

## Sharing knowledge...

Shift your horizon.

Feel free to contact us.

### Preventing process safety incidents.

Your development or manufacturing processes should be carried out as safely as possible. Because just one process safety incident can have a huge impact on your people, physical property and the surrounding community. Safeguarding process safety is not always as simple as it seems. For example, an increase in temperature can cause a runaway reaction that ends in a destructive explosion.

Runaway reactions can be caused by impurities, a plain lack of knowledge about the chemicals used or insufficient awareness of the potential risks of a process. Dust created during storage or manufacturing processes can become an explosive mixture that is ignited by simple static electricity.

Industry is frequently confronted with the physical, financial and emotional damage resulting from the unintended release of chemicals or runaway reactions. This damage can be avoided by implementing appropriate Process Safety Management and Process Safety Engineering actions.

#### What can we do for you?

##### *Analysing chemicals and processes: tiered testing services*

DSM Resolve has long experience in the full breadth of chemical issues. We can carry out tiered testing services for the fluids, powders and dust used in your processes based on standard industry methods and state-of-the-art instruments. The first tier is a theoretical analysis of functional groups of substances and case histories.

In additional tiers of testing, we perform experiments to provide more detailed insight into the potential hazards of your processes. They give you an in-depth understanding of the inherent chemical properties of the substances used in your processes. These experiments analyse:

- Dust fires and explosion hazards
- Gas and vapour flammability hazards
- Electrostatic hazards
- Thermal instability of solids and liquids
- Chemical reaction runaway hazards
- Auto ignition risks
- Flash point risks
- Risks involved in the transport of dangerous goods

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*Creating a plan: managing process safety*

The analytical results from our tiered testing services are interpreted by our experts who have many years of hands-on experience in the chemical arena. They can advise you on how to create an effective process safety management plan aimed at preventing process safety incidents from occurring. If required, we can work with your team to assist you in implementing the lab-scale analyses in an up-scaled production plant.

*Creating awareness: process safety training*

We can help you increase awareness of the potential risks involved in your processes by creating a tailor made training or presentation at any of your locations. For instance, the Experimental Explosion Lecture visualizes the dangers of working with flammable or explosive materials in a practical environment.

During this training, various examples of the origin, consequences and prevention of explosions are shown. Reactions that result in physical explosions, chemical explosions, BLEVE (boiling liquid expanding vapor explosion) and implosion are shown. Explosions based on the influence of the oxygen concentration, effect of confinement, flammable vapours and highly flammable vapours are presented as well. Other topics, such as geometrical influences, source of ignition, dust explosions and safety precautions are discussed as well.

Operators, SHE managers, chemists, process engineers and other individuals that play an active role in the research and production of many organisations have already participated in this live, hands-on training. At the end of the training, participants take with them a priceless tool that allows them to identify potentially dangerous situations at an early stage.

**Expand your view**

DSM Resolve has a broad perspective of chemical issues gained over decades of experience in this industry. Our unique skills and understanding can expand your view of what's possible in your products and processes.

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