Leveraging on Safety in our Flour Milling Industry

Improving efficiency through Occupational Safety and Health

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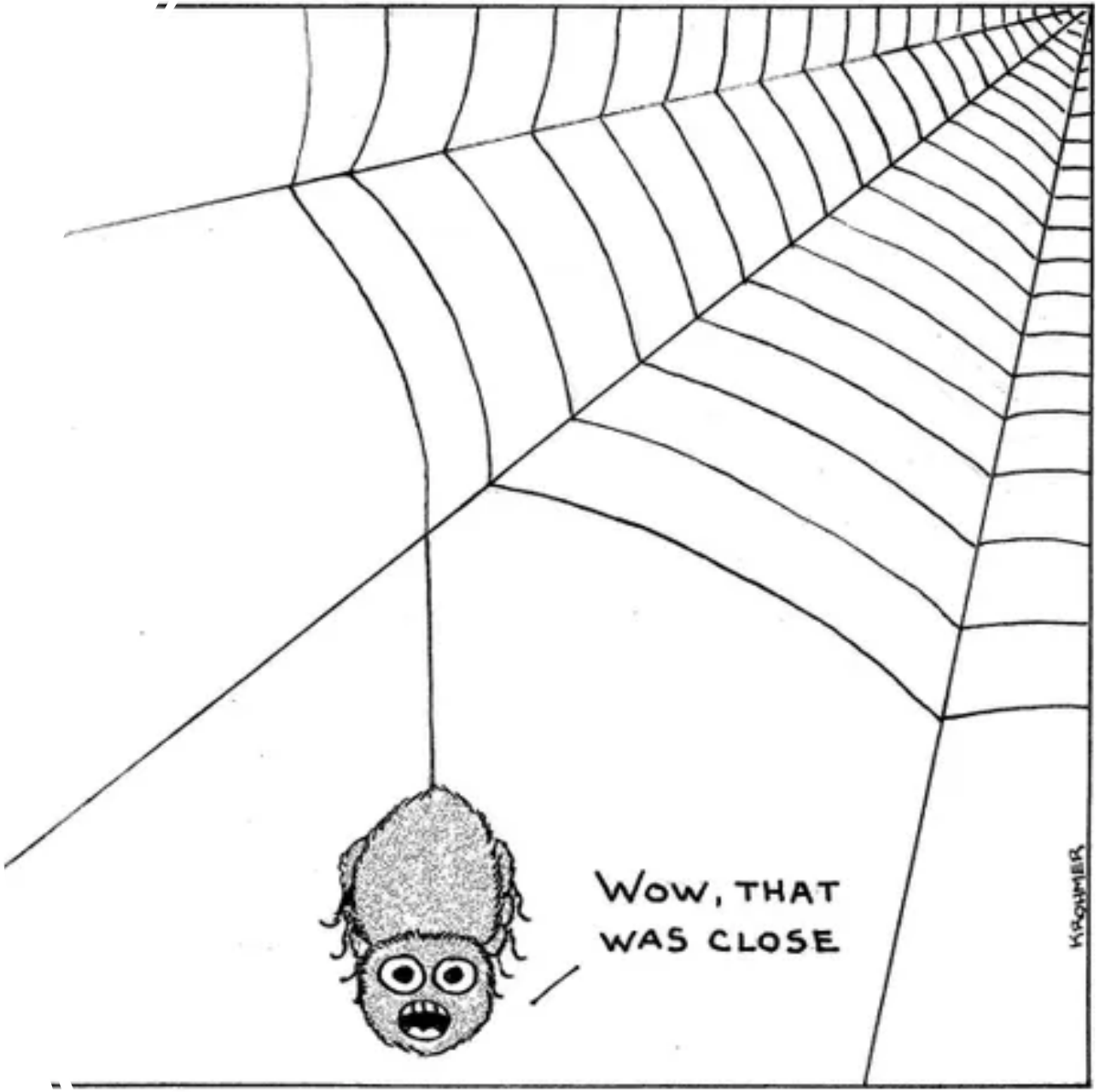
Occupational Safety and Health (OSH)

The purpose of OSH programs is to create a safe and a healthy work environment.

Presentation Overview

- Introduction to **safety standards and risk management** in the flour milling industry.
- How safety programs help reduce accidents and improve employee health.
- Using safety practices to boost worker engagement, productivity, and create a safer work environment.



ALWAYS WEAR A SAFETY HARNESS

Understanding OSH Standards & Risk Management

- **OSH Standards:** These are safety rules and guidelines to create a safer workplace in the flour milling industry.
- **Key Standards:** Important regulations like ISO 45001 (Health & Safety Management) and ATEX (Explosive Atmospheres) help protect workers and prevent incidents like dust explosions.
- **Risk Assessment:** A process to identify hazards (e.g., dust, machinery), assess the level of risk (high/medium/low), and take action to reduce or eliminate these risks.
- **Practical Example:** For example, assessing the risk of a dust explosion and implementing controls to reduce it, such as better housekeeping and dust collection systems.

OSH Standards in Flour Milling

Pleas check out the following organizations providing critical safety standards that help us manage key risks such as fires, dust explosions, machinery safety, and electrical hazards in our mills.

- **NFPA – The National Fire Protection Association:**
  - Prevention of Fires and Dust Explosions and Electrical Safety.
- **OSHA – The Occupational Safety and Health Administration**:
  - Grain Handling Facilities Standard, Lockout/Tagout (LOTO) Procedures, and Machine Guarding Standards.
- **IEC – International Electrotechnical Commission:**
  - Global standards for electrical safety in hazardous environments
- **ISO – The International Standard Organization:**
  - ISO 45001 (Occupational Health and Safety Management Systems), ISO13849-1 (Safety of Machinery), ISO20345 (Safety Footwear), ISO 11228 (Ergonomics - Manual Handling)

Example - Bucket Elevator

- ✓ **ISO 45001 – Occupational Health and Safety Management**
  - Framework for managing safety risks, ensuring regular inspections, maintenance, and training of employees.
- ✓ **NFPA 61 – Prevention of Fires and Dust Explosions**
  - Focus on controlling ignition sources and managing dust accumulation around bucket elevators.

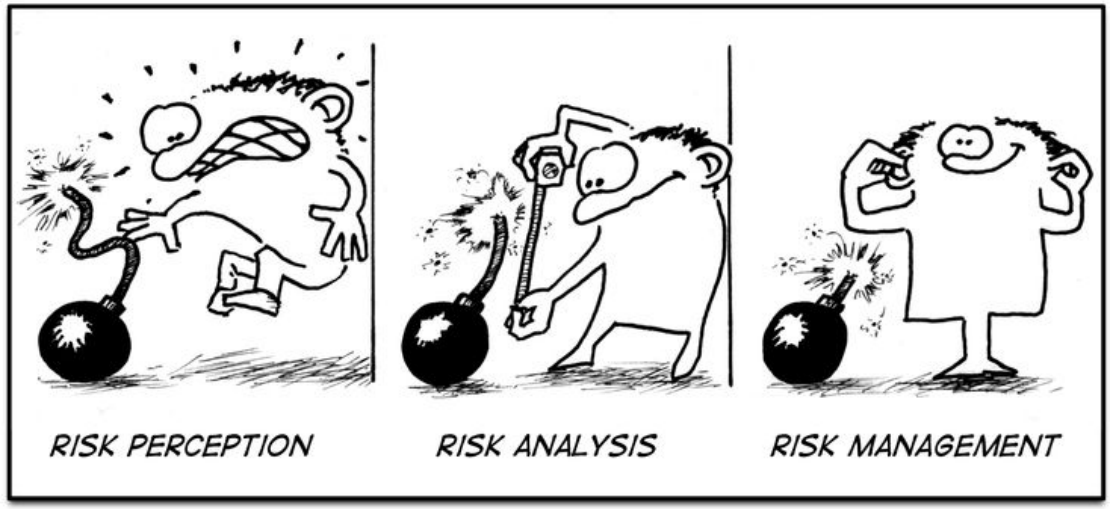
- ✓ **ISO 13849-1 – Safety of Machinery**
  - Ensures the safety of machinery to prevent malfunctions that could trigger fire or explosion. For example, rotation, alignment and temperature sensors.
- ✓ **NFPA 68 – Explosion Protection by Deflagration - Venting**
  - Provides guidelines for installing deflagration venting systems in bucket elevators to control and minimize the impact of dust explosions.
- ✓ **ATEX Directive (94/9/EC) – Equipment for Explosive Atmospheres**
  - Ensures all electrical components and mechanical parts are safe for use in potentially explosive atmospheres (like flour mills).

Risk Assessments in Flour Milling

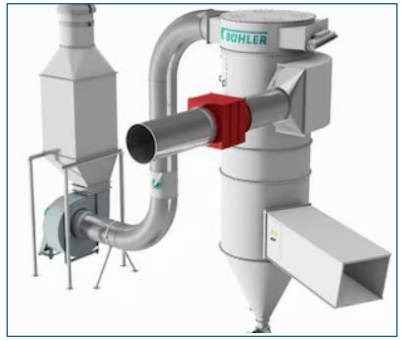
Risk assessments **identify hazards, assesses their risks**, and **implements control measures**.

Those are the common risks in the flour milling industry:

- **Dust Explosion**
- **Machine Guarding & Equipment Safety**
- **Electrical Equipment**
- **Ergonomics**
- **Chemical Health (Fumigation)**
- **Noise Exposure**
- **Slip, Trip and Fall**
- **Forklift Operation**
- **Process Safety Assessment for Critical Equipment**



Safety Measures in Flour Milling



Dust Control & Housekeeping for Explosion Prevention.

Electrical Safety Design and Preventive Maintenance.

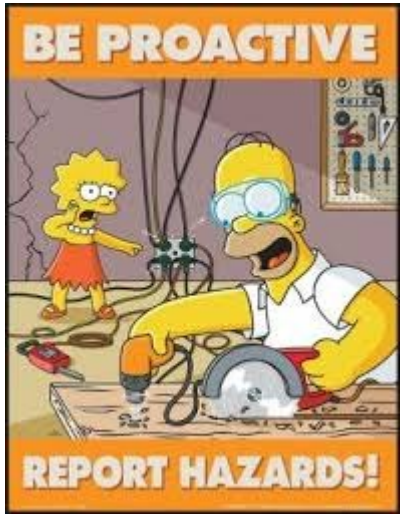
Equipment Guarding, LOTO & Machine Safety Devices.

Personal Protective Equipment (PPE).

Safety Measures in Flour Milling

Fumigation & Chemical Safety

Employee Training & Engagement



Near Miss & Hazard Reporting

Forklift Safety & Traffic Management

Recap...

OSH Standard

Risk Assessment

Safety Measure

OSH Standard:
NFPA 61 requires dust control measures.

Risk Assessment:
Evaluating areas prone to dust accumulation and potential ignition sources.

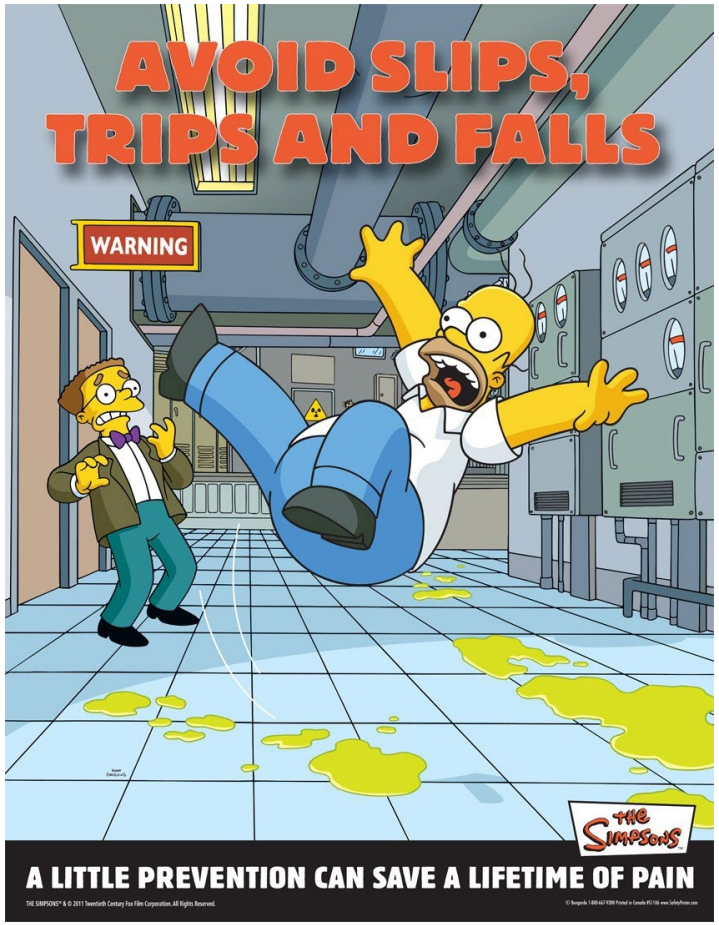
OSH Initiative:
Proper ventilation, dust collection systems, and housekeeping routines.

OSH Initiatives **Improve** Operational Efficiency and Productivity…

Reduced Workplace Injuries
Fewer accidents mean less downtime and lower healthcare costs, keeping operations running smoothly and improving overall productivity.

Minimized Equipment Downtime
Preventive maintenance and safety measures reduce equipment breakdowns, ensuring continuous and efficient production

Improved Employee Morale & Engagement
A safer workplace boosts employee morale, leading to higher job satisfaction, increased engagement, and greater productivity



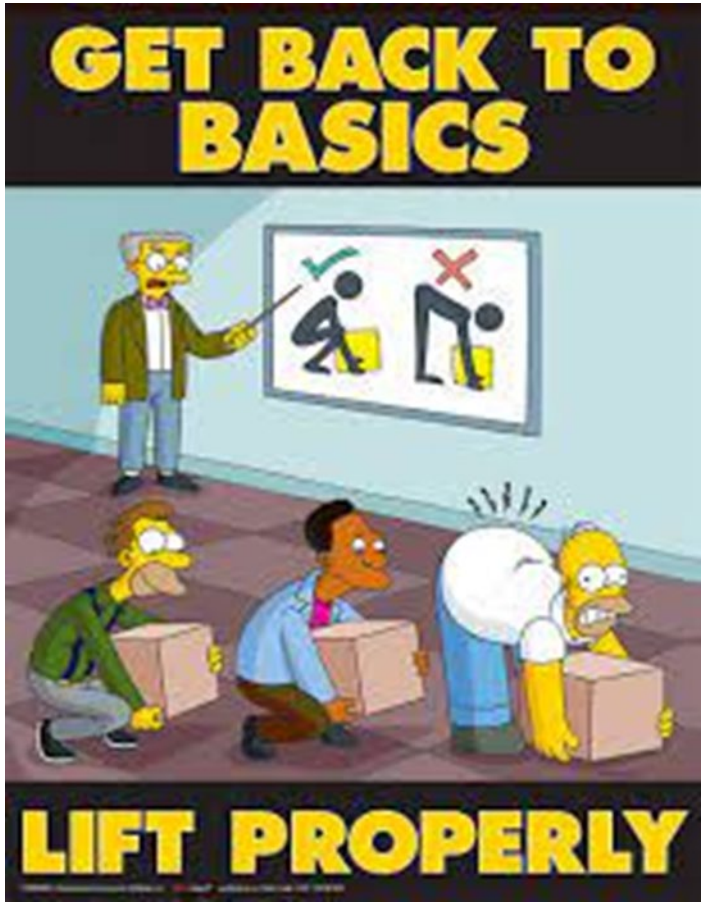
Enhanced Process Efficiency
By identifying and controlling hazards, OSH initiatives streamline workflows, reduce disruptions, and enhance process efficiency.

Cost Savings on Insurance & Compensation
Lower incident rates lead to fewer workers' compensation claims and reduced insurance premiums, directly impacting the bottom line

Positive Safety Culture
A strong safety culture promotes accountability and continuous improvement, driving productivity and maintaining operational standards.

The Business Case for Workplace Safety and Health Programs

- **Perception of Workplace Safety:** Workers who perceive better safety and health conditions at their workplaces report 5% higher productivity and fewer accidents. *(Syarnubi et al., 2018)*.
- **Training and Accident Reduction:** Increasing training hours in safety and work-related tasks is associated with a 1% increase in productivity and a reduction in workplace injury rates *(Kaminski, 2001)*.
- **Workplace Health Programs:** Implementing workplace health and safety programs led to a reduction in absenteeism and a productivity increase, saving $1392–$2592 per employee annually *(Boles et al., 2004)*.
- **Work Interruptions and Productivity Decline:** Workplace accidents and interruptions, such as equipment breakdowns, lead to a 2.4% reduction in worker productivity on the following day due to proficiency loss and negative emotions *(Cai et al., 2016)*.



Conclusion...

Understanding Relevant OSH Standards:
It is crucial to understand key OSH standards (ISO 45001, ATEX, and NFPA) to establish a safe work environment in the flour mill industry.

Comprehensive Risk Assessment:
Risk assessments help to identify hazards and determine their risk levels, enabling targeted interventions.

Reducing Risks through OSH Initiatives:
By implementing OSH initiatives aligned with applicable standards, we reduce risks, such as dust explosions and machinery hazards, while ensuring compliance.

Benefits to the Flour Industry:
Effective OSH Programs result in fewer accidents, less downtime, enhanced operational efficiency, and cost savings.
A safe work environment and strong safety culture contribute to more engaged employees, continuous improvement, and operational excellence.