Case No.39

Dust explosion when flour was fed into a storage hopper by air pressure

[Circumstances of Incident]

A dust explosion occurred within a storage hopper when flour was fed into a storage hopper.

On the day of the accident, flour stored within the storage hopper was first put into bags. This bagging work was completed around 3:00 in the afternoon.

Following this, the victim confirmed that no flour was left inside the storage hopper by lowering a shielded electric light inside the storage hopper from the inspection hatch located at the upper part of the bin.

About one hour after confirming that the hopper was empty, another worker started feeding flour into the hopper by air pressure. About 30 minutes after the start of the feed, the victim noticed an offensive odor around the bin. While the victim was checking the cause, an explosion occurred in the upper part of the bin, and the victim suffered burns from hot gases generated in this explosion.

[Causes]

The following can be considered as the causes of this accident.

1. Flour particles being fed into the storage hopper were 50 microns in size, and therefore highly prone to explosive combustion when mixed with air in the process of being fed into the bin by air pressure.

2. The incandescent electric lamp used to check the inside of the storage hopper was left within the hopper and became the source of ignition.

3. As the work manual was not careful enough to cover all possibilities, a still-lighted incandescent electric lamp was left inside the storage hopper.

4. Safety management structure was not fully established.

5. Safety education concerning dust explosions was insufficient.
<table>
<thead>
<tr>
<th><strong>Caused by</strong></th>
<th>Hazardous materials, harmful substances, etc.</th>
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<tbody>
<tr>
<td><strong>Type of accident</strong></td>
<td>Explosion</td>
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<tr>
<td><strong>Number of victims</strong></td>
<td>Two injured (requiring an absence from work)</td>
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