

We are



Dear **Vahid,**

**May 2023**

## Process Safety Dispatch

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- Joe Public, Class I, Division 2, and Gas Stations

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### Thermal Reaction Hazards - Your Problem?



A 1959 Swedish postage stamp commemorating Svante Arrhenius

*"It's all about Arrhenius: Hot and it grows on you!"*

What is this all about, I hear 70% of all our readers ask!?

If you are a chemist, we're hoping the 'quip' above brought at least a groan, or perhaps a slight smile. If you are in the 70% who don't have a clue what's going on here and may be a little bit curious about **thermal hazards in industry**, read on and be aware of one thing; Thermal hazards are often thought of as a problem of the 'chemical industry', and this is correct; but beware the industries of food stuffs, detergents, fertilizers, biofuels, metals and even farmers. You can have thermal hazards too. Ignore them at your peril!

We begin with thermal hazards in the chemical industry.

The chemical industry, including pharmaceuticals, plastics, energy..., is an essential component of modern society, providing a wide range of products that are used by everyone. However, chemical manufacturing processes involve a range of hazards, including the release of heat/ energy during chemical reactions or processes, which can lead to thermal hazards. These hazards can pose a significant risk to workers, the environment, and nearby communities and must be understood and managed. In this article, we will provide an overview of thermal hazards in the chemical industry – and in other industries. We will examine how thermal hazards arise, and how they are identified, studied, and indeed, controlled.

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### Expert Consulting

- Dust Explosion Prevention & Mitigation
- Control of Static Electricity
- Hazardous (Electrical) Area Classification
- Process Hazard Analysis
- Process Safety Management
- Fire and Explosion Hazard Assessment
- Incident Investigation
- Organizational Process Safety Competency Assessment

### Specialist Laboratory Testing

- Combustible Dust Testing
- Electrostatic Testing
- Self-Heating / Thermal Instability Testing
- Flammability Testing of Gases & Vapors



**Joe Public, Class I, Division 2, and Gas Stations**



**Question 1:** Have you ever been in a Class I, Division 2 (Zone 2) Classified Hazardous Area away from your workplace?

Let me answer that for you - YES.

Self-service gasoline pumping operations require the public, usually unknowingly, to perform activities within a Class I, Division 2/ Zone 2 hazardous location. If you put gas in your car, vapors will be displaced and may end up in precisely the location where you stand. Around the fuel dispenser there is always a Class I, Division 2 area (Ref 4).

**Question 2:** But does it matter?

Let me answer that for you - YES.

There have been a number of flash fires on gasoline forecourts involving members of the public, and in some of these cases, Mr or Mrs Joe Public was using their cell phone.

**Question 3:** Does that mean that cell phones have actually caused ignition of gasoline vapors on forecourts?

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