CHAPTER 6

ANALYSIS OF CAUSES OF ACCIDENT CASES
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Accident is an unexpected, unplanned occurrence which interrupts the completion of an activity. It may result in personal injury, damage to plant and machinery which may affect flow of production. To come out of clutches of accident risk, it is essential to understand the causes of accidents. The following analysis of accident cases, reveals of causes of accident, the types of business and number of victims.

CASE NO. 1 :

Paper dust ignited during repair work in milling room of a paper manufacturing plant.

[Circumstances of Incident]

The accident occurred in the process of tissue milling and winding rolls (an intermediate product) in a paper manufacturing plant.

Following the instructions of an operations chief to replace the clutter edge used to peel raw paper from the paper mill dryer, the victim turned on the switch rotate the cylinder by compressed air and cut the raw paper by means of the cutter edge.

When the victim next tried to turn on another switch to start positioning the cutter edge, accumulated paper dust in a dust-collecting system located between the dryer exit and the winding roll suddenly ignited, injuring the victim by the blast and heat from the flare-up.

Resulting fire was fed by floating dust particles (dust cloud) in the air and spread throughout the entire paper milling room.
Causes

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

1. Ignition causes:

   1. Ignition of a paper dust layer at a low temperature.
   2. Contact sparks from the dryer.
   3. Friction sparks from the nozzle and chain of the dust collected system.
   4. Sparks due to static electricity.

2. Concentration of dust, etc.

   1. The room humidity was partly below 15 per cent.
   2. The dust-collecting system was designed to release a large part of collected air after filtering.
   3. The dust-collecting method and capabilities were inadequate, considering the accumulated dust in the duct of the system.

Type of business: Pulp/paper manufacturing

Type of accident: Explosion.

Number of victims: One injured (not involving any absence from work).
A reaction vessel burst due to a sudden increase in its internal pressure as a result of abnormal reactions during the process producing intermediate pharmaceutical products.

[Circumstances of Incident]

The accident occurred in a plant that manufactures intermediate pharmaceutical products. The production train can be divided into reaction, maturing, analysis and degassing operations. The accident occurred during the degassing operation which byproduct gases are removed from the 6 - K1 reaction vessel.

On the day of the accident, two workers in the production section were carrying out the second day degasing operations under the supervision of the production manager.

As not all of coolant (ethylene green in a water solution) had been removed from the vessel jacket on the previous day, two workers had been working since the morning to try to remove the coolant by washing the vessel with steam.

Temperatures inside the vessel were elevated partly as a result of the washing operations, and additional mixing operations caused abnormal chemical reactions within the vessel, leading the generation of heavy form on the liquid surface at about five O'clock in the afternoon.

As the manager was absent from the operational site at the time, the two workers tried to reduce the internal pressure by opening the pressure-reducing valves at about 5 : 35, and then evacuated the site in anticipating imminent danger.
The vessel burst, soon with the cover plate with clamp coming off. Scattered chemicals injured five employees, including one fatality.

Causes:

A major cause of this accident can be attributed to the plant manager who did not anticipate the occurrence of abnormal chemical reactions in the process of producing benzyl chloroformate. The following conditions can also be pointed out in relation to this.

1. The vessel's internal pressure rapidly increased due to an abnormal reaction, thus exceeding the vessel's capability to withstand internal pressure. The vessel was not equipped with safety devices, such as safety valves or burst plugs, to release internal pressure to the outside before reaching the bursting point.

2. Appropriate operational manuals were not prepared regarding countermeasures to deal with abnormal reactions. Namely, workers engaged in the manufacturing process cannot take the necessary measures to respond to abnormal conditions as they are not properly educated or trained.

3. Indirect causes may include inadequate organisational measures, as shown by the lack of detailed safety and health education for related workers, and an undefined command and responsibility structure to ensure safety in production facilities.

Type of business: Pharmaceuticals manufacturing.

Type of accident: Bursting.

Number of victims: Four injured and one fatality.
CASE NO. 3:

A forklift operator was caught between the mast and the head guard while trying to straighten a loose load.

[Circumstances of Incident]

This accident occurred when a Thai restaurant owner and other workers were laying carpet on the restaurant floor by themselves.

On the day of the accident, the restaurant owner-manager, A helped by a waiter B started to lay carpet that he and his wife had bought at a nearby home-center. They were doing this work during some spare time before the restaurant opened.

One cleaned the floor and another applied adhesive to the back of the carpet and laid it on the floor. The work started at about Seven O'clock in the evening. After working for about an hour, fire suddenly broke out at a place where the new carpet had been installed, and spread throughout the entire space, and totally destroying the restaurant by the fire.

The manager A was severely burned and died almost instantly. The waiter B who had been working with the manager also died one week after being taken to a hospital. A female worker C, who had been washing dishes in the kitchen in preparation for opening, was also seriously burned. A Thai cook D who was preparing vegetables in the kitchen was also injured by fire although he was able to escape from the building by himself.
Causes:

The direct causes of this accident can be attributed to the adhesive used in the carpet laying work. The adhesive's major component – flammable organic solvent – was spread over the entire space during the work, and was believed to have caught fire from something inside the restaurant, leading to the serious fire that destroyed the entire restaurant.

Moreover, as the accident occurred in the cold of winter, it is thought likely that the manager and other workers carried out the work without opening any windows for ventilation, leading to the conditions that may have contributed to the sudden outbreak of the fire.

While it is assumed that the organic solvent was ignited by one of two kerosene stoves used for drying purposes, there were other sources, including a ventilator. Although it was assumed that it was not used at the time or sparks from a refrigerator.

The most important point, however, is the fact that foreign nationals, without adequate knowledge of adhesives and capability to read instructions in Japanese, were carrying out carpeting work by themselves, by using adhesive purchased at a home-center instead of employing professionals.

Type of business: Other retail industry.

Type of accident: Fire.

Number of victims: Two fatalities and two injured (involving absences from work).
Skin exposure to hazardous radiation during X-ray leakage tests

[Circumstances of Incident]

An inspector was suffered hazardous radiation exposure to this skin while conducting X-ray leakage tests at the final stage in the manufacture of an X-ray device.

The company carried out pre-shipment tests of manufactured X-ray devices in a controlled area within the plant. Detailed inspections were conducted in terms of both hardware and software in accordance with the checklist developed by the company.

One the day of the accident, the victim was engaged in preshipment tests on X-ray diffraction devices in the test area described above.

The victim started X-ray leakage tests from at about one O'clock in the afternoon. He released a fail-safe mechanism (which turns off the X-ray power supply switch if the operator opens the front door of the device), and measured X-ray leakage with a survey meter after confirming that X-ray radiation is continuing. At 1:30 in the afternoon, as X-ray leakage exceeding the permissible standard was detected near the right shutter. When he tried to inspect the shutter that covers the X-ray generator unit, his right hand was exposed to hazardous radioactive X-ray radiation.
Causes:

The direct causes of this accident may be attributed to the victim's actions. He released the fail-safe mechanism of the X-ray generator and inserted his right hand into the radiation path to remove the shutter covering the X-ray source.

This operation involves high risks, as the test must be conducted after releasing the fail-safe mechanism which contrasts with the operation by and users. For this reason, operational standards must be established in advance for trouble involving the shutter (for example, procedures to remove the shutter). However, such standards were not adopted by this workplace.

The indirect causes of this accident relate to daily operational practices in this plant. As inspectors had to handle a large number of inspections in professional areas, they are assumed to have paid less attention to the danger of X-ray radiation.

Type of business: Other precision machines/equipment manufacturing.

Type of accident: Contact with hazardous substances, etc.

Number of victims: One injured (involving absence from work).

CASE NO. 5:

Chemical burns to skin by contact with high-concentration raw liquid phenol while taking countermeasures against abnormal reactions in the synthesizing reaction process for phenol.

[Circumstances of Incident]

This accident occurred in a phenol resin manufacturing plant, where the phenol resin synthesis process included: mixing raw phenol with acid in a
reaction vessel; adding formalin while heating the raw material; and adding denaturant prior to completing the reaction process by steam heating. Phenol resin is then produced by dehydration.

A team consisting of a supervision and four workers was scheduled to work from 11:00 in the evening to 8 O'clock the next morning. Trouble occurred during phenol reaction process. As temperature in the reaction vessel rose to an excessive level due to operational mistakes by workers, cooling operations were started. However, other mistakes in the cooling process resulted in foam resin (an intermediate product) adhering to pipes and a wide range of other equipment. Although the foam resin was removed, there was another serious mistake by the supervisor. When the supervisor ordered the cover of a check value to be opened for cleaning at round 10:30 in the morning, dehydration liquid spouted from the valve. Four workers who were engaged in this emergency operation were injured when their skin was burned by the high-concentration phenol.

Causes:

The direct causes of this accident may be attributed to the supervisor's erroneous instructions to clean the check valve instead of cleaning a strainer contaminated by foam resin due to trouble during the phenol resin synthesis process. Dehydration liquid containing high-density phenol spouting from the valve injured four workers.

Although the supervisor and four workers knew about the presence of the check valve, but had no knowledge of its structure and functions. This is why they mistook the valve as the strainer. Moreover, while workers were wearing protective masks and rubber gloves, their clothing was made of cotton rather than impermeable protective fabric. As a result, they sustained injuries on their necks, bodies, arms and legs.
The indirect causes of this accident relate to the following:

1. An instruction book covering this operation indicated no clear instructions on vacuum adjustments, leading to rapid increases in the temperatures in the reaction vessel due to a worker's erroneous operations. Thus, vacuum cooling is required to correct the situation.

2. When proceeding with the vacuum cooling, workers mistakenly switched over to "dehydration piping" as they normally to during the resin transport process, thus requiring the cleaning of the strainer and other equipment.

**Type of business**: Inorganic/organic chemicals manufacturing.

**Type of accident**: Contact with hazardous substances, etc.

**Number of victims**: Four injured (involving absence from work).

CASE NO. 6:

Operator crushed by suddenly descending forklift container while trying to remove a piece of wood caught between the lift cylinders.

[Circumstances of Incident]

This accident occurred when an operator was loading waste on a truck at a company that processes industrial waste.

The operations involved breaking up and sorting household and industrial waste by using scrapping machines at an open space on the company's ground, classifying the waste by material type and transporting it to waste landfills by trucks.
Although the day of the accident was Sunday, the operator arrived at the company at nine o'clock in the morning and starting loading wooden scrap on the truck by a forklift to finish work that was not completed on Saturday.

Shortly after he started he loading work, a piece of wood fell from the container and became caught between the lift cylinders, preventing the container from descending.

The operator left the driver's seat, went in front of the forklift (under the container) and tried use a crowbar to pull out the piece of wood. The container suddenly fell, crushing the operator's chest and abdomen.

Causes:

The following can be cited as the causes of this accident:

1. Without taking any safety measures, the operator went to the front of the forklift (under the container) and tried to pull out the piece of wood. It is always necessary to use a safety block or other similar means in such situations to ensure the safety of the operator even if the fork suddenly drops.

2. The indirect causes of this accident relate to the following: The company management lacked adequate understanding of the need for safety management at workplaces. There were no employees who had completed any forklift operation skill training courses. In addition, no specified voluntary inspections of forklifts had been implemented by this company.

Type of business: Industrial waste management business.

Type of accident: Caught or trapped.

Number of victims: One fatality.
CASE NO. 7:

Electrocuted while repairing semi-conductor manufacturing equipment.

[Circumstances of Incident]

This accident occurred in a semi-conductor manufacturing plant where 4Mbit memories and other products are produced.

The victim in this accident worked for a subcontractor of the parent company, which owned the plant where the victim and this colleagues were engaged in silicon water polyimide processing and back face processing. On the day of the accident, two maintenance workers, including one leader, started repair work when a sputtering unit used in the processing wafer surface failed.

As the first step, workers tried to replace a power amplifier and an intermediate amplifier with no success in restoring the functions of the unit. They then checked the voltage inside the high-frequency power source unit and detected abnormal figures in the voltages of four inspection terminals.

After taking a rest break, the leader made a telephone call at about 2:30 to the maintenance company responsible for the unit to report their failure in repairing the sputtering unit. He came back to the repair site about one hour later, and found the victim lying unconscious on the floor between the sputtering unit and power source rack.

The victim's body showed evidence of electric current passing through from the first and second fingers of the right hand to both knees and legs. In addition, some rubber-like material was adhering to a burned spot near the bottom of the metal cap on the top of the power amplifier in the high-frequency power unit.
Causes:

The following can be cited as the causes of this accident:

1. **The power source was turned on**: Although the leader had turned off the power switch of the high-frequency power unit by himself before taking break, the victim turned on the switch while the leader was talking to the maintenance company by phone to locate the failure and perform other repair work.

2. **Personal protective equipment to prevent electric shock was not used**: The victim was wearing polyester work clothes for the clean room, with a hood and anti-static rubber shoes, but no anti-shock protective equipment.

3. **Wrong operational procedures**: The sputtering unit handling manual indicates that the unit can generate electrical discharges and requires adequate precautions for high voltages. However, the worker started the operation without reconfirming the contents of the manual.

Type of business: Electronic and electric equipment parts manufacturing industry.

Type of accident: Electric shock.

Number of victims: One fatality.
Fall into an opening while unloading steel rods from the cargo bed of a truck at a subway construction site.

[Circumstances of incident]

The accident occurred while unloading steel rods that had been delivered as construction materials to a subway construction site.

The victim worked for a company that was engaged in delivering steel rods from the parent company's rod processing plant to the construction site. The victim had gone to the parent company's rod processing plant the day before the accident to load the steel rods onto a truck equipped with hoist, and arrived at the subway construction site where the accident occurred at around 8:30 AM on the day of the accident.

After arriving at the site, the victim backed up the truck so that it came to rest against the fall-prevention guard installed at the opening of the cargo off-loading site. The unloading work was to be jointly carried out with an employee working for the steel rod subcontractor. Work was started with the employee of the steel rod subcontractor operating the bridge-crane used for moving materials into and out of the site.

After working through the morning, the workers continued to carry out this work in the afternoon. At about 14:00 when the victim put his right foot on the fall-prevention guard at the opening (against which the rear end of the truck had come to rest), he slipped and fell through the opening, falling to this death some 10 meters below.
Causes:

The following can be cited as the causes of this accident:

1. Only a small space was provided for material deliveries.

2. Fall prevention measures at the opening were not sufficient.

3. The command and instruction system for the work was unclear.

4. Overall safety management was not adequate.

Type of business: Land cargo transportation.

Type of accident: Fall.

Number of victims: One fatality.

CASE NO. 9:

Caught between plug table and unit frame during repair work on a plastic molding machine.

[Circumstances of Incident]

The accident occurred at a plant that manufacture molded plastic products.

The plant operates on a 24-hour continuous basis, with three working shifts per day. One the day of the accident, the victim was working the night shift and was responsible for operating two plastic molding machines with the assistance of two foreign workers who were employed by an in-site subcontractor.
At round 30 minutes after midnight, the victim and the two foreign workers changed the die in the molding machine. When this work was completed, the victim gave instructions to the two workers to prepare the sheets of plastic material, etc. and entered the inside of the machine.

After about 15 minutes had elapsed, the voice of the victim could be heard calling "I need air!" followed moments later by a loud cry of "Air, air, air!". The two workers ran to where they heard the voice. The victim, his chest caught between the plug table and the unit frame inside the machine, was lying on his stomach with his arms outstretched.

One of the two workers who had rushed to the site was quick witted enough to open the machine's main compressed air supply valve, causing the plug table and the upper die to lift and release the victim. Although the victim's chest was heaving up and down as he tried to suck air into his lungs, his breathing had stopped after about a minute.

Causes

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

1. It is assumed that when the victim entered the molding machine, he leaned the upper part of his torso under the plug table, etc. to carry out replacement work and was replacing the controller when the plug table and upper die descended, trapping him by the chest between the plug table and the unit frame.

2. The reason the plug table, etc., descended was because the victim closed the valve of the main pipe that supplies compressed air to the molding machine. In other words, the machine employed a mechanism whereby the plug table, etc., are raised and held at the upper dead point by compressed air, but descend by their own weight when the valve is closed.
3. It is assumed that the reason the victim closed the main compressed air supply valve was the fear that compressed air would suddenly gush out when the controller was removed.

Type of business: Plastic products manufacturing

Type of accident: Caught

Number of victims: One fatality.

CASE NO. 10:

Logs falling from a barker table during work using an overhead travelling crane to hoist logs into position for processing.

[Circumstances of Incident]

The accident occurred on the drainage check adjacent to a lumberyard at a factory that manufactures and sells construction materials.

The work on the day of the accident involved using a radio-controlled overhead travelling crane with a lifting load of 10 tons to hoist sling-loads containing six logs each from the drainage deck to the 3.3 m high table of a drum barker located adjacent to the drainage deck. The victim was carrying out this work by himself.

When the victim was carrying out slining work on the drainage deck, one of the six logs in the fourth load that had been piled atop the barker table fell back to the drainage deck, striking the victim in the back. The victim died the next day due to bleeding in the abdominal cavity.
While stopper wedges had been installed in four placers at the edge of drum baker table to prevent logs from falling back to the drainage deck, these wedges were only 43 cm thick-raising the danger that raw logs could roll off the table when they were piled two layers high.

Causes:

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

1. While the table is big enough to hold three sling-loads (a total of 18 logs) at a time without piling if they are of uniform shape, only two sling-loads (12 logs) could be reasonably accommodated without stacking if the logs had any curves or bends. Despite this fact, it is assumed that the victim had placed three sling-loads of logs on the table, and that one of the logs rolled over the stopper wedges and fell.

2. It is also assumed that because the victim was carrying out the slinging work alone with this back to the table, he did not notice the falling of the log.

Type of business: Lumber industry.

Type of accident: Crushed.

Number of victims: One fatality.

CASE NO. 11:

Overturning of a crane-mounted truck while carrying out work to load steel plate.

[Circumstances of Incident]

During work to load steel plate by using a crane mounted on a truck, the vehicle overturned and trapped the victim between an outrigger and the railing of a bridge.
1. This construction work involved the installation of sewer piping, and the only work remaining prior to the day of the accident consisted of levelling the height of the backfilled sections and paving over the area where the piping had been buried.

2. The work scheduled for the day of the accident included the delivery of earth and sand, surface rolling, cutting the paving sections, and laying the brick pavement for a sidewalk.

   The victim drove the crane-mounted truck to a leasing company to rent a concrete cutter.

3. After returning to the site, the victim was instructed to remove three steel plates that were laid over the portion of the trench that had not yet been backfilled. The victim started the work by himself, using the crane mounted on the truck.

4. The victim stopped the crane-mounted truck on a bridge, attached a sling to a steel plate and prepared to hoist in onto the bed of the truck. As he lifted the plate and tried to swing the boom some 90 degrees to place the plate on the bed of the truck, the truck toppled over onto the victim who was standing at the side and operating the crane. The victim's left leg was caught between an outrigger and the railing of the bridge, and he died about 11 hours after the accident.

Causes:

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

1. At the time the crane-mounted truck turned over, the victim was operating the crane from a narrow space between the bridge railing and the outrigger.

2. When the crane-mounted truck over, the outrigger was extended, but its length wasn't enough. The angle of the job boom was 30 degrees, and the...
Jib length was 5.61 meters. As the rated load of the crane in that configuration was only 0.4 ton, the victim was attempting to use the crane beyond its rated capacity.

3. The operating method, work methods and measures to prevent overturns had not been specifically determined for cases involving the use of a crane mounted on a truck to carry out such work.

4. The victim had conducted the slinging work on his own, despite the fact that he was not qualified to perform slinging work.

**Type of business**: Construction.

**Type of accident**: Caught.

**Number of victims**: One fatality.

CASE NO. 12:

Crushed by collapse of casting sand flexible containers

[Circumstances of the Incident]

This accident occurred at a factory that produces casting sand.

On the day of accident, the victim has started work at around 8:00 and was ordered to transport products that had been manufactured at plant production lines from the product shipping outlet to a product warehouse by operating a forklift, and to pile them in three layers in the warehouse for temporary storage.
At round 14:30, the worker started to collect loose sand scattered around the stacked sand containers by using a shovel and a wheelbarrow.

Soon after starting the sand collection work, a three-layer stack of flexible containers suddenly collapsed and crushed the victim, resulting in his death due to a broken neck that caused suffocation.

Five flexible containers were scattered around the accident site, one of which was found on the back of the victim.

Causes:

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

1. Flexible containers were piled on accumulated sand on the floor, keeping them under an unstable condition.

2. When the victim was collecting scattered sand, he tried to rake out sand from under the stacked containers.

3. As no instruction manual had been prepared for operations that are usually carried out in the warehouses, the victim had to use their own judgement in carrying out his job.

4. No safety education/training had been provided to workers.

Type of business: Non-organic/organic chemical product manufacturing.

Type of accident: Collapse.

Number of victims: One fatality.
CASE NO. 13:

Worker killed by a tree failing from the roadside during lumber collecting work.

[Circumstances of Incident]

This accident occurred during the cutting and collecting of larch logs.

A group of six workers was engaged in this operation. Two workers were loading logs on a truck at a flat space downhill from the cutting site, where another worker was cutting larch trees some distance from the truck. Three other workers were collecting lumber on a road near the site by using two machines. One of these three workers was hit by a tree standing at the roadside that suddenly fell over on him. The victim was waiting with his colleagues to remove logs from the machine.

The victim was immediately hospitalised but died from neck injuries.

Causes:

The following can be cited as the major causes of this accident.

1. The immediate cause of this accident can be attributed to a strong wind on the day, causing the tree to fall over.

2. Three days before the accident, the tree has been used to install a pulley through which a wire rope was used to haul felled logs to the loading site. It is possible that the tree was exposed to considerable weight and that its roots had been loosened.
3. The tree was growing on a steep slope of some 35 degrees. A pumice layer was found some 40 cm below the ground surface. Accordingly, it appears that the roots were not held with adequate strength to withstand the pulling force.

Type of business: Lumber felling.

Type of accident: Crushed.

Number of victims: One fatality.

CASE NO. 14:

Worker killed when much car broke free from battery-powered locomotive and ran out of control at the tunnel construction site.

[Circumstances of the Incident]

This accident occurred during tunnel excavation work that was being carried out by a shield-tunneling machine.

The mud-shield method being used at the tunnel construction site involved excavations at the cutting face by a shield-tunneling machine, segment erection work, much transportation by a battery locomotive and muck cars and mucking work from the entrance shaft.

One the day of the accident, workers started operations at 20:00 and took a rest break at 20 minutes after midnight. The locomotive operator came to the resting room after changing the make-up of the train into the locomotive and a muck car.

At around 1:00, two segment workers, a surveyor and the shield machine operator entered the tunnel to restart their work at the cutting face.
The locomotive operator got into the train at the shaft entrance and backed the muck car towards the cutting face. When the train came to the pithead, the muck car suddenly broke free from the locomotive and started running down the 4-percent grade towards the cutting face.

The car brushed against a segment worker some 59 meters from the pithead, ran over a surveyor and crashed into the shield machine operator at a point close to the cutting face, finally derailing and coming to a stop around 109 meters from the pithead.

Causes:

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

1. The locomotive operator failed to insert a connecting pin into the coupling after changing the make up of his train into the locomotive and the muck car. This was the reason the car broke free of the locomotive coupling at a point where the 4-percent grade started and ran out of control.

2. As a rule, cars are prohibited from running in the tunnel when workers are working in the tunnel and workers are prohibited from entering the tunnel when cars are running. However, the locomotive operator moved his train into the tunnel despite the fact that he knew that workers were passing through the tunnel. Moreover, the shield machine operator and the locomotive operator failed to observe the rule that they must communicate with each other by interphone before entering the tunnel or when they can enter the tunnel.

Type of business: Tunnel construction.

Type of accident: Crush.

Number of victims: One fatality and one injury requiring an absence from work.
CASE NO. 15:

Collapse of hardened block of cement during operations to break it up.

[Circumstances of the Incident]

One day on the accident, the victim and another worker had been trying to break-up a hardened block of cement inside a cement-storage silo. As the surface of the stored cement had become very hard, workers were not able to ship cement to the outside. The cylindrical block had a diameter of 20 meters and a height of 24 meters. While workers have tried to break it up, a large mass of cement, a height of 7.5 meters, a width of 3.1 meters and a length of 6.0 meters, suddenly collapsed. The victim was buried under collapsing cement and died of suffocation. Another worker was also suffered a broken left ankle, requiring an absence from work for 30 days.

Causes:

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

1. A 7.5 meter high section of the block of hardened cement suddenly fall from the 80 degree slope of the block, as workers applied jack hammers and poples to the base of the block to try to break it up.

2. No provisions were taken to use safety belts or other safety measures to prevent workers from being buried by cement when the block broke up.

Type of business: Port cargo transportation.

Type of accident: Collapse.

Number of victims: One fatality and one injury requiring an absence from work.