



# **Safety Culture and Zero leak Commitment**

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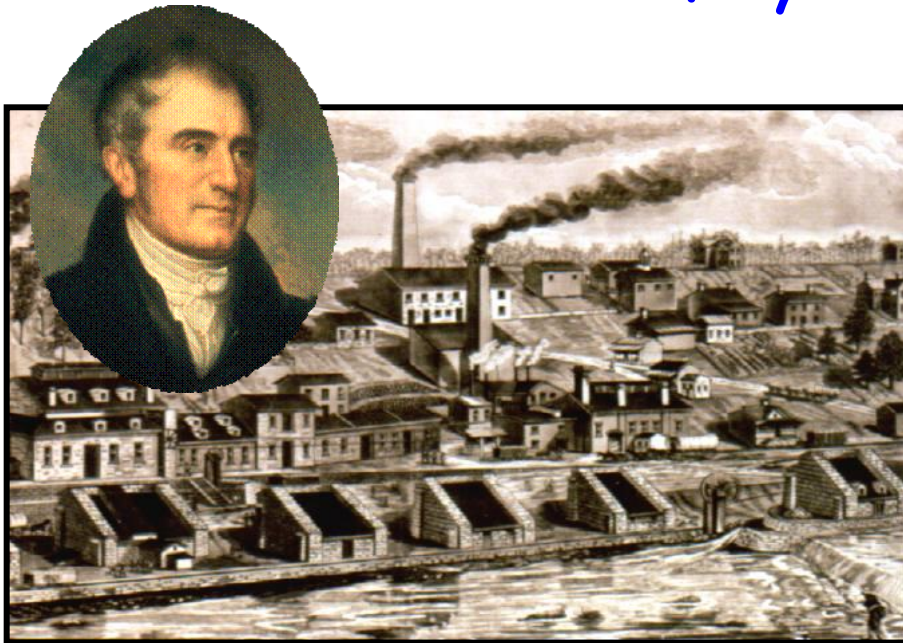
SHE Manager EMEA

# Topics

- **The origins of DuPont's Safety culture**
- **Cultural Elements of the Safety Management System**
- **Application to Process Safety**
- **Case study: Zero Leak / Absolute containment**

# DuPont Safety Culture - History

Safety has become part of our DNA



Powder mill operation began in 1802.

First safety rules established in 1811.

*"Safety is a line management responsibility. ... No employee may enter a new or rebuilt mill until a member of top management has personally operated it."*

*- E. I. du Pont*

Safety statistics began in 1912.

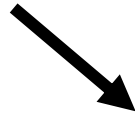
"Goal is Zero" established in 1990s.

Off-the-job safety program began in the 1950s.

Belief that all injuries are preventable developed in the 1940s.

# Cultural Elements of our Safety Management System

**Leadership is key**



Safety Management System

Leadership

- **Management commitment**
- Policies and principles
- Goals, objectives and plans
- Procedures and performance standards

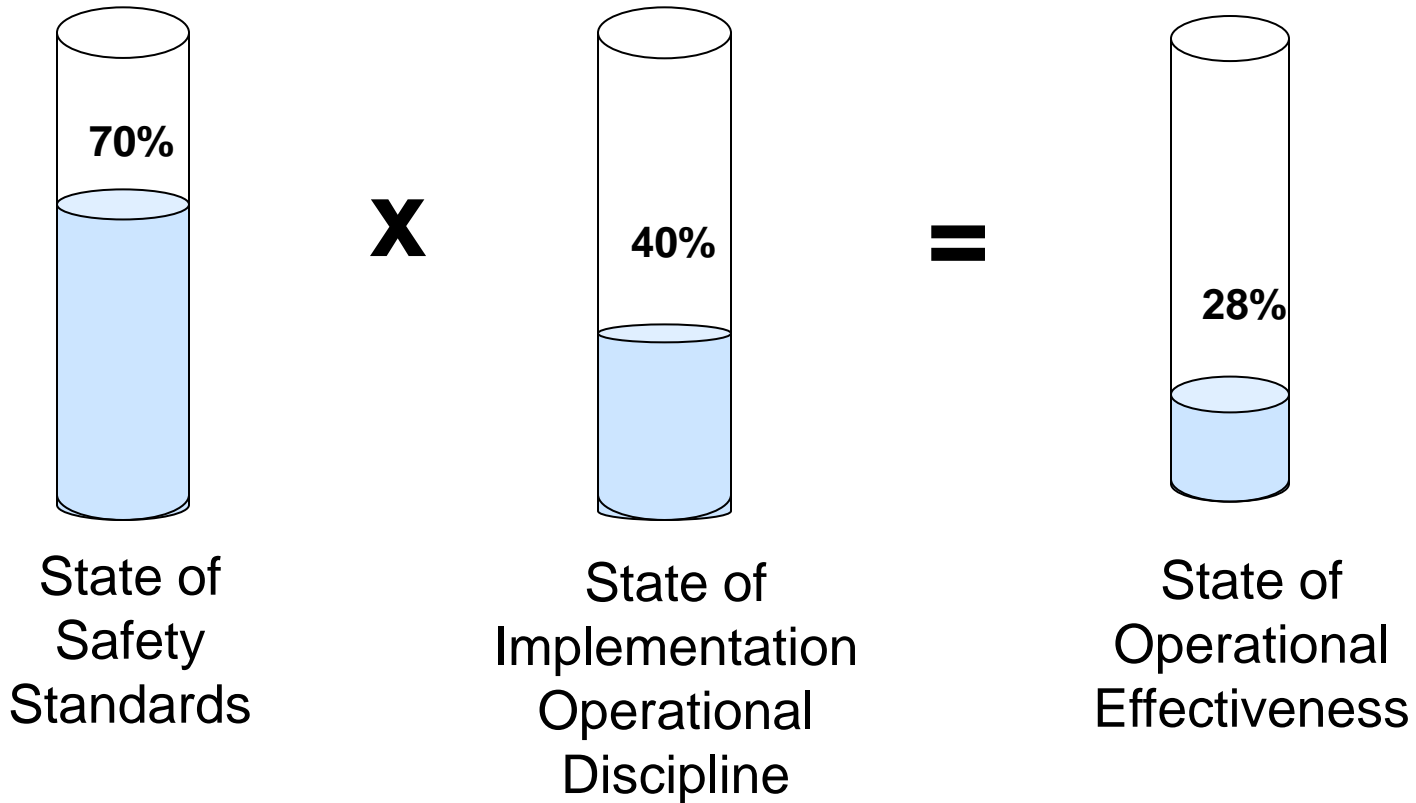
Structure

- Line management accountability and responsibility
- Safety personnel
- Integrated organization structure
- Motivation and awareness

Processes & Actions

- Incident investigation
- Audits and observations
- Effective communication
- Training and development

# Safety Performance is a function of the safety management systems and level of execution

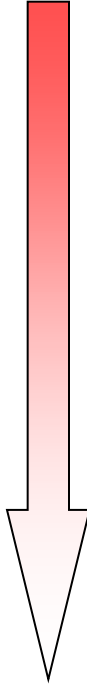


**SHE Organisation**

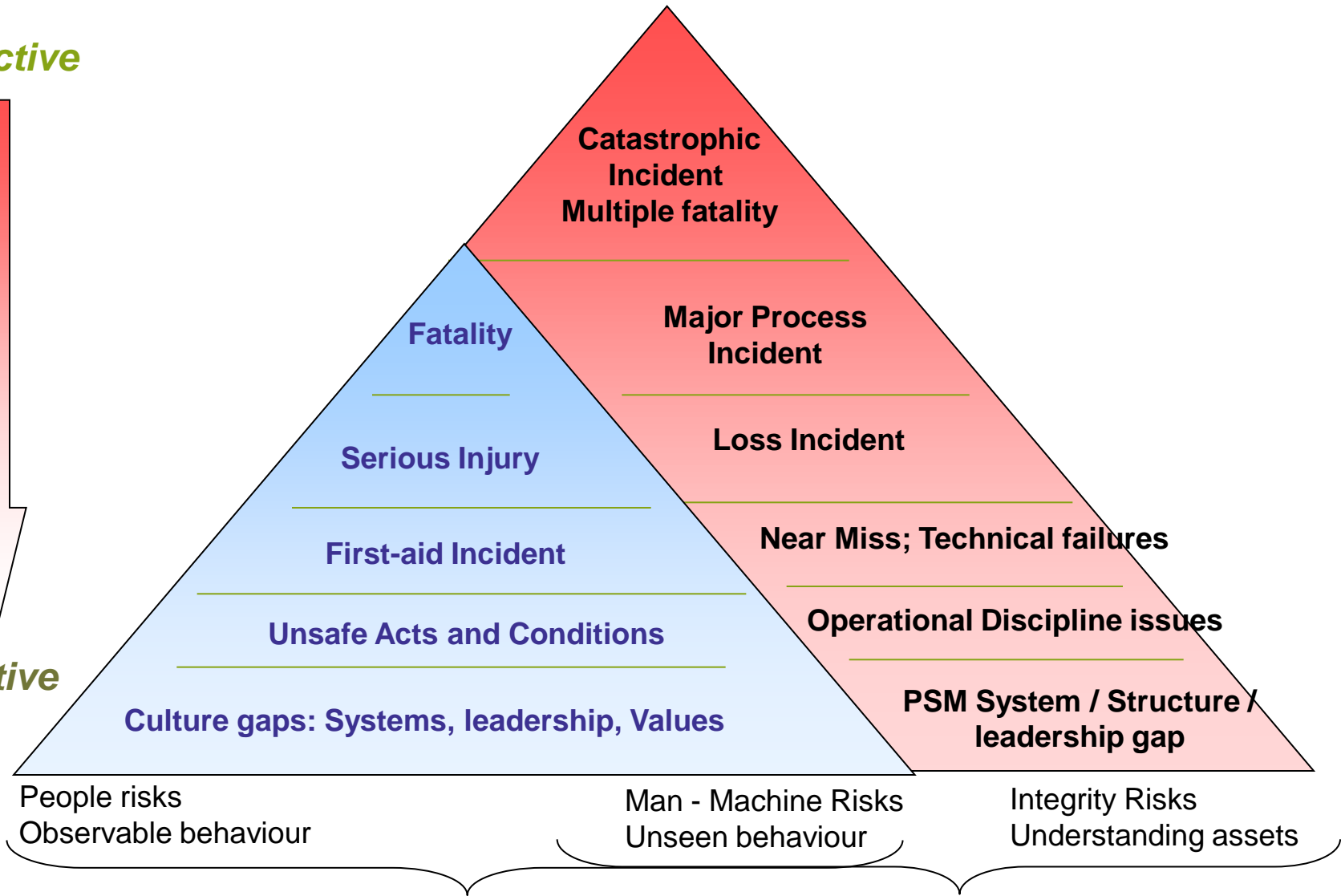
**Line Organisation**

# From people safety to process safety

*Reactive*



*Pro-active*



**Workplace Safety**

**Process Safety Management**

# Process Safety Management Model



# Examples of management processes supporting PSM Culture

## Leadership

Management commitment  
Policies and principles  
Goals, objectives and plans  
Procedures and performance standards

## Structure

Line Mgmt accountability & Responsibility  
Safety Personnel  
Integrated organisation structure  
Motivation and awareness

## Processes and Actions

Incident Investigation  
Audits & observations  
Effective communication  
Training & development

- Corporate PSM standard with many requirements beyond compliance
- Global PSM metrics defined and targets set for overdue reduction. Quarterly PSM metric reporting & review with Operations Directors.
- PSM results are part of performance management
- Ops director sponsors PSM competency team; Site managers lead PSM committees
- Dedicated expert resources (PSM, HTM, MIQA) at sites, supported by regional and global expert teams.
- Reporting, scoring and communication of PSM incidents and near misses. 450 incidents are reported yearly in EMEA (30 plants).
- Focused, dedicated 2<sup>nd</sup> party PSM audits with scoring.
- PSM and MIQA training focused on leadership, maintenance management, expert resources

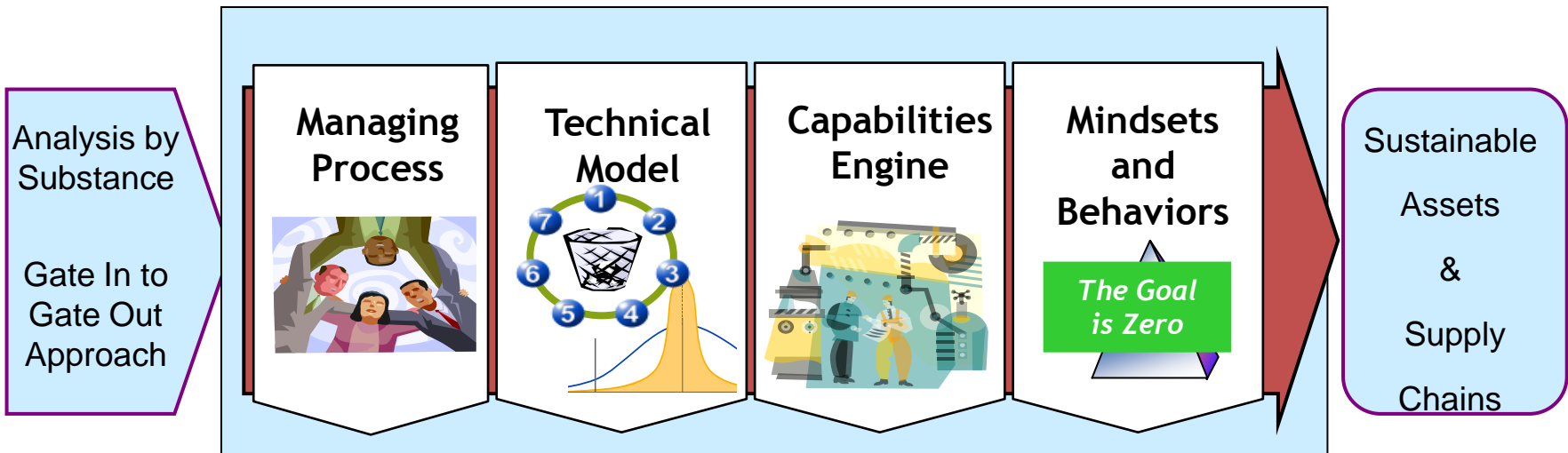
# Case: Zero Leak commitment in Crop Protection business

## Challenge

The site produces herbicides, fungicides and pesticides. Trace contamination was found in aquifer and downstream wells.

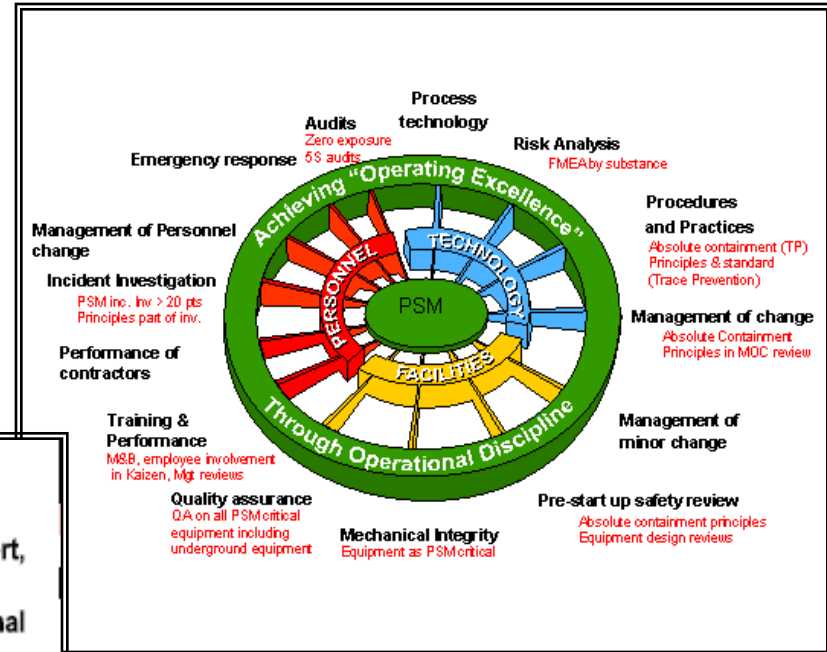
## Approach

- Developing “Zero leak / Absolute containment” culture
- Build on “DPS” ( DuPont Production System) to ensure full engagement and sustainability
- Maintain open and close cooperation with the surrounding community



# Leadership and Management Processes

- Development of Vision & Principles
- Integration in PSM Management system
- Audits



## « Absolute containment » : 10 principles

1. All leaks and spills can and must be prevented and emissions controlled (report, control, investigate, corrective/preventive actions).
2. Between any chemical and myself, between any chemical and the external environment, there are always at least **two lines of defense**.
3. **Unit operating practices** must be described as procedures and reviewed for continuous improvement. They must be standardized and communicated.
4. The use of water or solvents must be efficiently managed to minimize their consumption and waste generation.
5. All retention basins and dikes must be free of chemicals.
6. The transportation and storage of materials outside of the buildings must be environmentally secured.
7. All equipments and people leaving the unit or area must be free of product.
8. All leaks and spills must be contained as close as possible to the source.
9. All site modifications must be made such that they meet the « Absolute Containment » principles.
10. The installations must be controlled and maintained in accordance to the « Absolute Containment » principles.

# Technical Tools

- FMEA to identify and prioritise all possible failure modes (625 line items)
- Point Kaizen to address sources of leaks and ensure double barrier principle



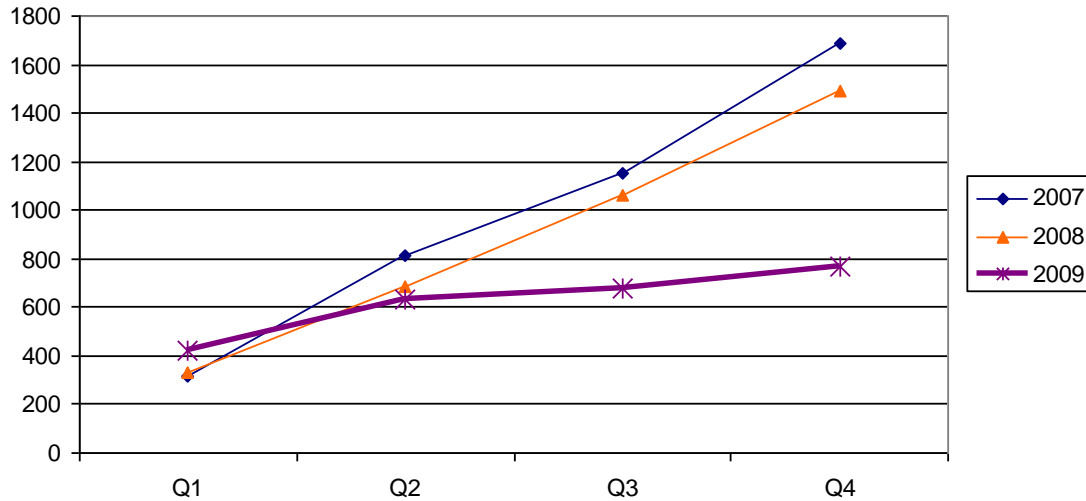
# Mindset & Behaviour

- Engagement of everyone
- Auditing processes
- Visual management

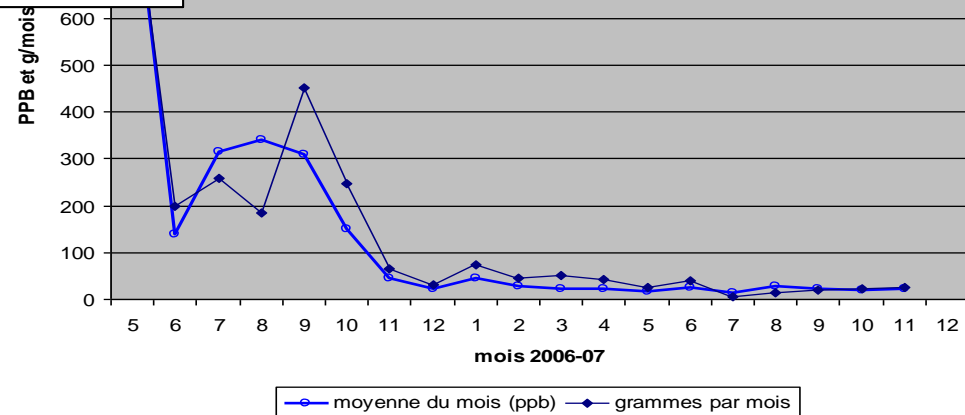


# Results

PSM points cumulative  
LOCs



Rejets e eaux superficielles





*The miracles of science™*