

Dear Reader,

As a conscious and constructive measure to build a culture of safety that will help people live safe, secure and injury free lives, we had started a proactive and preventive initiative in the form of a newsletters called '**LivSafe**'.

Initial aim of the newsletter was to drive an increase in safety awareness among the readers concerning their health and lives.

**This issue marks the 50<sup>th</sup> edition of LivSafe.** All past editions, provide critical information on hazards and their causes across all walks of life, and lend an insight into a gamut of safety measures that can be implemented to minimize the consequences of breach and to develop a consistent approach to implementing health and safety in their day to day life.

We hope that you will benefit from the safety information provided in these newsletters and remain safe and secure.

**Happy Reading and LivSafe.**

Roopam Asthana,  
CEO and Whole Time Director  
Liberty General Insurance Company Limited



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CEO and Wholetime Director  
Liberty General Insurance Limited

## FEEDBACK FROM AVID LIVSAFE READERS:

“Thank you very much for this informative newsletter. This is timely and topical; well designed and certainly useful. In the 2<sup>nd</sup> page the uttarakhand-flood is mentioned and some estimates are provided.”

“Really nice initiative from the risk team”

“Your mails forwarding LivSafe and the Insurance industry related news is certainly useful. I look forward to continuing your mailing list.”

“The newsletter is quite informative and useful!”

“This is a very good initiative!! The new format looks more professional and attractive to read!!”



LivSafe has been an important part of our Risk Engineering endeavor in sharing knowledge to facilitate solutions to various types of risks.

At Liberty General Insurance, the integrated risk engineering-underwriting team provides seamless support to our patrons - both internal and external with an intention to build best in class safety culture. Our highly qualified risk engineers have years of experience in both, insurance and industry offering best risk advisory and mitigation measures.

The 50<sup>th</sup> edition of LivSafe is a testimony to our mission of spreading risk awareness, offering practical and innovative suggestions for reducing risk and minimizing loss.



**Balaji Cuddapah**  
President-  
Underwriting and Claims



**Milind V Kolhe**  
SVP National Head -  
Risk Engineering, Commercial  
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Liberty General's Risk Engineering professionals assist clients to evaluate the risks at their facilities and present risk reduction measures. These independent evaluations and loss minimization guidance tips avoid risk associated with unknown or un-quantified risks.

Topics are consciously selected which are easy to relate. Bulletins on Electrical safety to Selfie hazards, Monsoon protection to Safe driving and many such topics kept the audience engaged in the area of risk management.

This is a 50<sup>th</sup> article of this series and I congratulate our Risk Engineering Team on this milestone which was initiated with a motive and self-belief "Responsibility is our Policy".

## QUIZ

Reply with your answers on [livsafe@libertyinsurance.in](mailto:livsafe@libertyinsurance.in) and stand a chance to win **Surprise Gifts**. All questions need to be answered.

1. Which are the elements required for explosion pentagon to cause dust explosion?
2. Primary and secondary, which is more destructive explosion?
3. Name the five metal dusts which are combustible?
4. What you like about LivSafe newsletter?

## LivSafe Editorial Team

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## Risk Engineering Offering

1. **Thermography Audit**
2. **Property Risk Assessment**
3. **Electrical Audit**
4. **Work Place Safety**

For more information about risk engineering offering, Please visit <https://www.libertyinsurance.in/commercial/rec-services-insurance>. Or write to Risk Engineering Experts at [RiskEngineering.Cell@libertyinsurance.in](mailto:RiskEngineering.Cell@libertyinsurance.in)

## Understanding and preventing combustible dust hazards

Case studies, control methods and measures to prevent health hazards.

LivSafe is a conscious safety initiative of Liberty General Insurance Limited to help people live safer, secure lives through an education series of proactive and preventative suggestions in the safety arena. This document does not purport to promote any product, directly, or indirectly.

### Overview

Combustible dust includes any combustible solid that presents a hazard when suspended in air, regardless of shape or size. Many combustible solid substances may become explosive and create a significant hazard when they take on the form of a fine dust.

We at Liberty General Insurance understand the importance of human safety against such life-threatening hazards and intend to suggest some useful measures to augment the same. We sincerely hope that the measures suggested in this document will help follow better practices, when it comes to handling combustible solids.

Combustible solid substances include organic materials such as grain, sugar, wood, powdered milk, flour, and coal; synthetic organics such as plastics, dyes, foams, chemicals, and pharmaceuticals; and combustible metals such as aluminum, iron, magnesium, titanium, and zinc. Materials that are not explosive include mineral dusts such as silicates, sulphates, nitrates, carbonates, and phosphates; salts, gypsum, sand, limestone, and cement.



### Case Studies:

- A. An employee suffered second and third degree burns on his hands and arms from a dust fire triggered explosion after two workers changed a bag filter on a powder coating line for office furniture.
- B. Workers were processing feed pellets when the system failed. An employee went upstairs to investigate and was killed when dust in the air exploded and set off a fire. Two other employees suffered serious burns and smoke inhalation.



### Dust Fire and Explosion Pentagon:

Five elements are necessary to initiate a dust explosion, often referred to as the "Dust Explosion Pentagon".

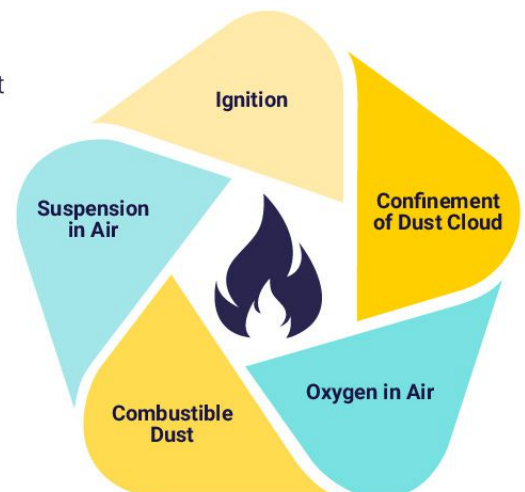
The first three elements are those needed for a fire, i.e., the familiar "Fire Triangle":

1. **Combustible dust (fuel);**
2. **Ignition source (heat);**
3. **Oxygen in air (oxidizer).**

Two additional elements must be present for a combustible dust explosion:

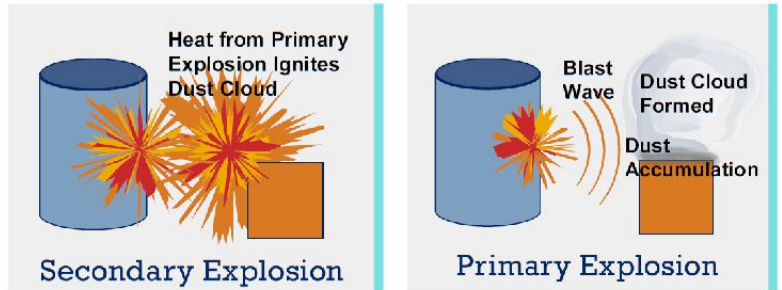
4. **Dispersion of dust particles in sufficient quantity and concentration; and,**
5. **Confinement of the dust cloud.**

If one of the above five elements is missing, an explosion cannot occur.



## Avoid the Secondary Dust Explosion:

An initial (primary) dust explosion in processing equipment may shake loose accumulated dust, or damage a containment system (such as a duct, vessel, or collector). This causes the dust to become airborne and this additional airborne dust, if ignited, may cause one or more secondary explosions. These can be more destructive than a primary explosion due to the increased quantity and concentration of dispersed combustible dust and the larger ignition source.



## Control Measures

- 1  Review safety data sheets (SDSs) and related information for the chemicals and materials used or processed to determine the potential to create combustible dusts.
- 2  Develop a housekeeping program with regular cleaning frequencies established for floors and horizontal surfaces (such as ducts, pipes, hoods, ledges, beams, cable trays, and on and around equipment) to minimize dust accumulation.
- 3  The cleaning methods used should prevent combustible dusts from being suspended in the air. High-efficiency (HEPA) vacuum cleaning equipment or wet methods are recommended. Blowing off the settled dust with compressed air is discouraged.
- 4  Capture dust before it escapes into a work area by using properly designed, installed, approved and maintained dust collection systems.
- 5  Clean work areas, overhead surfaces and concealed spaces frequently and thoroughly using safe housekeeping methods to remove combustible dusts not captured or contained.
- 6  Electric cleaning devices, such as sweepers or vacuum cleaners, and electrical equipment should be approved for the combustible dust locations.
- 7  The facility should have Hot Work Program, including performing hot work in approved locations.
- 8  Combustible dust locations and other areas where smoking is prohibited need to be posted with "No Smoking" signs.
- 9  The facility must select and use powered industrial trucks (such as forklifts) that are approved for the combustible dust locations.
- 10  Ensure that the personal protective equipment (PPE) has been selected for the job tasks involving combustible dusts.