

# Process Safety Fundamentals

Implementation, Experiences & Initial Results

December 13, 2023

You are the authority to Intervene



Apply Double Isolation

Report Process Safety incidents and Near misses



Empty and De-energize before line breaking

Walk the Line



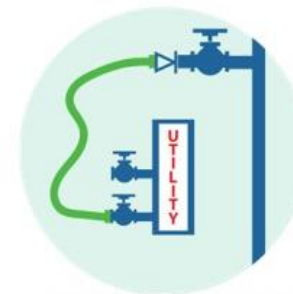
Verify leak tightness after maintenance work

Manage overrides of safety critical systems



Operate within safe limits

Monitor an open drain



Control utility systems connected to a process

Avoid w... single



Verify the condition of flexible hoses



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# Discussion Topics

1. LyondellBasell
2. Process Safety Fundamentals - EPSC
3. Process Safety Fundamentals – LyondellBasell
  - Introduction
  - Implementation
  - Experiences
4. Initial Results

1

LyondellBasell



# Who We Are



**Solutions for a  
better tomorrow**

Tagline

## Business strategy

Grow & Upgrade  
the Core

Build a Profitable Circular  
& Low Carbon Solutions  
Business

Step Up Performance  
& Culture

## Purpose

Creating solutions for everyday sustainable living

## Commitments

- Sustainability-focused innovation
- Ever-better performance
- Outside-in perspective
- Impactful collaboration

## Values

- We champion people
- We strive for excellence
- We shape the future

## Competencies

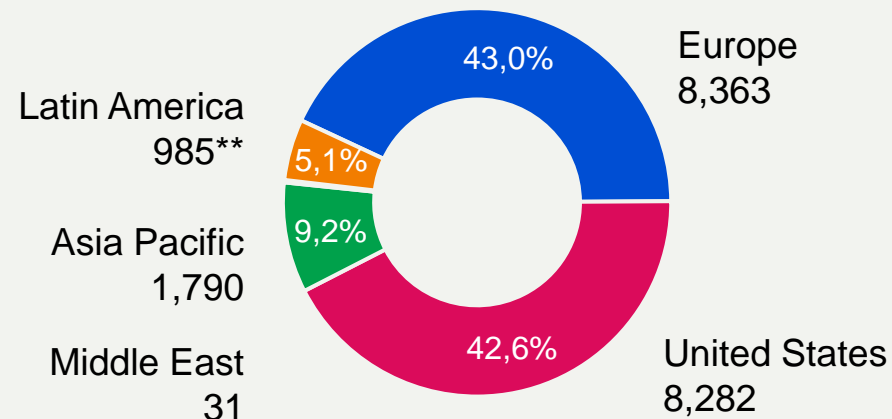
- Build Partnerships
- Deliver Results
- Drive Innovation
- Grow Capabilities
- Promote Inclusion

Our Goal**ZERO** mindset enables our strategy

# Who We Are

We are LyondellBasell (LYB) – a leader in the global chemical industry creating solutions for everyday sustainable living. Through advanced technology and focused investments, we are enabling a circular and low carbon economy. Across all we do, we aim to unlock value for our customers, investors and society. As one of the world’s largest producers of polymers and a leader in polyolefin technologies, we develop, manufacture and market high-quality and innovative products for applications ranging from sustainable transportation and food safety to clean water and quality healthcare. For more information, please visit [www.lyb.com](http://www.lyb.com) or follow @LyondellBasell on LinkedIn.

## Our 19,451 employees globally:\*



#1

largest producer of polyethylene (PE) and polypropylene (PP) in Europe

21

countries with manufacturing sites and joint ventures

6,000

patents and patent applications worldwide

#2

largest producer of propylene oxide (PO) worldwide

\$34M+

in charitable investments globally over the past four years through 4,500 grants

23 TONS

of waste collected in the environment during our 2021 Global Care Day events



\*Full-time and part-time employees as of December 31, 2022.

\*\*Including Mexico

# 2 Process Safety Fundamentals - EPSC

# Process Safety Fundamentals - EPSC

Fundamentals developed in 2019 – 2020 based on Shell Process Safety Fundamentals

- Made available to general public in September 2020 through a webinar
- Information booklet issued in 2021

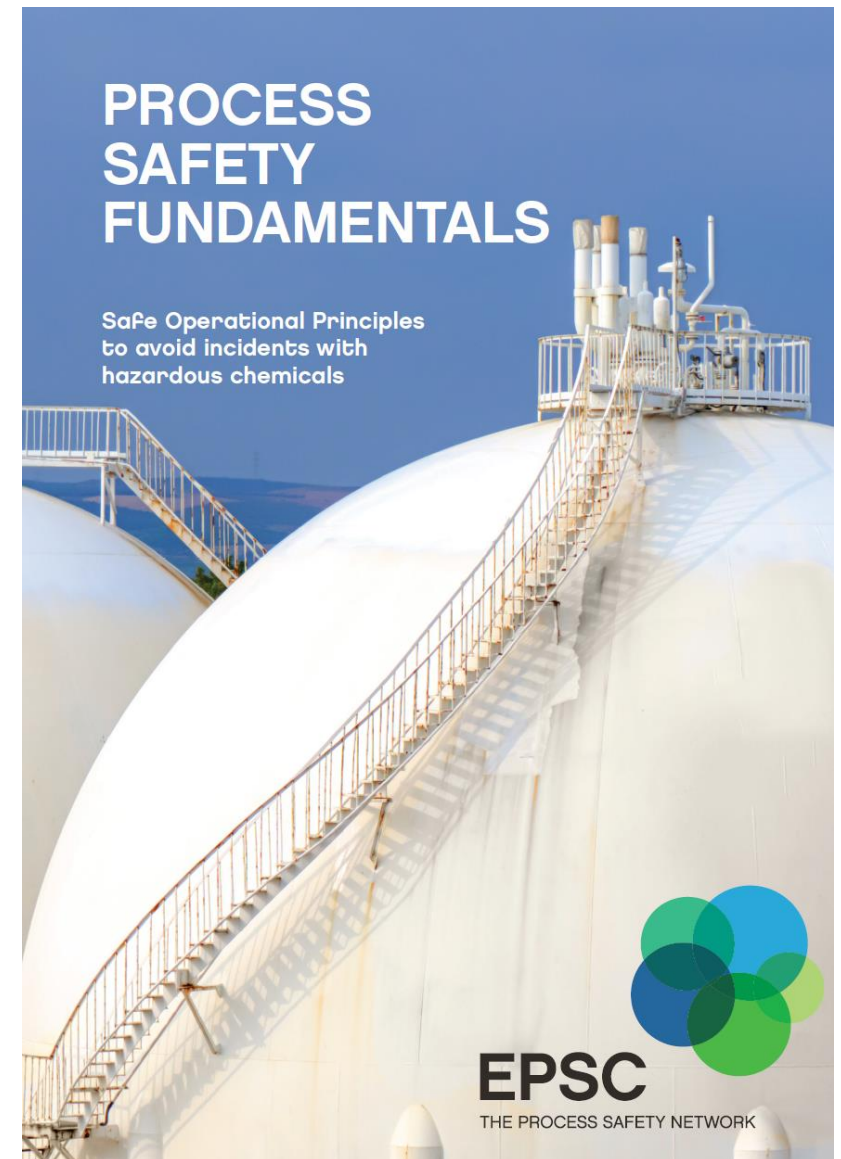
Process Safety Fundamentals differ from “ life saving rules”

	Life saving rules: Occupational Safety	Fundamentals: Process Safety
Objective	Reduce number of injuries/fatalities	Avoid loss of chemicals with potentially serious consequences for people, environment and Business
HSE Domain	Behaviors in occupational safety	Behaviors on operations involving hazardous chemicals
Target	All	Operation teams on hazardous sites (process operators, process engineers, maintenance technicians, operational management)
Nature and applicability	In principle simple rules that are easy to understand and apply in all circumstances	More complex principles that cannot always be fully applied (e.g. in case of design issues)
Implementation method	Non negotiable set of requirements “Life saving Rules” or “ Golden rules”	Identify situations that are not in line with the Process Safety Fundamentals and start a discussion on how to proceed, avoiding uncontrolled initiatives “to get the job done”

- No new requirements. Formulation of operational principles.
- An upgrade in behaviors. Operational Excellence of Process Safety execution.
- Emphasis on critical tasks, fully understood and supported by all operational leaders.
- Understanding of the dilemmas that frontline may face to comply with the Safe Operational Principles.
- Makes Process Safety an everyday frontline conversation with an involved leadership.
- Attention on risk normalization and substandard practices.
- Sanction management not emphasized, open culture driving Process Safety Excellence.

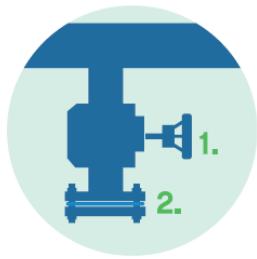


SOURCE EPSC





# 18 Process safety Fundamentals developed by EPSC



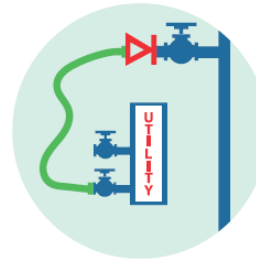
Apply Double Isolation



Empty and De-energize before Line-breaking



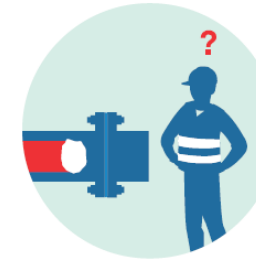
Monitor an open drain



Control utility systems



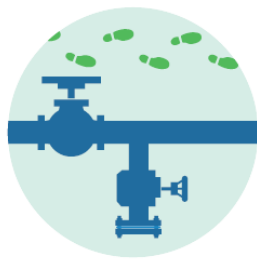
Report deficiencies on Safety critical Equipment



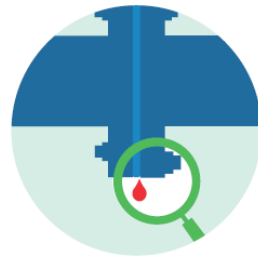
Control unplugging of equipment



Manage Overrides of Safety Critical Systems



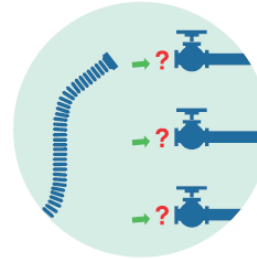
Walk the line



Verify leak tightness after maintenance work



Stay out of the Line of Fire



Control (Un)loading



Check atmosphere in fire box before igniting the burners



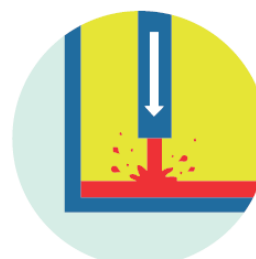
Avoid working behind a single valve



Verify the condition of flexible hoses



Operate within safe limits



Avoid Splash Loading



Avoid run-away reaction



Report Process Safety Incidents

For each Fundamental a description of:

- Hazards
- When important
- Challenges in the field
- Options to get it right.

# 3

## Process Safety Fundamentals LyondellBasell

# Process Safety Fundamentals – LyondellBasell

## Embracing Process Safety Fundamentals

- Increase the understanding of people in the field what their role is in preventing Process Safety incidents.
- Target is to change behavior when handling hazardous materials, reducing the likelihood of errors and consequent losses of primary containment (LOPC).
- Reduction of Process Safety Incidents and Near Misses with a behavioral component.

## Applying LyondellBasell corporate language / culture

- Connect the Process Safety Fundamentals with existing cultural elements
- Removed Fundamental: Body out of line of Fire – more occupational safety related.
- Added a Fundamental: “You are the Authority to Intervene”
- Developed translations for global roll-out.



## Check Signals

pre-task analysis



What could go wrong?

What precautions should I take?

Can I do the job safely?

Focus - Start to Finish



GoalZERO  
Principles

- All incidents are preventable
- Stop work if you believe a situation is unsafe
- Get help if a situation is not understood
- Intervene and take action – if you see something, say something
- Check Signals and re-check when conditions change
- Follow all procedures and take the time needed to do the job safely
- Report all incidents immediately so others can learn

# 18 LyondellBasell Process Safety Fundamentals



You are the authority to Intervene



Report Process Safety incidents and Near misses



Walk the Line



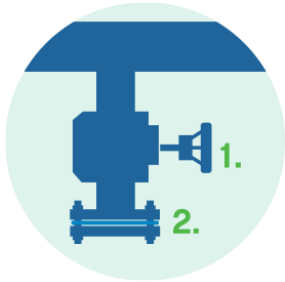
Manage overrides of safety critical systems



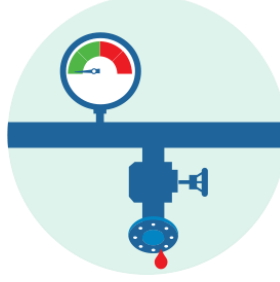
Monitor an open drain



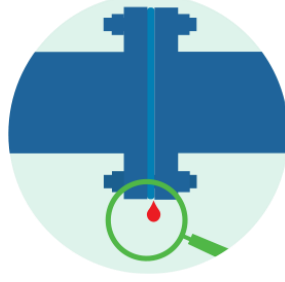
Avoid working behind a single valve



Apply Double Isolation



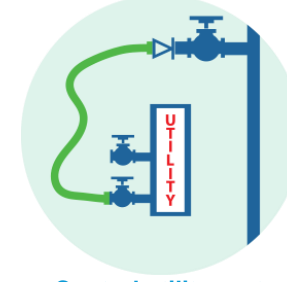
Empty and De-energize before line breaking



Verify leak tightness after maintenance work



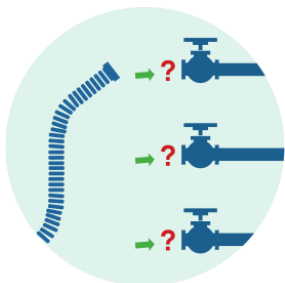
Operate within safe limits



Control utility systems connected to a process



Verify the condition of flexible hoses



Control (Un)loading



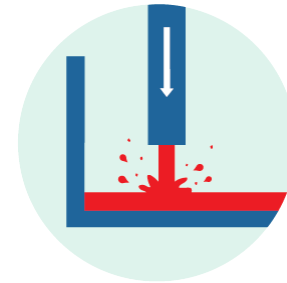
Master Unplugging of equipment



Check atmosphere in fire box before igniting the burners



Avoid run-away reaction



Avoid splash loading



Report deficiencies on Safety Critical Equipment

# Implementation - Ongoing multi-year program

2019

Aligned incident reporting with Process Safety Fundamentals

- Corporate tracking system includes a field to link a Fundamental to an incident
- Started in 2019

2020 / 2021

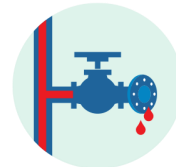
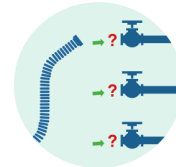
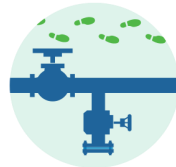
Focus on awareness

- Roll-out of all Process Safety Fundamentals to operations teams through interactive communication by leadership
- Translations are key!

2022

More detail on selected Fundamentals

- Each site selects 4 Process Safety Fundamentals based on incident data
- Extend these Fundamentals to all employees.
- Development of Process Safety Shorts – Electronic training modules with additional content



2023

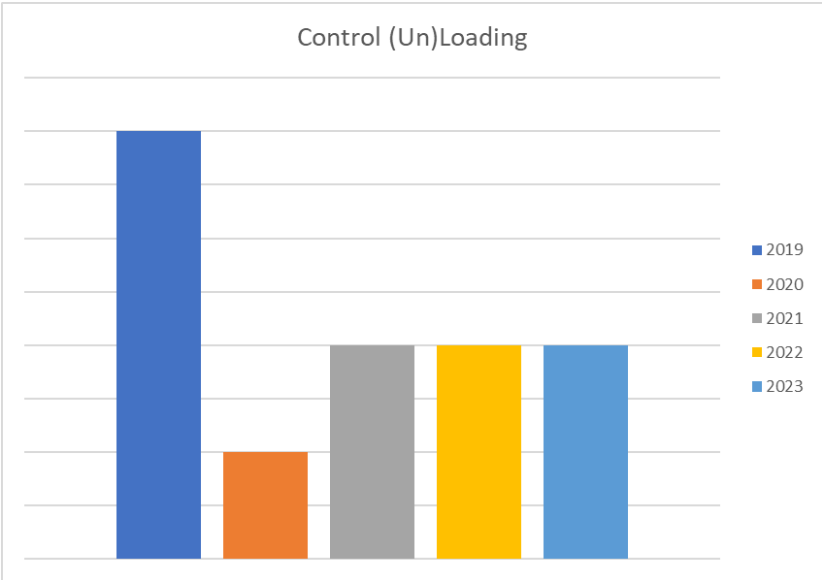
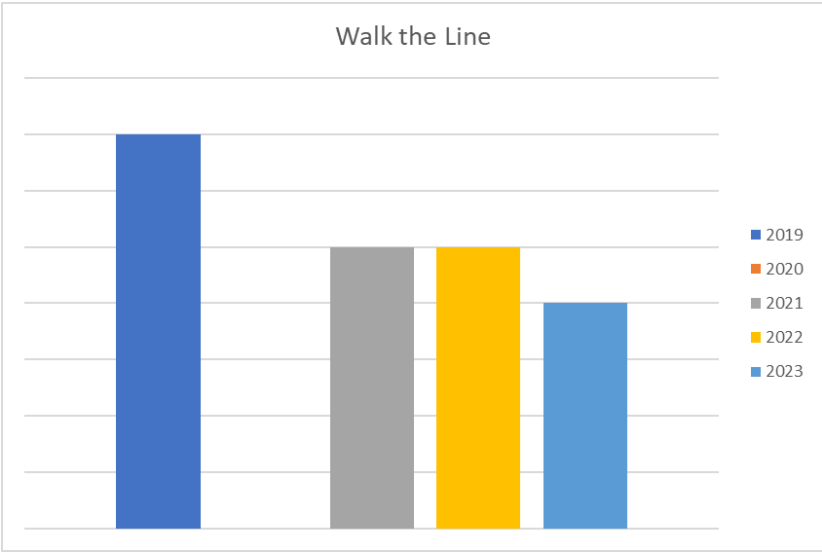
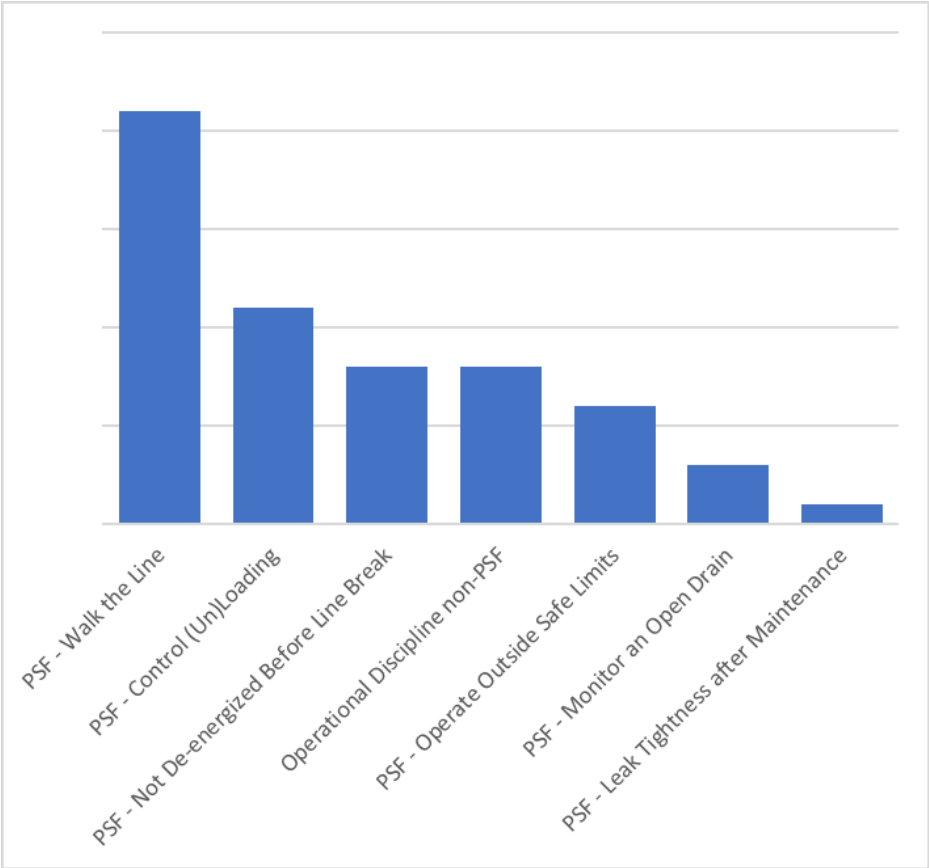
Incorporate selected Process Safety Fundamentals in site systems

- KPI per PSF

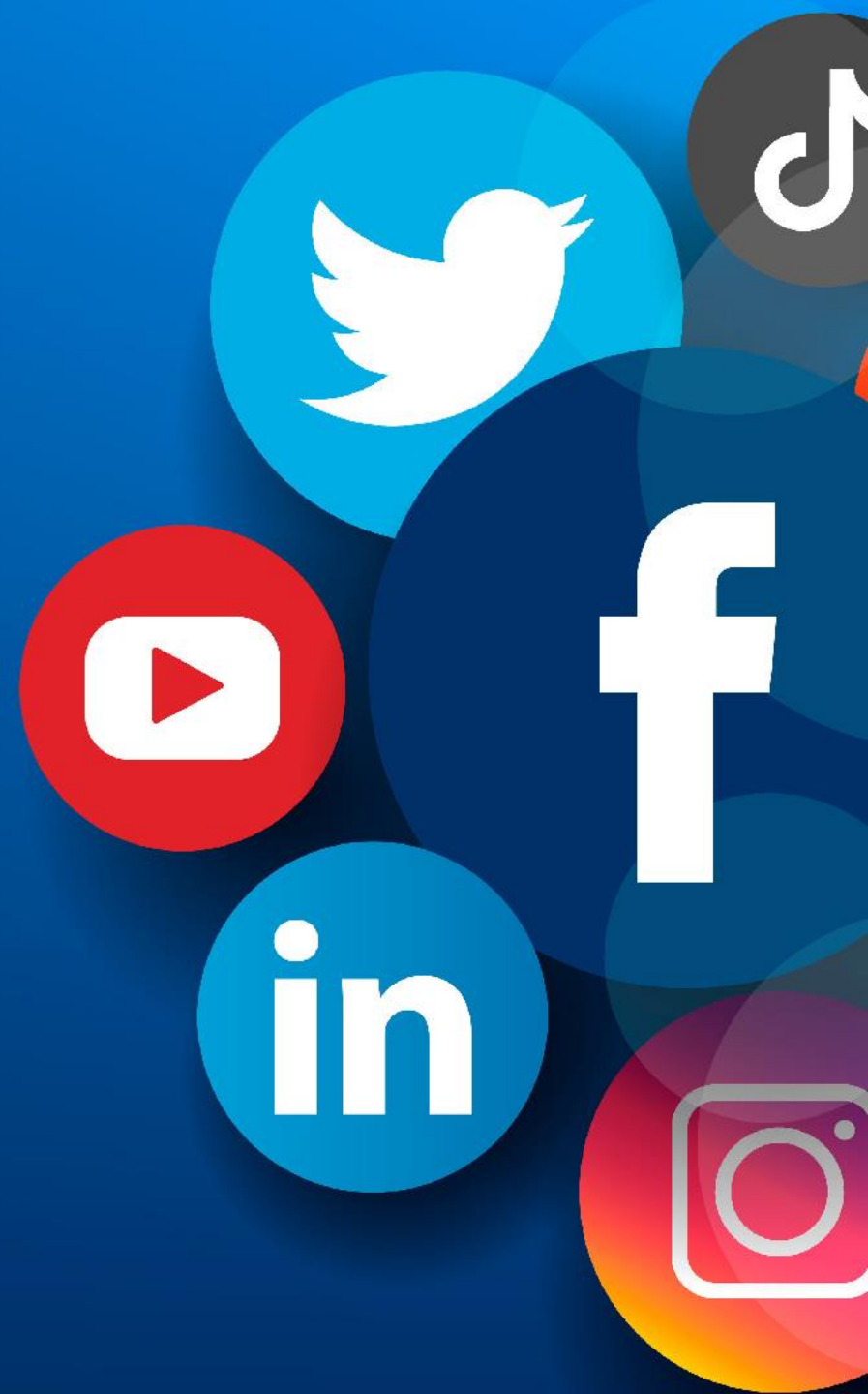
# 4 Initial Results

# Initial Results

- Data from 2019 – 2023
- Level 2+ Process Safety Incidents – CEFIC reportable



Follow LYB and  
join the conversation!





Solutions for a better tomorrow