
Lifting Hook
CAUTION
RADIATION AREA
AUTHORIZED PERSONNEL ONLY
NO. 8

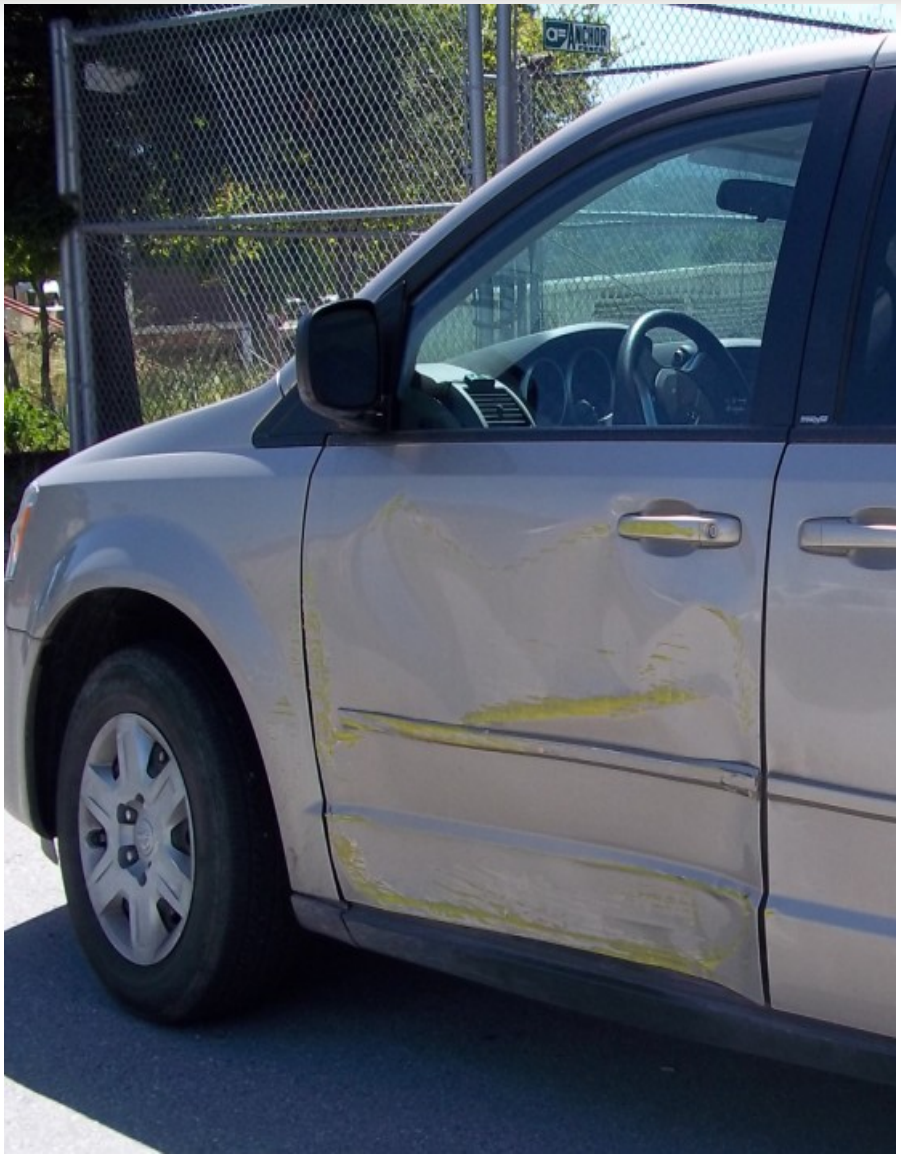
# Why We Are Here?

- Brief review of recent incidents, near misses and related causal factors
- Review the reasons mistakes are made
- Review methods in use to mitigate or prevent errors
- Participate in incident prevention brainstorming process

# Example: GSA Vehicle Accident

Employee initiated left turn at sector 30 and scrapped the yellow bollard. He had successfully made this left turn many times in the past.

Approximately 10% (40/368) of GSA fleet damaged in past 2 years at SLAC



# Vehicle Accident Details

- An employee was driving a GSA van going south on the south target road toward sector 30.
- He stop at sector 30 gate and showed the officer his badge
- He proceeded to move forward after approved by officer and make a left turn toward Counting House Road.
- He initiated his left turn and heard a loud scraping noise and determined that his vehicle was causing it so he brought the vehicle to stop.
- He exited the vehicle and he realized he had scrapped the entire side of the vehicle against the yellow bollard.

Candidate Causal Factors and Error Precursors:

- Repetitive action, monotony, overconfidence
- Distraction
- Inaccurate risk perception

# Example: Crane Near Miss

The crane operator raised the Klystron tube assembly before 1 of the 3 sling hooks was disconnected

We've had 2 hoisting and rigging incidents in the past year at SLAC.

# Crane Near Miss Details

- A two-man team was performing a routine lift following standard operating procedures to install a 5045 Klystron Tube Assembly onto the square tank
- The tube assembly is hoisted into position with use of a 10T wireless remote controlled bridge crane and a 3-leg wire rope sling
- With the tube stabilized onto the tank the supervisor lowered the sling fixture slightly to provide sufficient slack for the technician to the remove the sling hooks
- 2 hooks were released but repositioning was required to release the 3rd
- A miscommunication occurred resulting in the crane raising the wire rope sling prior to the release of the 3rd hook, lifting the unit with only one sling. Had the unit toppled, it could have caused extensive damage

Candidate Causal Factors and Error Precursors:

- Inadequate/unclear communication
- Time pressure
- Imprecise communication habits

# Example: Shock Incident

A worker was shocked when he contacted exposed copper wire on the control box on vendor-provided portable test equipment.

Second electric shock incident with portable test equipment in the past year

# Shock Incident Details

- Portable test equipment was set up and in use in the KTL
- When manipulating the control box, worker 1 felt a shock and called out to a nearby worker 2.
- Worker 2 assisted and had worker 1 report to the medical department.
- The test equipment was deenergized and secured by worker 2.
- Upon inspection the control box was found to have inadequate insulation (small length of exposed copper wire…see photo) on both 120 VAC power leads at the point of connection to the device.

Candidate Causal Factors and Error Precursors:

- Test equipment not inspected (or inadequate inspection) by worker prior to use
- Complacency or overconfidence
- Short cut mentality
- Unclear procedures or guidance (regarding inspection and EEIP requirements)

# Example: Ergonomic Injuries

Multiple injuries and first aid cases related to poor ergonomics in office environments

Have also seen multiple strain injuries and first aid cases from incidents involving non- office workers

11 Recordable cases so far in FY'11

# Ergonomic-Related Injuries

## Summary of recent recordable injuries (11/10 to present)

### Non-office

Rigger felt back pain when lifting a 4 by 4 board (Ops)

Café worker felt lower back pain while working at grill (Ops)

Welder strained knee while working and moving materiel (Accel)

Worker felt leg pain when positioning a pump (SSRL)

Worker felt back pain after lifting several small items (SSRL)

Worker felt pain after removing cables from overhead tray (Accel)

### Office

Arm pain when performing prolonged mousing (Ops)

Worker felt pain after performing standard office duties (Ops)

Pain in neck and upper back after prolonged computer use (Accel)

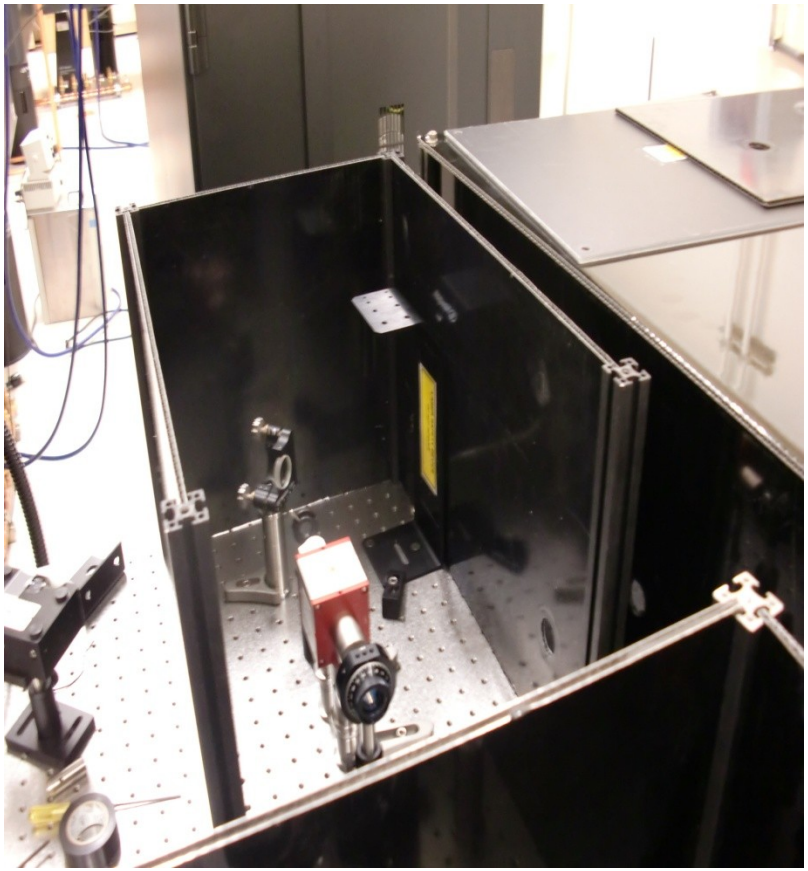
Wrist, forearm, and hand pain from using key board and mouse (Accel)

Shoulder and left index finger pain from computer-related work (Accel)

# Example: Laser System Near Miss

Laser operator noticed red laser beam on shirt sleeve while moving an unused optic while the lab was in Class 1 laser operations mode (i.e., beam should have been totally enclosed)

Second laser event in past 2 years



# Laser System Near Miss Details

- Day prior to incident, a safety shutter was removed from shutter enclosure during a configuration change to accommodate a new optic being installed
- Laser system was then operated for an extended period in Class 4 mode (accessible laser beams; PPE required; may open shutter and laser covers) with the safety shutter not relocated to restore its functionality. Two covers for shutter enclosure are also removed during this period.
- At end of day the laser system is put to Class 1 operation mode, a common practice for this lab, but without the safety shutter and 2 covers required in Class 1 mode
- Following morning, a laser operator enters to work in Class 1 mode without PPE (not required for this mode, but without noting the missing shutter/cover) when event occurs.

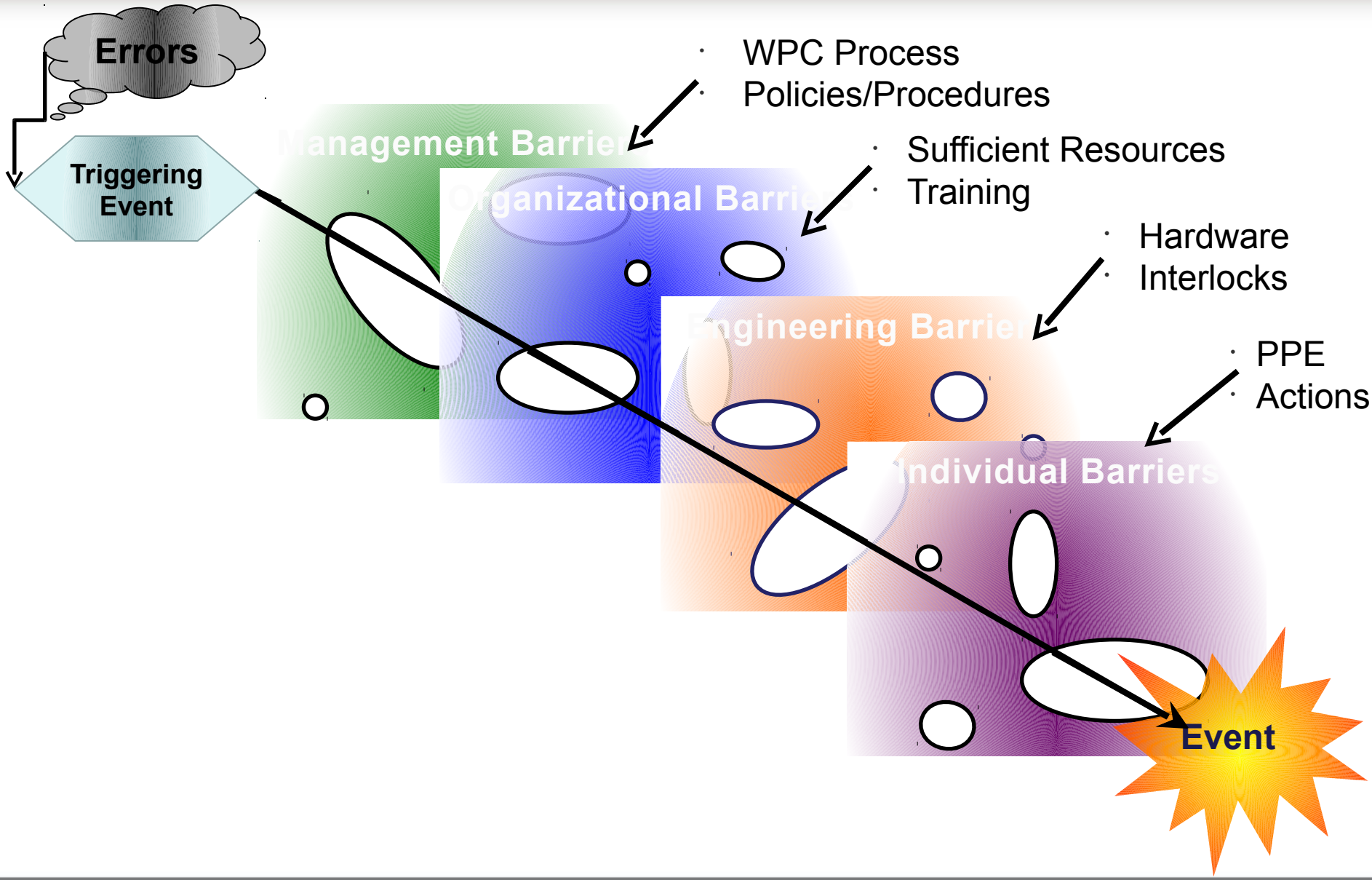
Candidate Causal Factors and Error Precursors:

- Inadequate work planning and controls -- re. hazard analysis and controls required for safety configuration change
- Inadequate safety configuration control for laser safety shutter

No one **purposely** and **deliberately** sets out to have an accident/incident

**So why do they occur?**

# Anatomy of an Incident



# Integrated Safety & Environmental Management System (ISEMS)

# Review/Discuss Applicable Incidents

Notes to presenter:

- Look at the 5 example incidents and near misses from the beginning of this briefing
- Pick 1-2 that would be applicable to your organization
- Discussion:
  - What similar factors exist in your organization that can or have resulted in a triggering event?
  - What existing barriers does your organization deploy that may or have failed to prevent an event?
  - What could be done to reduce the probability and severity of a similar event from occurring in your organization?

# Summary

- Incidents occur when there is a combination Error + Poor Defenses
- Prevention
  - Use ISEMS & improve attention to errors
  - Improve barriers…don't just rely on administrative or person-driven defenses

***Reduce Errors + Manage Defenses  No Events***