

## Incident Investigation Case Studies

In groups of two or three, determine what the incident was, the direct cause of the incident, the indirect causes of the incident, and what corrective actions should be put in place to prevent similar incidents from reoccurring.

### Case study 1

A lift truck operator received extensive acid burns to his face and hands when a 50 litre boxed carboy of sulphuric acid rolled from the four-wheel truck he was pushing and burst on impact when it hit the floor. The injured man reported that the carboy was dislodged when the right-hand front wheel of the truck fell into a small pothole caused by previous acid spills on the wooden floor of the corridor. The lead hand had instructed all workers not to use the above-mentioned corridor, but the injured man disregarded his orders because it was a shorter route.

#### What was the incident:

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#### Direct cause:

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#### Indirect causes:

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#### Corrective actions:

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**Case study 2**

During an inspection of a new vessel, which was on site for eight weeks, it was determined that it was too dirty to put back into service during the final phase of a major expansion due to weld slag and poor housekeeping from installation. The prime contractor required the vessel to be vacuumed and cleaned of contaminants. A tank-cleaning contractor assigned a worker to do the job. The worker built a small section of scaffold and proceeded to clear out the vessel. During this process, a worker came by to assist and asked if this was confined-space entry work due to the fact that three connections had not been de-energized, double-blocked, and bled to atmosphere prior to the job being undertaken. The answer given was, no product had been in the vessel, so it was not a confined space.

After a second inspection, the worker was asked to re-do the vacuuming. The worker pulled the vacuum cleaner into the manway and a few minutes later, while working, an explosion occurred. Both workers were blown off the scaffold. The worker vacuuming was burnt about the face, tops of ears, and suffered a concussion. The other worker extinguished the fire.

**What was the incident:**

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**Direct cause:**

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**Indirect causes:**

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**Corrective actions:**

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**Case study 3**

A worker received serious head and arm injuries when struck by pieces of wood from a crate of plumbing materials weighing 3,000 kilograms. The crate was being hoisted to the 10<sup>th</sup> floor (which was under construction) when the tower crane operator noticed the boom of another crane moving toward his load. The tower crane immediately stopped the ascent of the crate, but — “the sudden stop caused the two-centimetre-diameter sisal fiber sling to break and the crate fell 20 metres to the ground, scattering parts and debris over a 40 metre radius.”

The injured worker was within five metres of the point of impact where he was manning the tagline attached to the load. Measurements done during the investigation showed that the angle between the sling arms and the vertical would have been 75 degrees.

**What was the incident:**

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**Direct cause:**

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**Indirect causes:**

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**Corrective actions:**

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**Case study 4**

Two workers at a bulk petroleum facility collapsed while cleaning the walls and base of an underground tank.

The atmosphere in the tank had been tested prior to the workers entering the tank. The measured levels were documented as safe to work in. Luckily, the supervisor of the area came by to check on the work shortly after the two workers began cleaning the tank bottom, and he found them unable to climb out of the tank when ordered to do so. Respiratory protection in the form of cartridge gas masks is available but seldom used by workers. The two workers were taken to the hospital for treatment of nasal, throat, and eye irritation and released.

**What was the incident:**

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**Direct cause:**

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**Indirect causes:**

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**Corrective actions:**

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**Case study 5**

A 100,000 litre water truck used to haul salt water from a petroleum plant was taken to the company wash bay for cleaning. The salt water being hauled did contain hydrogen sulfide and had been noted to contain up to 600 parts per million. The tanker was to be washed out to prevent corrosion. A worker entered the tanker to clean it out and collapsed. A second worker climbed in to rescue the victim and also collapsed. A third worker put an air-purifying mask on and attempted the rescue. He also collapsed when the mask was pulled from his face. Rescue was completed by a fire rescue crew and the workers were taken to the hospital. The worker who had worn the mask survived, the first worker who attempted a rescue was dead upon arrival at the hospital, and the original worker died four weeks later.

**What was the incident:**

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**Direct cause:**

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**Indirect causes:**

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**Corrective actions:**

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**Case study 6**

A bricklayer received serious leg and back injuries when he fell from a wooden scaffold four metres high. He was repairing a 15 centimetre square hole. It was gathered that the supervisor told a newly trained worker to install the scaffold.

The injured bricklayer was inspecting the hole when he stepped back into a box containing the concrete mix. As he lost his balance, he grabbed the upper railing which gave way, causing him to fall to the ground. The wooden railing was weakened by a big knot that was covered with dirt and was not previously noticed.

**What was the incident:**

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**Direct cause:**

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**Indirect causes:**

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**Corrective actions:**

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