

Safety practice

What I wish I had known about process safety – part 2

A selection of anecdotes from our readers

Advice I would give to my younger self

Listen carefully and pay attention – this is one of the most important lessons you will ever be taught in your life

*Dame Judith Hackitt
Chair, Make UK and
IChemE President 2013–2014*

Always listen to what operators have to say to you. Be appreciative of their experience and learn from them as much as possible. You may think you know more because you have a superior qualification (master's degree, doctorate, etc.), but nothing can beat the experience of the people actually operating the plant and putting their lives on the line when something goes wrong. The real plant will not behave like the simulation, and experienced operators are the ones who know what can go wrong and how, even if they do not always know why.

*Esteban Bernechea
Principal Consultant, Engineering Safety Consultants*

There are no new losses, just new victims – place an emphasis on rigorous root cause analysis, develop an active passion for 'learning from experience', and don't be afraid to look outside your own industry

*John Munnings-Tome
Chief Risk Engineer, The Hartford*

Never remove or change anything unless you know why it was like that in the first place: if you don't know, try and work it out with the help of others; Network as much as you can to learn from others! People's perceptions of the same risk can be dramatically different. It's not their fault; it's just the way they see things.

Phil Eames, Process Safety Consultant

When making things safer – don't make them more dangerous. Sometimes control measures reduce one risk at the expense of increasing another. A routine laboratory operation on the open bench was malodourous. It could not easily fit in fume cupboard. A bespoke containment device was built for it to improve COSHH compliance. It was very effective. The next time the equipment was cleaned with acetone a static spark ignited the now flammable atmosphere.

*Antony Janes
Process Safety, GSK Medicines Research Centre*

People don't remember advice or instructions, but they do remember stories.
Fiona Macleod, Managing Director, Billions Europe Ltd

Continuous learning throughout your career is essential. Learn on-the-job, from experienced peers (internal and external to your company) and acquaint yourself with lessons learned from major accidents.

Tony Tate, Process Safety Lead, BP

There is always another side to each process safety incident that has been missed or underestimated so it's always worth looking at it from another angle. There are still too many investigations that stops at the "operator error" finding instead of challenging the original design.

Frederic Gil, Process Safety Consultant

Process safety is personal. In addition to learning the technical details or an incident cause, learn the names of the victims. Process safety has real consequences for real people.

*Bill Ralph, BP Process Safety Segment
(Downstream) Technical Authority*

Process safety is everybody's business but too often it's nobody's business.

*Lee Allford
Safety Advisor,
Halcyon Safety*

Don't assume everyone knows about process safety, from frontline workers to top management – learn to ask questions and discuss to gain understanding of peoples' knowledge...
Steve Fogarty, Principal Technical Safety and Risk Engineer, AMOG

Encourage a sense of 'chronic unease' to temper engineering pride/arrogance ("Questions are the antidote to assumptions that incubate a mistake" – QC Hatton-Cave)

John Munnings-Tome, Chief Risk Engineer, The Hartford

Try and get a good blend of operational and design experience.
Ryan McEwan, Sustainability Engineer, DSM

Procedures are there for a purpose, if you don't understand why – ask. If you think the procedure does not work as it should change the procedure – do not ignore it.

Doug Scott, Risk Engineering Consultant, Charles Taylor Adjusting

Process Safety can be applied to many branches of chemical industries, do not be afraid to explore different branches of chemical industries to find out which one is most suitable to your liking.
Ali Mokhber

Get a job in manufacturing, preferably on shift. Get to know about the real world of a chemical plant
*John Bresland
 Board Member at US Chemical Safety Board*

Process safety is not a 'bolt-on' layer of protection like a relief valve or a trip, it is the inherently-safe 'way we do things'. Putting in time and effort to get the right culture brings so many benefits beyond mere safety statistics, but it needs constant senior engagement and commitment lest it becomes that latest 'management initiative' that'll be forgotten about next week.

Nigel Cairns, Senior Risk Engineer, Aon

As a new graduate beginning to study major accidents of the recent and distant past that we have experienced and continue to experience, you will be surprised at how many there are. In twenty years when you better understand what we do, how we do it, and how many things have to go right every day and at every location, you may be surprised how few there are.

Andrew Rushton, Principal Consultant, ESR Technology

Don't assume that because something looks wrong it is wrong – there may be a very good reason for it. But equally don't assume that because something looks right it is right – question everything.

*Stephen Richardson
 Emeritus Professor at Imperial College London
 & IChemE President 2019-2021*

Change control is important – never underestimate the little things. Even if it doesn't seem important to you – it could be.

Some 30 years ago I worked on a new batch process at large pilot scale (circa 1,000L). Not everything went smoothly. The phase separation (organic and water) in a batch reactor went badly owing to the formation of a stable emulsion. The process chemist added salt to break the emulsion. It worked brilliantly. The batch paperwork was updated. The next batch worked fine. At inter-batch cleaning one of operators came to me to say that the vessel looked odd – albeit with more syllables; many of them colourful.

Important life lesson – always believe operators if they say something is odd.

He was right. Inspection revealed severe pitting corrosion of the stainless steel vessel at the interface level. Previous laboratory corrosion experiments had shown the originally intended process to be benign to stainless steel. Adding the salt gave pitting corrosion the like of which we had never seen before. If we had not believed the operator the vessel would have failed after another few batches.

Doing proper change control and process development, while the vessel was changed out for spare, showed that a small adjustment to pH allowed the modified process to work without damaging the new reactor.

*Antony Janes,
 Process Safety, GSK Medicines Research Centre*