

The art of storytelling in creating a **Safety First!** culture



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Safety First! Reflections



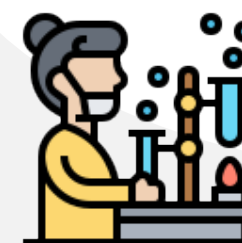
- In 2019 the Chicago ACS adopted a best practice of “**starting with safety,**” beginning meetings with safety moment reflections led by the **Environmental and Lab Safety Committee** (ELS).
- **Safety First!** reports are also published monthly in *The Chemical Bulletin*. Our goal —model awareness of safety at the forefront of section activities.

THE CHEMICAL BULLETIN

Chicago Section of the American Chemical Society Newsletter

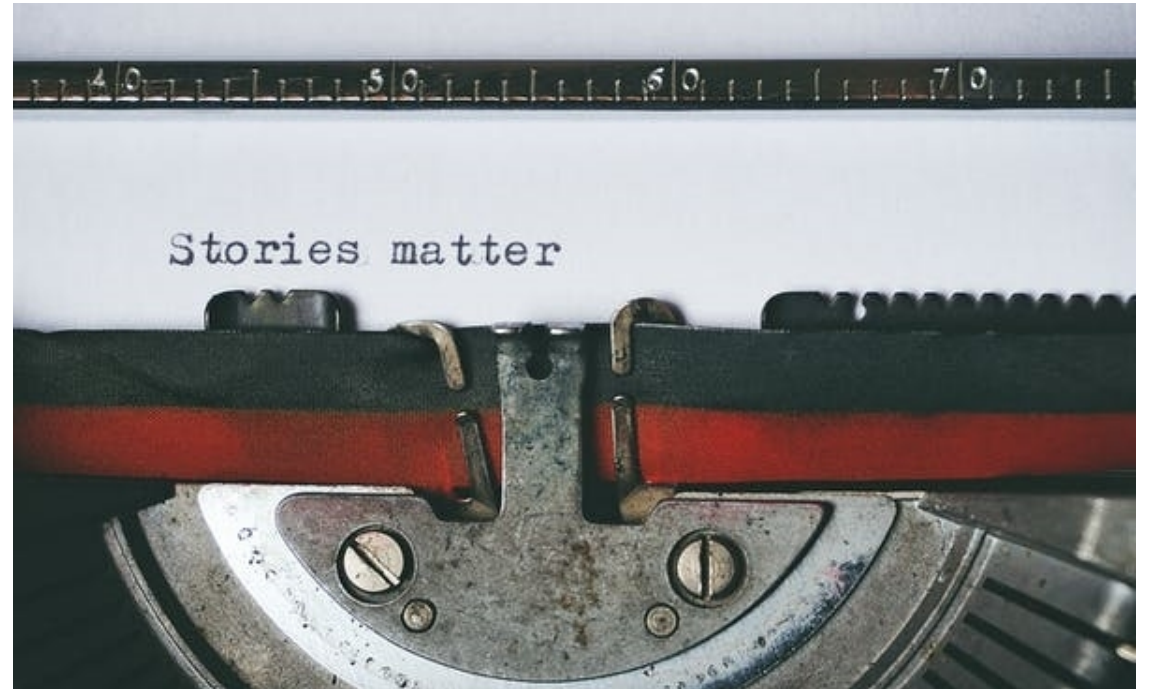
Environmental and Lab Safety Committee

- Promote the strategic goals of the ACS in support of safety as a core value within the Chicago Section.
- Provide information and resources to help members embrace safety awareness in their professional and personal lives.
- Model environmental stewardship relating to the safe use and responsible distribution of chemicals and our natural resources.
- Leverage the principles of sustainability to create an effective **safety culture**.



Culture and Communication

- Shared knowledge, experience, and values
- Safe space to share our stories and ask questions
- Embed safety awareness in the culture of chemistry



When an incident becomes an emergency?

Our April 2019 story was shared by Douglas Philip, a local professor with ties to University of St. Andrews in Scotland. Its Biomedical Sciences Building was severely damaged in a fire that started in a flammable base bath used to clean glassware containing a small amount of potassium.



<https://cen.acs.org/safety/lab-safety/Fire-started-routine-post-experiment/97/web/2019/02>

"If faced with an incident involving fire, raise the alarm immediately, make sure everyone in the area evacuates and then, and only if it does not place you at excessive risk, try to contain the fire."

https://chicagoacs.org/news.php?id=66#Safety_Feature



Emergency Response – Reflections

When confronted with a “small” or incidental fire on a laboratory benchtop, in a commercial workspace, or even at home, when is the “right time” to call an alarm?

An event that may seem trivial at first can quickly spiral out of control.

Elements of Storytelling

- Memorable character ... personal accounting by Prof. Philip
- Memorable location ... University of St. Andrews, striking visuals
- Dramatic, time-based sequence of events
- “Moral of the story” ... reflections, lessons learned, teaching moment



Credit: University of St. Andrews

In the context of the story, the lesson becomes memorable.

Safety Culture



Education



Chemical Safety



Sustainability



General Safety



Laboratory Safety



Consumer Safety



Safety Culture



Safety Is a Team Effort
Reproductive Health Safety

General Safety



Chemical Safety in the News
Understanding and Perceiving Risk
Evaluating Gas Hazards

Safety Education



Safety Guidelines for Chemical Demonstrations

Are common chemicals always safe?

Your ACS Toolbox for Chemical Safety Education

Kinetics, Thermodynamics – and Safety

Laboratory Safety



Ventilation Safety in the Age of COVID

Wear Protective Gloves

Safe Hazardous Waste Disposal

Chemical Safety



Chemical Reactivity Is NOT
Unexpected

Advances in Toxicology Testing

A Short Primer on Exposure Limits

Hydrogen Gas – Properties and
Precautions

Chemical Exposure – A Special
Case

Chemical Hazards and the Effect of
Particle Size

Consumer Safety



Spring, Seasonal Allergies, and
Sensitizers

Disposing of Unused Medications

Battery Recycling

Aerosol Can Hazards

Sustainability and the Environment



What are PFAS, and why are they everywhere?

Chemical Risk Management and the EPA

The Story of More Book Review

Chemical Safety and Climate Change

Electronics Recycling and Sustainability

Green Chemistry – Bridging Safety and Sustainability

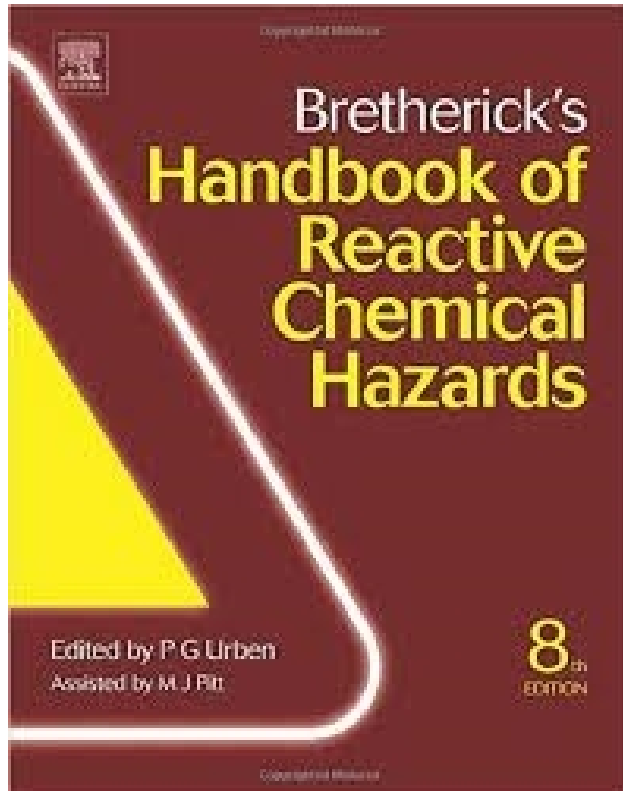
Kinetics, Thermodynamics – and Safety!



Our December 2020 **Safety First!** report was inspired by a story about Leslie Bretherick in *Chemistry World* Writer recalled flask exploding – “strange” because he had done same reaction many times.

“It was a reminder of how much the chemistry we do is under kinetic control; we are often blissfully unaware of the yawning thermodynamic abyss that lies just a little beyond our standard reaction conditions. There monsters be.”

What an introduction!



- Leslie Bretherick achieved a pinnacle of chemical storytelling with the creation of *Reactive Chemical Hazards*.
- Firsthand information about hazardous chemical reactions.
- Details make for captivating reading and are crucial for preventing future incidents!

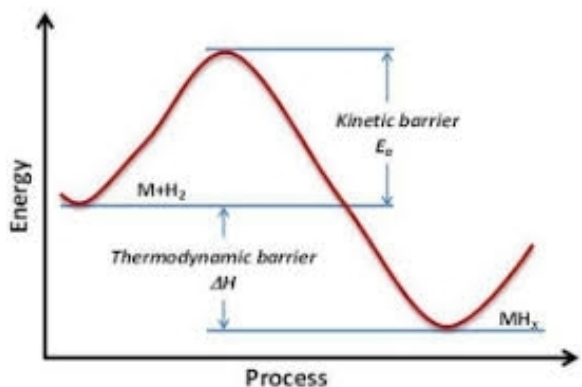


Integrating Safety and Chemistry Education – Reflections

Kinetics versus Thermodynamics

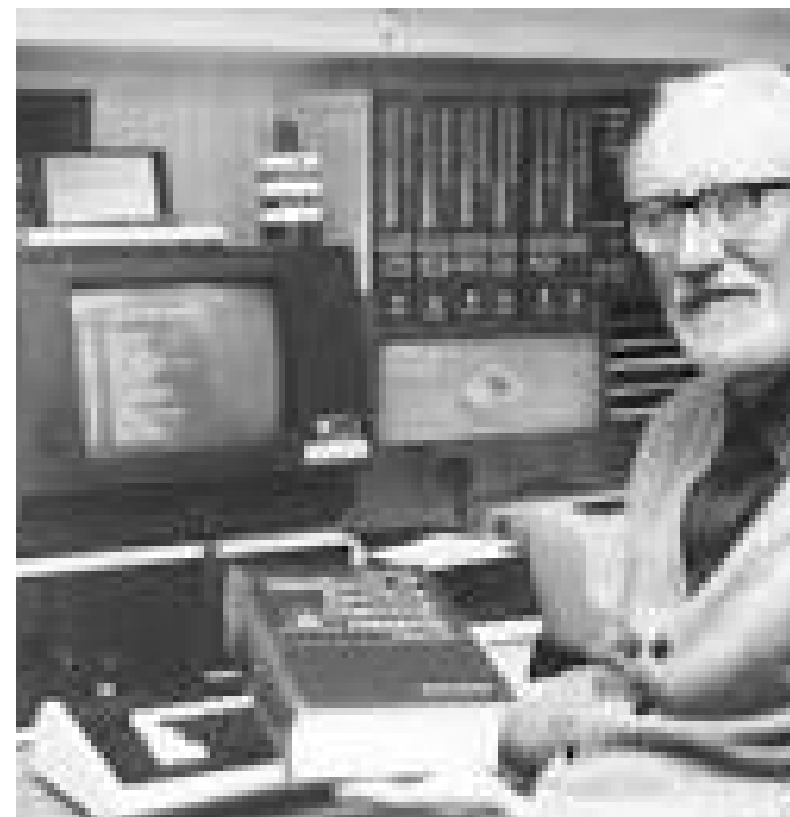
What happens, and why, when we descend from the plateau of kinetic stability into the abyss of thermodynamic reactivity?

A challenge – the next time you teach this topic, “ground” it using an example of real-life chemical stability versus reactivity.



Bretherick's Story

- First significant injury – spilled oleum on his leg, leaving him with permanent scar.
- Two years later, while dissolving CrO_3 in acetic anhydride, a procedure he had done 11x, the flask exploded. Flaming solvent shot across the lab and reignited after fire had been extinguished.
- Bretherick's manager sent a letter to *Chemistry and Industry* describing incident. Reply came in about similar incident four years previously when mixture of CrO_3 and acetic anhydride started to fume.
- Bretherick began compiling an index of chemical accidents, noting the reagents and the nature of the incident.



Stories create memories—the elements of storytelling



Character



Location



Presentation



Sequence



Reflections

SAFETY

'If history were taught in the form of stories, it would never be forgotten'

Rudyard Kipling



The art of storytelling in creating a **Safety First!** culture

Sharing stories leads to an inclusive and respectful culture of safety and is at the heart of our **Safety First!** initiative.

Storytelling is an indispensable aid in teaching, learning, and leading.

A good story can clarify a point better than a definition or explanation.



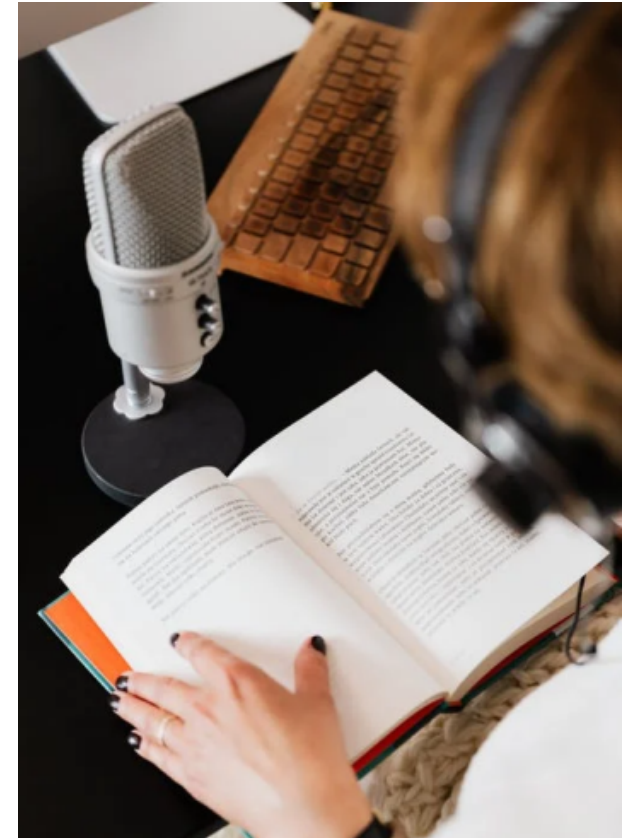


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Good stories improve our powers of persuasion.

“When necessary, use words” – don’t neglect images and videos!

Tell your stories! “We are the guardians of safety history in our organizations and our families.” (KF, JCHAS, 2003)



Safety First!
reports are
available on
the ACS
Chicago
website



<https://chicagoacs.org/>

The Chemical Bulletin – downloadable pdfs
Online stories