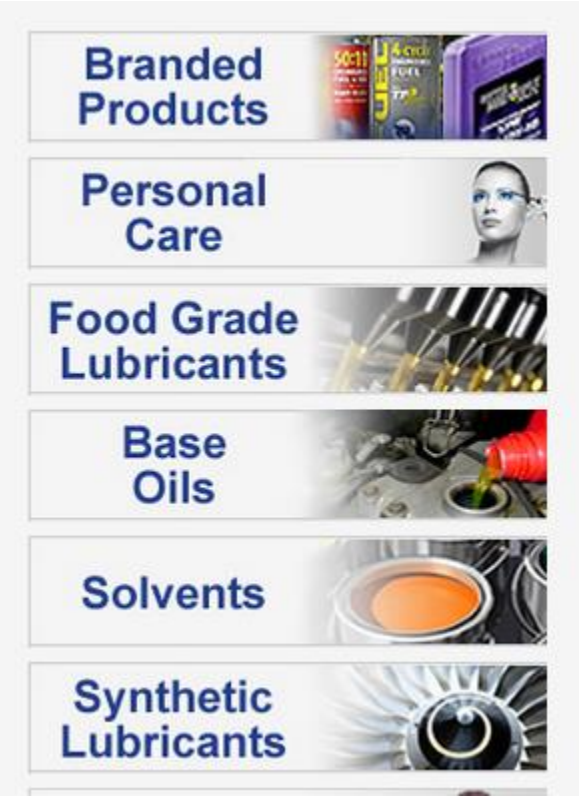
- Incident: An unplanned, undesired event that hinders completion of a task and may cause injury, illness, or property damage or some combination of all three in varying degrees from minor to catastrophic.
- Unplanned and undesired do not mean unable to prevent.

What Is An Accident?

Accident: Definition is often similar to incident, but supports the mindset that it could not have been prevented

November 2013

- EPA Case
- 68.81(d)(4) Incident reports did not include factors that contributed to the incident.
- In the 161 incident reports selected by EPA for review 133 had no or inadequate information under the factors contributed to the incident.
- $326,000 to settle nine violations of the Risk Management Program



Back to Root Cause

- May 2014
- $87,000 Shoulder strain
- Employee used inappropriate procedures

Another Root Cause

- Accident investigations only identify what happened; the underlying causes of the accident are not identified.
- If the root causes of an accident are not identified, only superficial solutions can be considered.

Tougher Root Cause

- July 2013
- “Employee was not attentive to the surroundings”
- Rack on the right
- Slid forks in
- Tilted forks up
- Heard a pop
- Stuck hand in to see if product damaged
- Rack back bar had popped loose trapping arm

Is the Root Cause Identified?

- Hit by Pulley
- Event Date: 07/27/2010
- Employee #1 was struck in the head by a metal pulley when the nylon sling to which it was connected broke.
- The pulley was being used to drag felled trees.
- When the rigging was put under tension, the nylon sling broke, releasing the pulley, hitting the employee in the head.

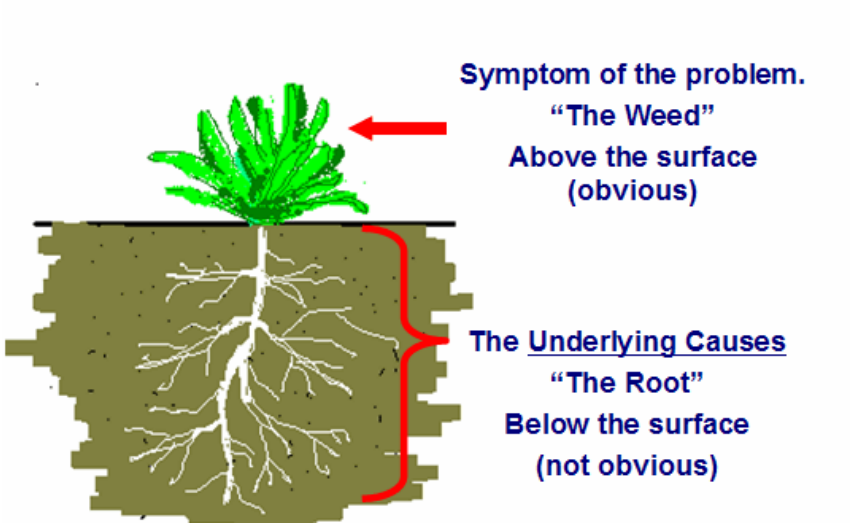
Training

- **Investigators need basic training;**
- **Ability to recognize "Root Cause";**
- **Technical Skills;**

  Understanding of task being performed at the time of the accident.

  Understanding of environmental influences on the accident.

  Investigator answers the six basic questions; who, what, when, where, why, and how



Training

- Training is necessary if you want good accident reports.
- Doing a good accident analysis is especially difficult.
- Without training, even management employees will not be able to fully evaluate all the contributing causes of a typical accident.

Second Key

- Secure an accident scene
- Numerous health exposures at plant

Plastic Plant Explosion

Boiler Explosion – What would you be concerned about?

Third Key - Timelines

- Set Timelines
- An incident report will be conducted with 24 hours of the date of the accident.
- An incident analysis will be completed within one week of the date of the accident

- “Too often the report is down by the Supv & employee asap so the employee can get on his/her way to get needed medical tx”

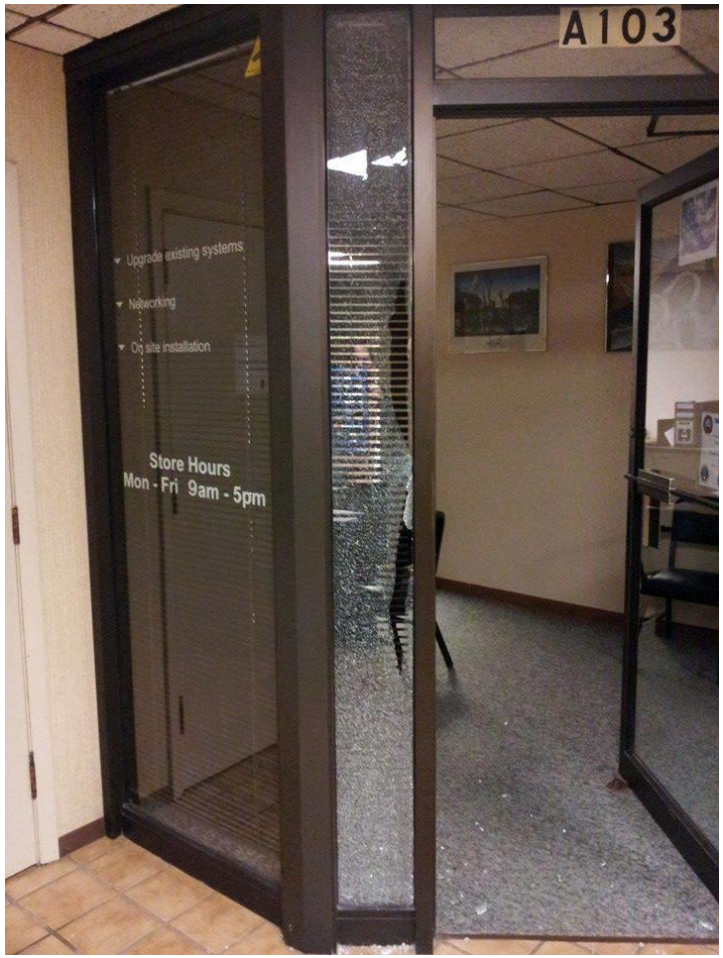
Fire in hospital from worker in hallway using torch setting papers on paper.
Sprinklers put fire out.

Begin Investigations Immediately

- It's crucial to collect evidence and interview witnesses as soon as possible because evidence will disappear and people will forget.

Who fills out the reports?

- “No one wants to take the time.”
- “They still think safety is the safety manager's job.”



Fourth Key – Take Photos

- Take photos or videos
- 2011, worker fell on the roof.
- Off 3 years.

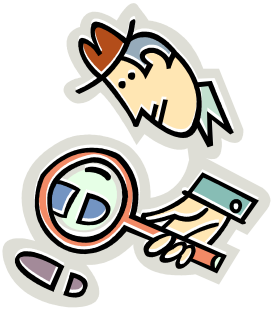
Take photos and video before digging

“Investigation Kit”

- Camera equipment
- First aid kit
- Video recorder
- Gloves
- Tape measure
- Large envelopes
- Caution tape
- Report forms
- Scissors
- Graph paper
- Scotch tape
- Sample containers with labels
- Personal protective equipment

Fact Finding

- Witnesses and physical evidence
- Employees/other witnesses
- Position of tools and equipment
- Equipment operation logs, charts, records
- Equipment identification numbers



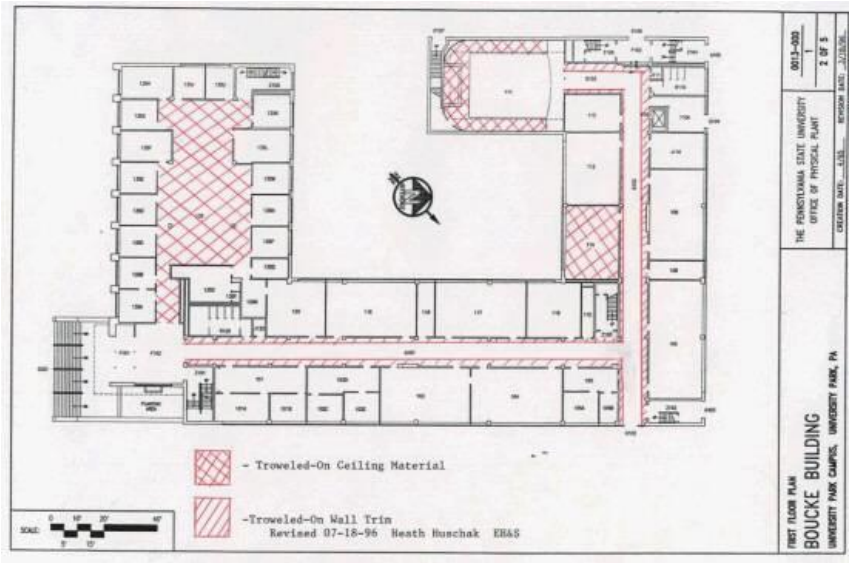
Fact Finding

- Take notes on environmental conditions, air quality
- Take samples
- Note housekeeping and general working environment
- Note floor or surface condition
- Take many pictures
- Draw the scene

Hazards?

Record the Facts

- **Record:**
  - Pre-accident conditions
  - Accident sequence
  - Post-accident conditions
- **Document victim location, witnesses, machinery, energy sources and other contributing factors.**
- **Even the most insignificant detail may be useful!**

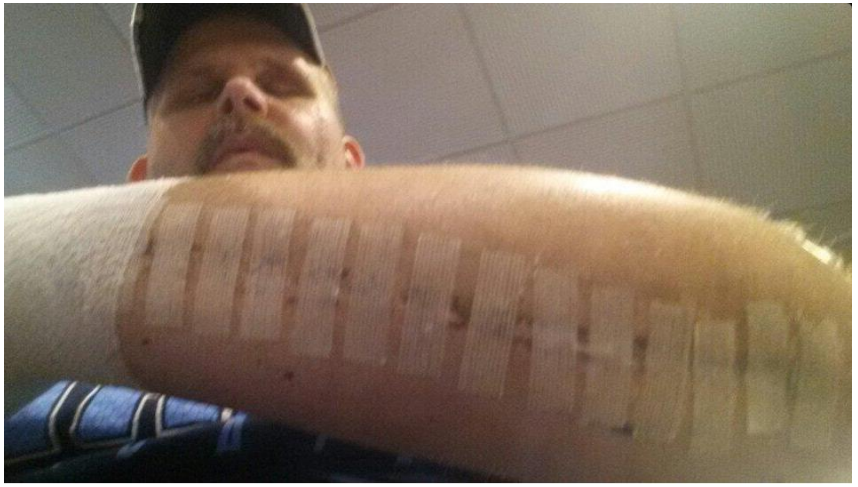


Record the Facts

- **Take different angles of the scene**

Fifth Key – Talk to the Injured

- Injured treated different from witnesses
- Try to get them to write out the incident in their own handwriting if possible.
- Or have two people witness.
- Get their sequences of events.
- Employees will be especially uncooperative if they perceive that investigations are being used as a technique to find a scapegoat.



Do not have the injured employee fill out reports beyond what is required by law

Active Listening

- Practice how to interview witnesses
- Passive
- Not enough why questions asked in the interviews

The Interview

- Take Notes!
- Ask open-ended questions
  - “What did you see?”
  - “What happened?”
- Do not make suggestions
- If the person is stumbling over a word or concept, do not help them out

After the person has provided their explanation, these type of questions can be used to clarify

“Where were you standing?”

“What time did it happen?”

Timeline

Chronology of the Accident*

Time	Power	Event
April 25		
0100	3200 MWt	Begin power descent to 700-1000 MWt as required for test.
1305	1600 MWt	Turbogenerator #7 disconnected. Power for auxiliaries (4 main cooling pumps, 2 feedwater pumps, etc.) was transferred to turbogenerator #8 (TG 8).
1400	1600 MWt	Emergency core cooling system disengaged as required by test procedure. Continued power reduction was delayed for 9 hours due to request from dispatch center to maintain full output of TG #8 to the grid. Operation with emergency core cooling system out of service was a violation of regulations.
2310	1600 to 30 MWt	Tests were resumed and the operator began reducing power. During the process, the operator disengaged the automatic control rod system (LAR) and failed to properly set "hold power" setpoint on backup power controller. As a result reactor power rapidly fell to 30 MWt before he could regain control.
April 26		
0100	200 MWt	Power stabilized at this level. Attempts to increase power to the desired 700-1000 MWt was difficult

Sixth Key – Interview All

- Interview all witnesses as soon as possible
- Separate Witnesses
- Take signed statements
- Too many miss the universe of people, because they went home or are on vacation.

Interview Witnesses

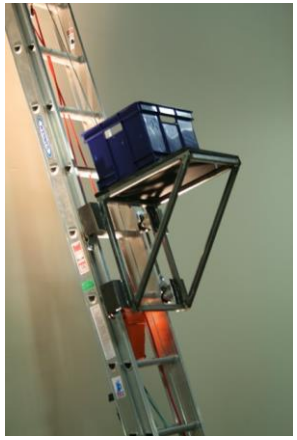
- Choose a private place to talk
- Ask open ended questions
- Interview promptly after the incident
- Ask some questions you know the answers to
- You can also write the statement of the injured or witness and have them initial or sign it.

Seventh Key – Keep Neutral

- It is advisable to have the supervisor responsible for only the incident report and not the accident analysis
- The immediate supervisor of the injured may be part of the reason why the accident happened.
- The supervisor may, therefore, be unwilling to identify deficiencies in training, supervision, discipline, etc., for which he or she is responsible.

Eighth Key – Get Help?

- Consider a professional investigator
- Seriousness or circumstances of the accident create the potential for litigation.
- A very high level of knowledge and experience is necessary to adequately prepare for legal contingencies.
- If legal action is possible, you don't want an amateur investigation.
- A poor investigation could cause more harm than good.



Litigation?

- If litigation is anticipated, an attorney should be consulted and an incident analysis conducted only if approved and directed by the attorney
- Attorney Client Privilege
- All reports go to the attorney.

Combustible Dust Explosion

Preserve Records

- Date Stamp (Bate Stamp)
- Equipment manuals
- Discipline records
- Inspection records
- Training records
- Previous related incidents

Ninth Key

- Fix it.
- “When they do write a corrective action they don't follow it and get it corrected.”
- That is why they continue to have repeated accidents.

Example

- Walking along a metal grate, a worker slipped on the loose grating and fell 31 feet.
- Several people knew about the grate being loose and never reported it.
- There were no mechanisms to report it as damaged property.
- If it was reported as damaged property, the accident would have never happened.

Tenth Key – Notify Family

- September 2013
- NBC says he took off his harness to reach a confined space.
- His widow says she found out about it on Facebook with people making fun of him, saying why was he working in a sewer?
- She said he was working because the company told him to work.

How do you let the family know?

Write The Report

Answer the following in the report:

- When and where did the accident happen?
- What was the sequence of events?
- Who was involved?
- What injuries occurred or what equipment was damaged?
- How were the employees injured?

Poor Investigations

- “Makes it easier to blame the victim when the investigation is not competently done”

The Key

- Do you see how linking property damage to workplace injuries can encourage more incident reporting, investigation, and corrective action?

Audit the Facility

- When your periodic environmental audits show less and less property damage, you can be assured you're preventing injuries.
- It can be more reliable and valid metric for safety improvement than the standard injury and illness rates
- Repairing environmental damage also should be tracked as an ongoing measure of safety improvement.

Why Investigate?

- Property damage or presence of unsafe conditions is a physical trace of an incident, and the precursor of an injury.
- These hazards and damages need to be investigated and repaired.
- Behavior that contributes to a unsafe conditions and property-damage incidents is not thoughtless and careless, but failing to report such damage and make repairs shows a lack of "active caring."

Results of an accident investigation

- **The primary purpose of accident investigations is to prevent future occurrences.**
- For example, the “Job Hazard Analysis” should be revised and employees retrained
- Recommended preventive actions should make it very difficult, if not impossible, for the incident to recur.
- The investigative report should list the ways to "foolproof" the condition or activity.

Fix the System . . Not the Blame!

The Situation (injury, illness, other losses)

- Employee in hospital
- Lost production
- Lawsuits

1. Injury Event

Amputation of 3 fingers and thumb of right hand from power press

2. Sequence of Events

1. Maintenance man removes guard .
2. Someone calls maintenance man away
3. Maintenance man fails to secure guard.
4. Part jams in press.
5. Employee fails to have press locked out.
6. Employee bypasses unsecured guard.
7. Employee reaches into press.
8. Employee steps on unguarded foot pedal.
9. Press dies close on employee's hand.
10. First aid responder called/renders treatment.
11. Supervisor calls 911.
12. Rescue squad provides treatment.
13. Employee transported to hospital.

3. Injury Analysis– Direct Cause

Amputation 3 fingers and thumb when hand caught between dies of press

4. Event Analysis- Indirect Cause (act or condition)

- Unsecured guard
- Unguarded foot pedal
- Employee bypassed guard
- Employee didn't lockout press
- Press operator not trained
- Supervisor not conducting inspections
- Etc.

5. System Analysis-Root Cause (procedures, standards, controls)

- Inadequate hazard identification & control
- Inadequate new hire orientation
- No inspection policy
- Inadequate guarding/lockout program
- No accountability for safety
- Etc.

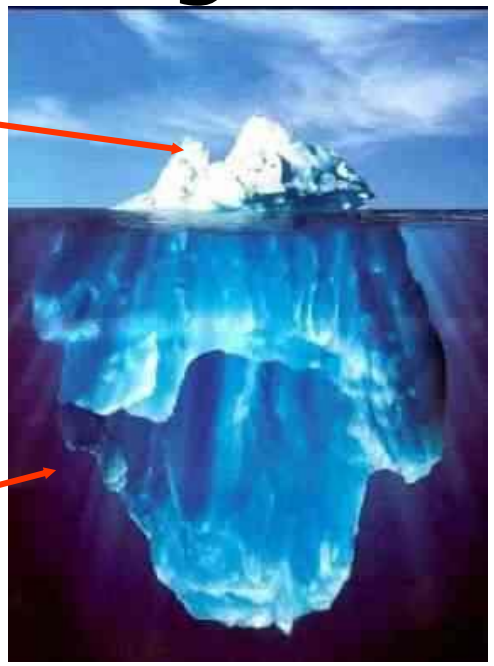
"The Tip of the Iceberg"

Accidents

Accidents or injuries are the tip of the iceberg of hazards

Investigate near misses since they are potential "accidents in progress"

Near Misses



Heinrich

- 300-29-1 ratio between near-miss incidents, minor injuries, and major injuries
- 88 percent of all near misses and workplace injuries resulted from unsafe acts.

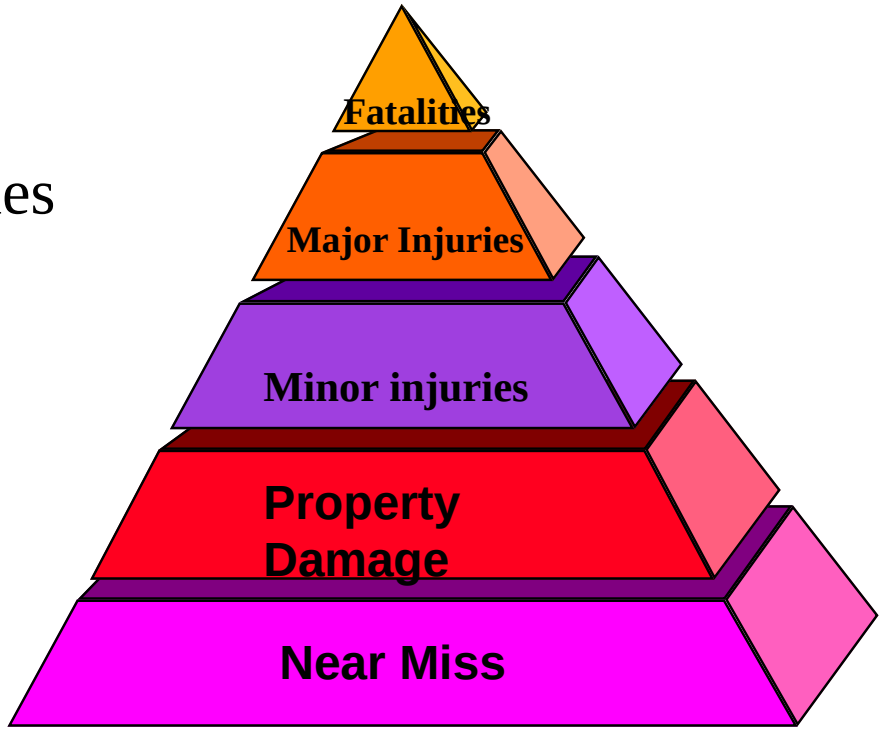
H.W. Heinrich (1931)

Frank Bird

- Analyzed 1,753,498 "accidents" reported by 297 companies.
- These companies employed a total of 1,750,000 employees who worked more than three-billion hours during the exposure period analyzed.

The New Ratio

For every 600 near misses
There will be 30 property damage incidents
10 minor injuries and
One major injury
The ratio of major injuries to fatalities depends widely on industry but is generally 30-40 major accidents to one fatal.



2014

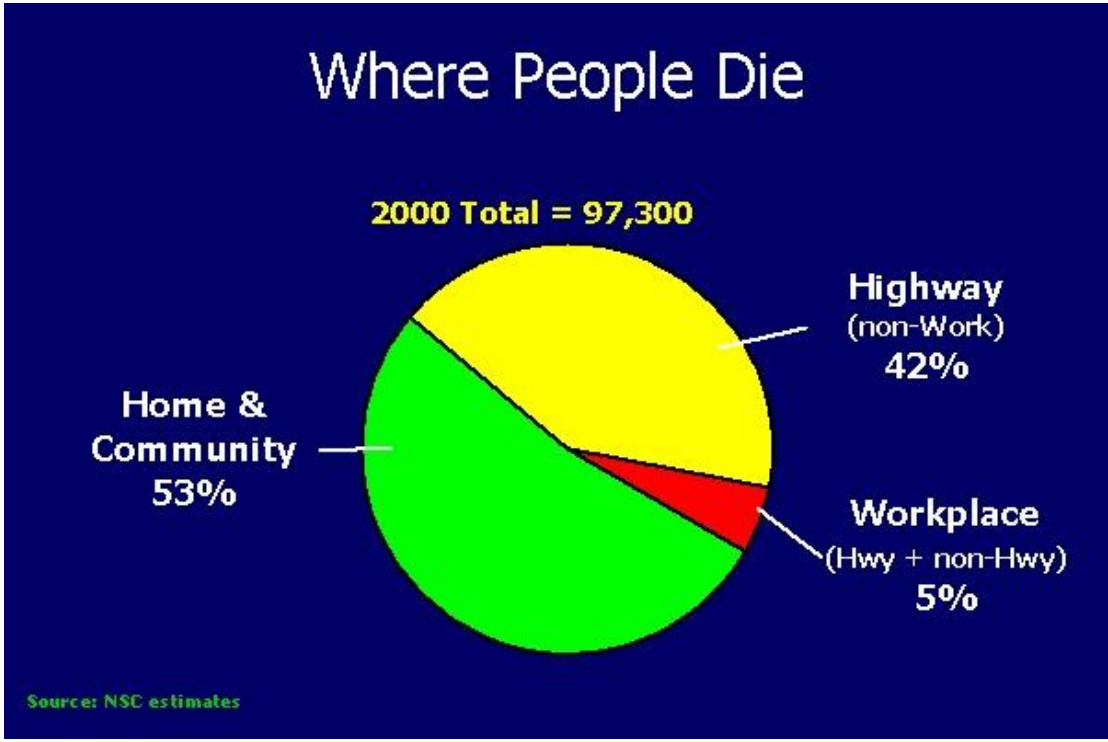
- The only thing Heinrich's Pyramid gets right (I think) is that dangerous work practices and deficient safety controls rarely cause a fatality every time, so the death that occurs is often the result of an activity that has been repeated, over and over.
- But the notion that that same activity will generate a bunch of minor injuries and a smaller group of more serious injuries is simply wrong

Timing

- Do we have to wait until a serious injury occurs before correcting environmental and behavioral conditions?

Problems

- Sometimes organizational influences deter near-miss reporting
- Slogans like "all injuries are preventable" don't help



Rewards don’t work

- Incentives could seem unfair because it's unlikely every employee has an equal chance to file a report.
- A person could readily fabricate a near-miss incident to receive a reward.

Solution

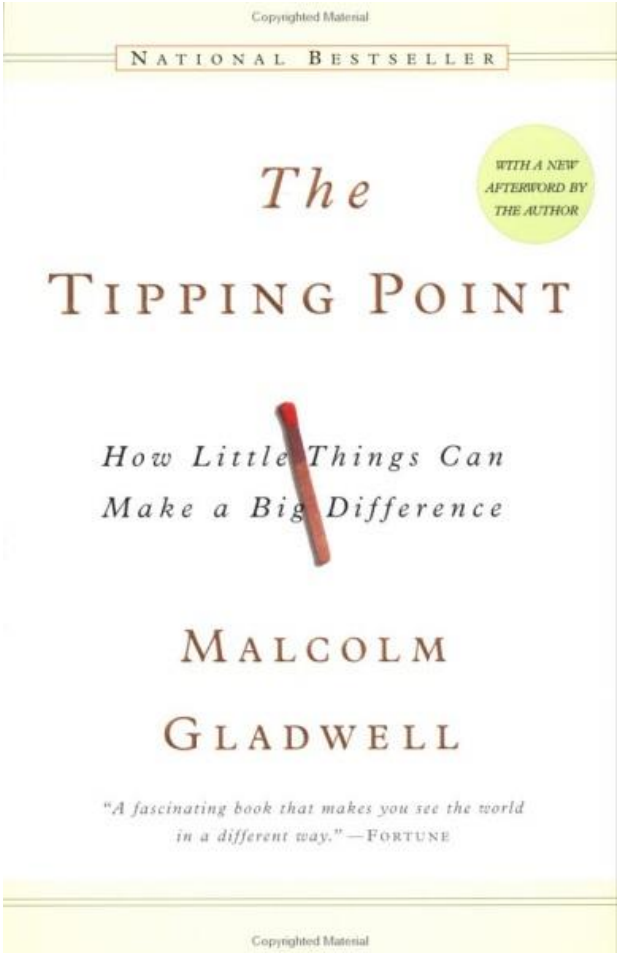
- Investigate incidents resulting in property damage--but no injuries.
- These are near misses.
- If damaged equipment or physical structures are not repaired, injuries will eventually follow.

Workers Know About

- Stockpiles of broken ladders
- Tools in disrepair, machine
- Guards that don't work properly
- Dents in equipment, walls, and vehicles.

Litter Begets Litter

- Planting litter in commercial settings led to more littering behavior
- Graffitti in NY leads to more graffitti
- “Property damage begets more property damage."



Quiz

- Who writes the accident description from the injured? _____
- Name 3 items in an accident investigation kit. _____, _____, _____
- 30 minor injuries lead to ____ major injuries
- Name at least one reason to investigate property damage? _____