



PROCESS SAFETY MANAGEMENT

Process Safety is a blend of engineering and management skills focused on preventing catastrophic accidents, such as fire, explosions and toxic releases associated with the use of chemical products.

Process Safety Management (PSM) is an integral part of Responsible Care®, the concept that inspired the birth of the initiative. The goal of PSM is to ensure that no harm occurs as a result of process-related incidents at any facilities of the Chemistry Industry Association of Canada (CIAC) member-companies.

We can reduce the likelihood and consequences of process-related incidents by understanding and applying the principles of PSM. Unfortunately, PSM is not well understood by people outside the risk management and process engineering field, which is why information and education is so important.

Safety Culture
Leadership commitment
Compliance
Accountability
Stakeholder Outreach

Process Safety Information
Hazard Identification
Documentation
Risk Assessment

COMMITMENT

HAZARD
ASSESSMENT

PSM

CONTINUOUS
ENHANCEMENT

RISK
MANAGEMENT

Enhancement of process knowledge
Audits & corrective actions
Measurement & metrics

Training & performance
Review & design procedures
Human factors
Process risk management
Management of change
Process & equipment integrity

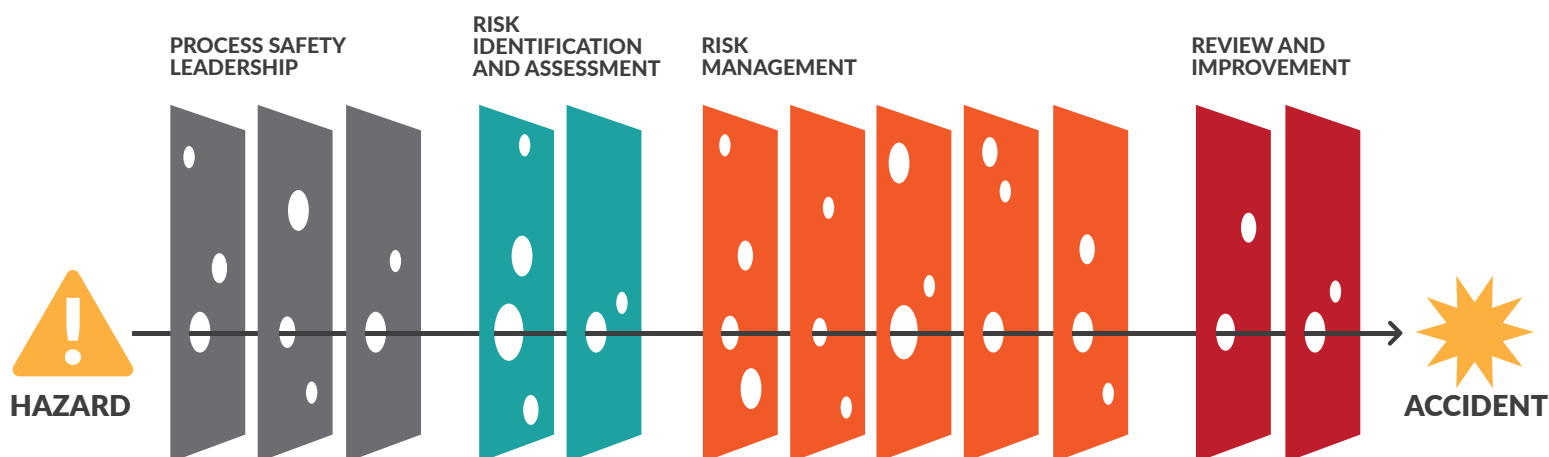
The Swiss Cheese Model

The Swiss Cheese Model, sometimes called the cumulative act effect, provides a visual interpretation of how a process failure occurs and is one of the key tools used in PSM.

In this model of accident causation, an organization's defenses against failure are shown as a series of layers, stacked side by side, represented as slices of cheese. The holes in the slices

represent weaknesses in individual parts of the system, continually varying in size and position across the slices.

A system produces failures when a hole in each slice momentarily aligns with the others, permitting a path of accident opportunity. A hazard passes through the holes in all the slices, leading to a failure.



CIAC Process Safety Network (PSN)

Focused on reducing the likelihood and consequences of process-related incidents, the role of the PSN is to:

- Increase the understanding and improve implementation of PSM in the Canadian chemistry sector.
- Promote awareness, understanding and use of PSM tools, services and techniques within CIAC member facilities.
- Collect and analyze incident and lessons learned reported annually.
- Facilitate sharing of PSM learnings and best practices.
- Monitor, influence and encourage development of public policy that incorporates sound PSM.

* Did you know?

Since 2000, CIAC's approach to process-safety management has led to a 50 per cent reduction in the number and severity of process-related incidents.

CIAC member-companies in action

Safety is first and foremost at any Responsible Care company. Whether it's biochemistry, petrochemistry or chlorine chemistry, chemical processes can involve high temperatures, high pressures, flammable and explosive mixtures, and other significant physical and chemical hazards.

To protect workers, the public, and the environment, CIAC member-companies must have comprehensive PSM systems in place. Any gaps in the company's management system must be assessed, and action plans developed and implemented to

raise the company's process safety to an acceptable level. A comprehensive examination of a company's PSM system is also a fundamental component of Responsible Care's triennial verification process.

Member-companies must also have an emergency plan in place with the capacity to respond to potential incidents involving their products and inform the communities of the risk and emergency procedures.

For more information:

If you have any questions about PSN or the chemical facilities in your community, we want to hear from you. Please email psn@canadianchemistry.ca



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