


*Pennsylvania Bureau of Deep  
Mine Safety*

Slips, Trips and Falls



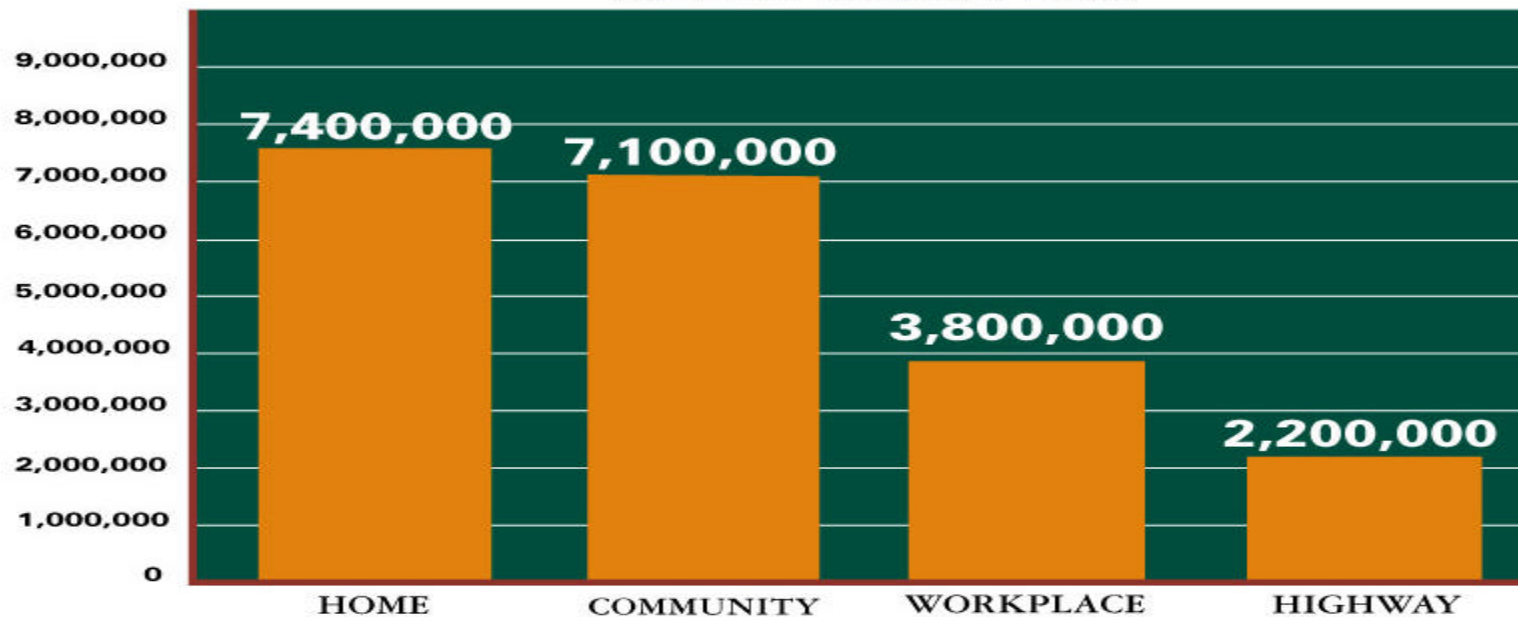
# *The Big Picture*



Where are you more likely to receive  
a disabling injury?

# The Big Picture

**DISABLING UNINTENTIONAL INJURIES  
UNITED STATES 1999**





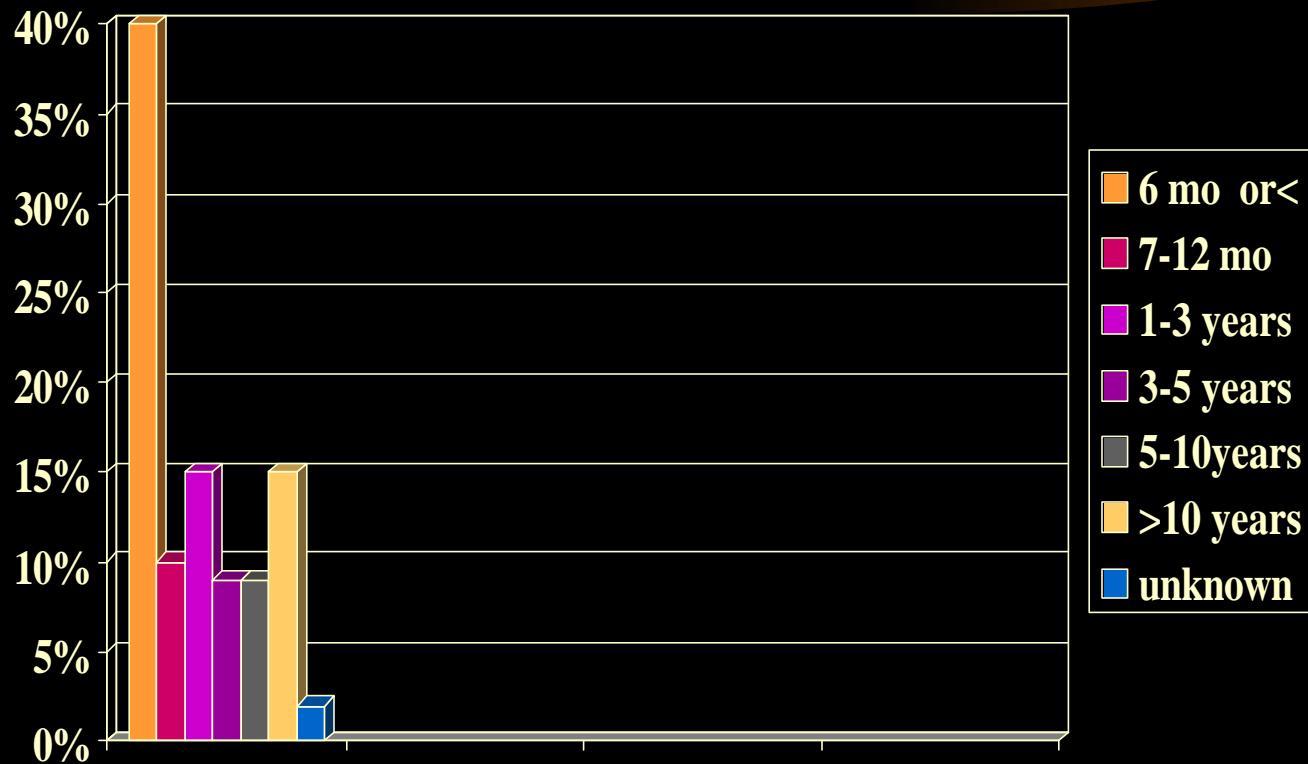
*What causes the most fatal  
accidents?*

# The Big Picture

## Total Fatal Accidents Nationwide

- Motor Vehicle 41,200
- ***Falls*** ***16,600***
- Poisoning 8,400
- Drowning 4,100
- Fires and Burns 3,700
  
- Top 5 since 1970

# Length of employment



NIOSH 1980-1994

# *Pennsylvania Mining slip trip and fall accidents*

1989-1999



Bituminous	2028 total	1720 lost time
Anthracite	539 total	451 lost time
Industrial Minerals	133 total	101 lost time

# Top 10 Bituminous Slip, Trip and Fall Accidents



- 960 – Mine Floor
- 194 – Ground
- 142 – Mining Machines/Mobile Equip
- 119 – Wires/Metal covers/Pipes
- 101 – Floors (not underground)
- 80 - Broken Rock/Coal
- 60 - Wood/Concrete Blocks
- 58 - Conveyors
- 47 - Rails
- 46 - Steps



# Top 10 Anthracite



- 224 – Ground
- 65 - Mobile Equip
- 57 – Floor (not underground)
- 31 - Steps
- 21 – Metal Covers/Guards
- 17 - Ladders
- 17 - Pipes/Wires
- 16 – Mine Floor
- 15 – Broken Rock
- 10 - Scaffolds

# Top 10 Industrial Minerals



- 34 – Ground
- 24 – Floor (not underground)
- 22 – Misc.
- 13 – Mine Floor
- 12 – Metal Covers/Pipe
- 10 – Steps
- 7 – Broken Rock
- 5 – Mobile Equip
- 4 – Conveyors
- 2 - Ladders

# Develop a fall prevention plan

1. Address all aspects of hazards
2. Identify all Fall hazards
3. Train employees to recognize Fall hazards
4. Perform a job hazard analysis for each task
5. Provide appropriate equipment
6. Conduct safety inspections at the site
7. Encourage employee participation

# Types of Falls



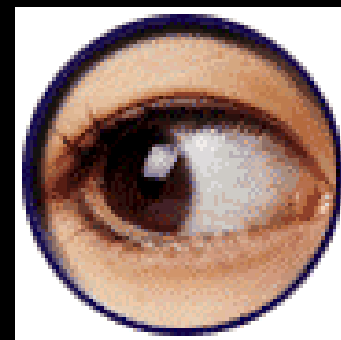
Same Level

Elevated

# Fall Prevention

**“The eyes have it”**

Look where you're going



# Fall Prevention

## Traction

Wear the correct shoes for the job.

Provide shoe cleaning devices

Slip resistance walk surfaces

Ice melt or sand

# Steps and Inclined Walkways

- Substantial hand rails
- Slip resistant treads
- Corrosion
- Lighting



# Walkways

- Identify
- Keep clear of obstructions
- Clean up spills
- Provide good lighting



# *Equipment*



## **While Climbing on and off**

- Ladders
- Handrails
- Steps
- Shoe cleaner

# Ladders

- Long enough to reach
- Non-conductive side rails
- Stable level surfaces
- 3 Feet above the upper landing
- Height-to-base ratio 4 feet to 1 foot
- Assistance during ascent or decent
- Never lean more than 12 inches beyond side rail
- Carry tools in a tool belt
- Three points of contact

# Passive Fall Protection



Passive systems protect workers without additional action on their own behalf.

- Guardrails
- Railings
- Safety nets
- Hole Covers

# Active System



Requires worker to take positive action to prevent falls

- Full body harness – distributes fall forces to minimize injury.
- Lanyard – shock absorbing.
- Attached to a proper anchorage point – sufficient to withstand 5000 pounds or two times the load expected.

# Human Factors

- Eye sight
- Age
- Balance
- Medications, Alcohol, Drug effects

# Recap



- Make a Plan
- Involve Employees
- Clear Walkways
- Clean up Spills
- Provide Traction
- Passive / Active Fall Protection
- Eliminate the Fall Hazard