

# **Industrial loss prevention relies on science**

## How fundamental explosion research is translated into loss prevention guidance at FM Global

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Every day, loss prevention specialists around the world provide recommendations to industry on how to prevent and mitigate explosions. These specialists are highly trained and experienced in analyzing complex scenarios and applying the best available loss prevention guidance. At the same time, scientists study the detailed phenomena involved in explosions and produce a wealth of fundamental insight and understanding. But what does it take to translate scientific insight into widely applicable loss prevention guidance?

At FM Global, an international property insurance company with deep roots in loss prevention research, we believe that the majority of loss can be prevented. Fundamental and applied research build the foundation of our loss prevention engineering, supporting the development of FM Global Loss Prevention Data Sheets and FM Approval Standards, ultimately helping our clients become more resilient. In explosions, research programs comprise large-scale experiments and modeling including CFD, fundamental theoretical and small-scale experimental studies, and collaborations with partners from industry and academia. The results from these programs are translated into loss prevention guidance that is applied internationally to address explosion hazards in diverse areas of commercial and industrial activities.

This presentation focuses on the intersection of fundamental explosion research and loss prevention engineering and highlights the challenges and solutions for translating scientific knowledge into applicable engineering guidance. An overview of past and present research programs is given, and examples of current work are discussed in more detail, including studies on explosion venting, suppression, and isolation. The role of engineering standards and product certification is discussed, and future trends related to emerging hazards are reviewed.