

Introduction to IOGP & the work of the IOGP Safety Directorate

IOGP

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PREVENTING PROCESS SAFETY EVENTS WITH THE IOGP PROCESS SAFETY FUNDAMENTALS

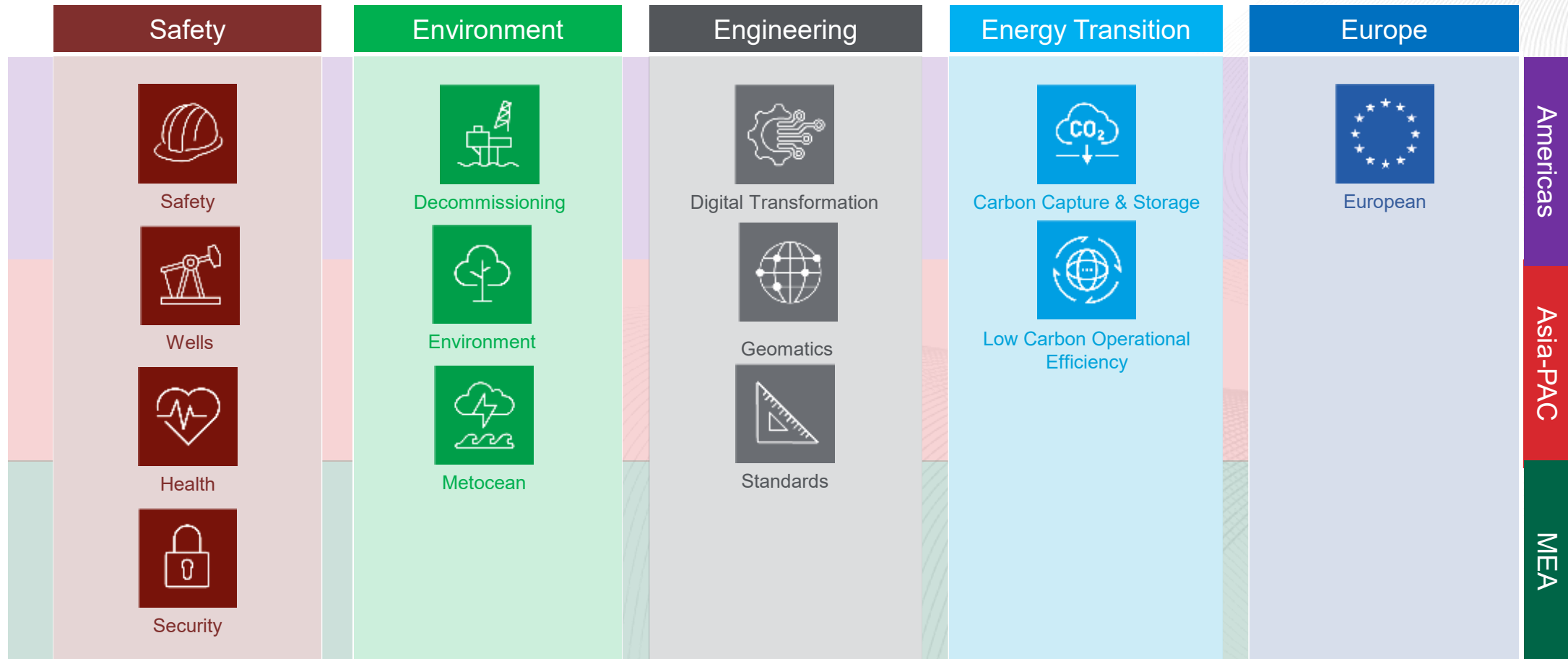
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2025

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International
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IOGP Safety Directorate

The objective of the Safety Directorate is to eliminate fatalities and permanent impairments and catastrophic process safety events in the oil and gas industry.



IOGP Safety Directorate Focus Areas



Development and adoption of IOGP Safety Recommended Practices

Publish safety data and enhance data to include leading indicators

Increase collaboration and engagement between IOGP and selected partners to maximise effectiveness

Co-ordinate activities designed to improve safety culture, including human performance initiatives

IOGP Safety Directorate Key Work Areas



Land Transport



Data Reporting for
Benchmarking and Learning



Process Safety



Personal / Operational
Safety



Aviation



Human Performance



Geophysical HSE

Development
and adoption of
IOGP Safety
Recommended
Practices

Introduction to the IOGP Process Safety Fundamentals

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PREVENTING PROCESS SAFETY EVENTS WITH THE IOGP PROCESS SAFETY FUNDAMENTALS

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What are the Process Safety Fundamentals?

Process Safety Fundamentals



Key actions to reduce,
and ultimately eliminate,
fatal and high severity
Process Safety Events (PSE)

How were the PSFs developed?

IOGP wanted to provide workers in the industry with actions they can take to protect themselves and their colleagues, no matter the worksite

Data over eighteen years (2007-2024) indicates that 175 people lost their lives in 86 Process Safety Events

The fundamentals were developed to be data-driven to reduce, if not eliminate, fatal and high severity PSEs

PSFs were designed based on Fatal and High Severity PSEs (latest data analysis 2007-2024)

IOGP created 10 Fundamentals with simple icons and clear actions for individuals

PSFs were tested with IOGP Member Companies workforce representatives and Human Performance experts

175 people might still be alive if PSFs had been implemented

Figure 1 from PSF Report 638 shows the proportion of fatal PSEs that can be linked to at least one of the 10 IOGP PSFs.

Of the incidents assessed, 94% of incidents could be linked to at least one of the 10 IOGP PSFs.

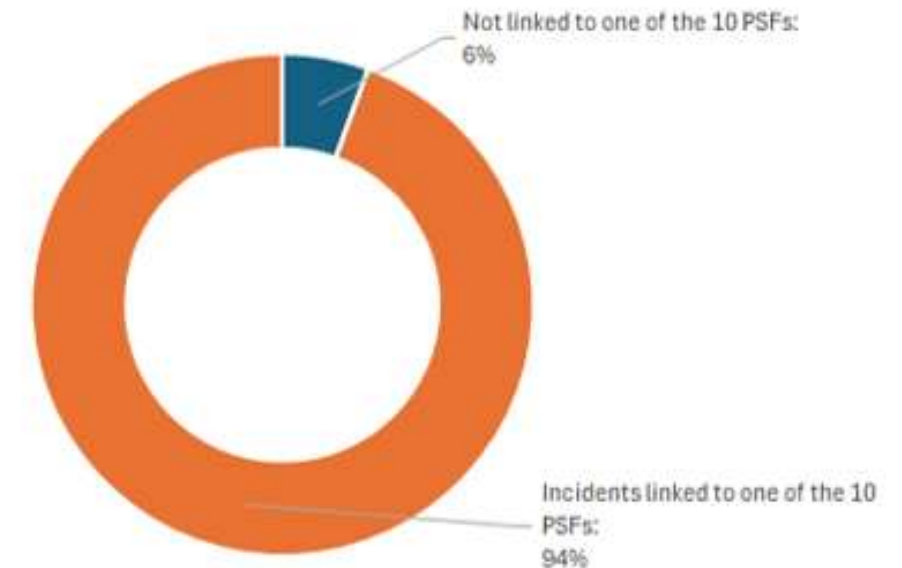
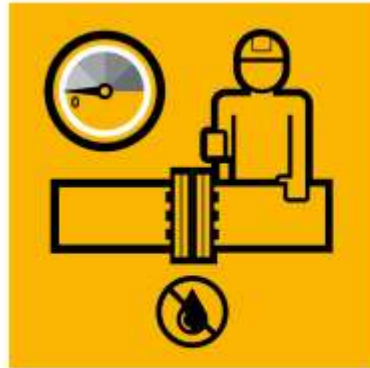


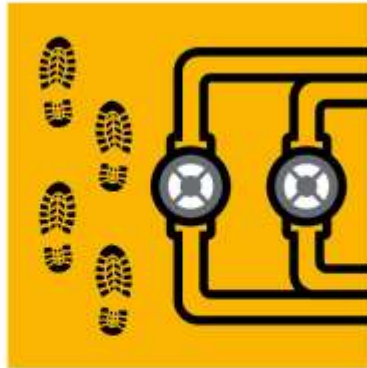
Figure 1: Proportion of fatal PSEs linked to one of the PSF, 2007-2024

The Process Safety Fundamentals

PROCESS SAFETY FUNDAMENTALS



Maintain safe isolation



Walk the line



Apply procedures



Sustain barriers



Control ignition sources



Recognize change



Respect hazards



Stay within operating limits



Stop if the unexpected occurs



Watch for weak signals

Process Safety Fundamentals mapping to fatal Process Safety Events

Figure 2 shows how the fatal PSEs were linked to each of the PSFs.

Note: In the initial analysis it was identified that some incidents could be linked to more than one of the PSFs. For the purposes of clarity, the chart shows the PSF that was considered the primary PSF involved in the incident.

The PSF linked to the largest number of fatal incidents are:

- We maintain safe isolation
- We recognise change
- We respect hazards
- We control ignition sources
- We apply procedures

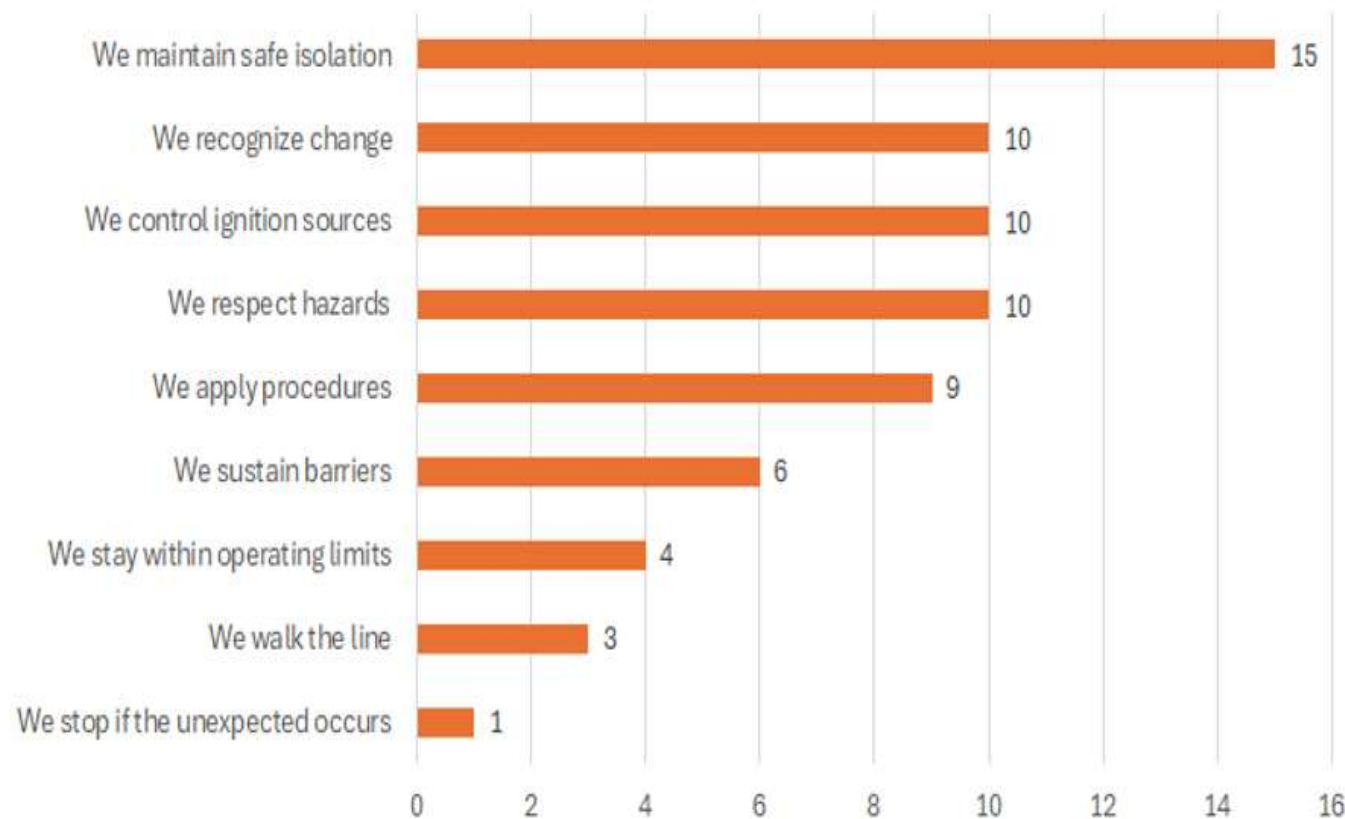


Figure 2: Number of fatal PSE and the related primary PSF, 2007-2024

WE APPLY PROCEDURES



- We use operating and maintenance procedures, even if we are familiar with the task.
- We discuss the key steps within a critical procedure before starting it.
- We pause before key steps and check readiness to progress.
- We stop, inform supervision, and avoid workarounds if procedures are missing, unclear, unsafe, or cannot be followed.
- We take time to become familiar with, and practice, emergency procedures.

WE APPLY PROCEDURES – Guidance Card

PROCESS SAFETY FUNDAMENTALS



WE APPLY PROCEDURES

Many of the operations or activities we perform on our facilities are complex and/or have the potential to release hazardous materials if they are not performed correctly. Step by step procedures are developed to perform these tasks safely and prevent unwanted or hazardous situations. It is good practice to use procedures on site and use job aids (e.g., sign off) to confirm that key steps have been completed in the correct sequence as the activity proceeds. Each company or asset may want to consider which of its activities or tasks are "critical" and require the higher level of assurance that "sign off" for each step of a procedure gives to the process. Typically, activities such as startup/shutdown of a facility, or particularly hazardous activities like pigging, are considered "critical" procedures.

Before starting a procedure, it is good practice to discuss the task ahead and how it is expected to proceed. The team involved can discuss the key steps, particularly those which are irreversible, and what will be expected at those stages to confirm readiness to proceed further.

In most cases existing procedures will be accurate, however if you identify issues with the quality or completeness of the procedures such as a lack of clarity on a task or missing/incorrect data, then this should be raised so they can be addressed as part of your MOC process.

It is easy to become complacent about an activity that has been performed many times before without hazardous or unwanted outcomes. However, no matter how experienced we are, it is easy to make a mistake, and therefore it is important to apply the procedures thoroughly, every time.

If you cannot complete or follow the procedure as it is currently written or you think there is an issue with the procedure, halt the activity and raise the issue with your supervisor. If you think there is a better way of performing an activity/task discuss it with your supervisor and raise a formal change request.

Sometimes an activity or operation is not completed in one shift, and it therefore is important to ensure there is an effective shift handover process so that the new shift has accurate knowledge of the status of operations and any issues they should be aware of.

If a hazardous situation occurs, it is also important to understand and apply emergency response procedures. These need to be readily usable in more stressful situations and regular practice drills help to reinforce understanding and familiarity.



Tips for Leaders and Managers:

Verify procedures are up-to-date, accurate, and effective, and they reflect the actual task or activity being performed.

Procedures should be easy to use and readily available to those who need them.

Confirm human factors are adequately considered in procedure design.

Plan that personnel have sufficient time to become familiar with the plant, its equipment, and its procedures.

Ensure that any issues raised are addressed and that procedures incorporate all relevant learnings.

In the field, ask the frontline:

- Are your procedures adequate and easily available?
(Provide feedback to the procedure owner or responsible discipline.)
- Are there any workarounds used? Why are they needed? What is the underlying issue?
(Discuss how procedures can be updated to reflect actual work practices.)
- Are you familiar with the other Emergency Response procedures? What is your role?

Tips for Leaders and Managers

- Verify that procedures are up-to-date, effective, and easy to use.
- Follow up if concerns are raised about a procedure.
- Promote familiarisation with the plant, its equipment, and its procedures.
- Discuss Emergency Response procedures with frontline staff.

Additional guidance

- US Chemical Safety Board: [Fire in Baton Rouge](#)
- Safer Together [videos and other tools](#)
- Center for Chemical Process Safety (CCPS). Guidelines for Writing Effective Operating and Maintenance Procedures.

For more information on Process Safety Fundamentals, please visit www.iogp.org/PSF

How can the PSFs be used?

PROCESS SAFETY FUNDAMENTALS



Toolbox talks & Safety meetings

- Can we learn from incidents that involved a PSF not being followed?



Pre-job planning

- How are the PSF applicable to the work we are doing today?
- What do we need to do to follow the PSF?
- What needs to be in place?
- Is everything in place, and in good working condition?



Last minute risk assessment

- Have I done all the PSF actions relevant before the job?
- Is everything as we discussed in the pre-job planning?
- Are there any Line of Fire hazards or ignition sources we didn't identify?



Post-job reviews

- Did we take all the actions associated with the PSF?
- What went well? What didn't go well?
- Is there anything to note for the next time we have to this perform task or work in this area?



Observations & walkabouts

- Do you see anyone performing work where a PSF is relevant?
- Are they following it?
- Yes? Great, recognise it!
- No? Intervene!
- If someone brings up a PSF dilemma, thank them and show them you will take it seriously.



Intervention

- Intervene or stop the work if a PSF is not being followed

Implementation Resources

Available at www.iogp.org/psf

- Icons
- Slide Deck
- Poster
- Launch Cards
- Translated PSF
- Industry related resources



PROCESS SAFETY FUNDAMENTALS

We respect hazards

- We challenge our understanding of process safety hazards as we discover and seek to understand them.
- We recognise those who point out potential impacts of operational process safety hazards.
- We discuss process safety hazards before starting a task.
- We bring forward process safety hazards to be included in a job risk assessment.

We apply procedures

- We use operating and maintenance procedures, manuals and other relevant documents.
- We discuss the key steps with a competent person before starting a task.
- We pause before key steps and check readiness to proceed.
- We stop, inform supervisors and maintenance staff if procedures are missing, unclear, obsolete or cannot be followed.
- We take time to become familiar with work and process emergency procedures.

We sustain barriers

- We discuss the purpose of barriers and failure modes of our barriers.
- We make sure these barriers could support process safety barriers.
- We speak up when barriers don't look adequate.
- We ensure operating or maintenance team are familiar with and understand the role of barriers.
- We make sure barriers are maintained and replaced as needed.

We stay within operating limits

- We discuss and set the operating operating limits for our process.
- We ensure when we start up and shut down operating limits.
- We report responses to process operating limits as they occur or as they are approached.
- We stop or hold operations before changing operating limits.
- We ensure that process limits are maintained throughout the process.

We maintain safe isolation

- We plan isolation plans for the specific task based on the task instructions.
- We ensure isolation is complete before the task starts and challenges when isolation plans appear to be incorrect.
- We check for residual pressure or process material before breaking connections.
- We ensure the integrity of isolation regularly and stop if we notice when changes could affect the isolation integrity.
- We could make mistakes before, during, and after isolating equipment.

We walk the line

- We set up to drive the operation (e.g., piping and instrumentation diagrams) that accurately reflect isolation system arrangements.
- We physically confirm the system is ready for the intended activity (e.g., valve position, line-up of relief devices, etc.).
- We don't expect to identify discrepancies and deviations during the operation.

We control ignition sources

- We identify, eliminate, or control the full range of potential ignition sources during both start-up and shutdown and during all operations and maintenance.
- We discuss and challenge ignition sources with our team.
- We ensure ignition sources during breaking, maintenance and start-up and shutdown operations.

We recognise change

- We look for and speak up about change.
- We discuss changes and make others to identify the need for management of change (MOC).
- We ensure the MOC process for getting on that triggers all MOC.
- We discuss and speak up to change that occurs gradually over time.

We stop if the unexpected occurs

- We discuss the work plan and what signs would tell us it is proceeding as expected.
- We pause and ask to confirm observations and conditions are not as expected.
- We stop and alert supervisors if the warning is not proceeding as expected.

We watch for weak signals

- We proactively look for indicators or signals that suggest a problem.
- We speak up about potential issues even if they are not clear or as expected.
- We proactively explore the causes of changing indicators or unusual situations.

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Process Safety Fundamentals,
please visit www.iogp.org/psf

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PROCESS SAFETY FUNDAMENTALS



Azeri
Catalan
Chinese (HK)
Chinese (simplified)
Danish
Dutch

French
German
Indonesian
Italian
Japanese
Kazakh
Malay
Norwegian

Polish
Portuguese (Brazil)
Romanian
Russian
Spanish
Thai
Vietnamese

Implementation Resources – IOGP Member Company Videos



We Walk the Line

Inpex



We Maintain Safe Isolation

Harbour Energy



We Sustain Barriers

Premier Oil



bp

Visit www.iogp.org/psf



Download Process Safety Fundamentals

Thank you.

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ASSOCIATION OF OIL, GAS
AND RENEWABLE ENERGY
COMPANIES OF LATIN AMERICA
AND THE CARIBBEAN

