1323308 January 2001

Source : CNN.COM, JANUARY 8, 2001
Location : Truth or Consequences, NEW MEXICO

Injured : 17 **Dead :** 0

Abstract

An explosion and fire occurred injuring seventeen people when a vehicle rolled onto a gasoline station and collided with an 18,000-gallon propane tank that was 85% full. Nearby residents were evacuated. A second tank holding 2,000 gallons of the flammable gas exploded as a result of the first explosion.
[fire - consequence, evacuation, road vehicle, gas - flammable]

Lessons

[None Reported]

1322114 December 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, DECEMBER 15, 2000, (http://www.chemsafety.gov).
Location : Woodlawn, Ohio, USA

Injured : 0 **Dead :** 0

Abstract

One hundred and fifty people were evacuated when a hydrochloric acid spilled during preparations for offloading. The incident occurred when a flange on a road tanker broke spilling several hundred gallons of acid. Fortunately no one was injured in the incident.
[evacuation, unloading, flange failure]

Lessons

[None Reported]

1320509 December 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, DECEMBER 11, 2000, (http://www.chemsafety.gov), Disclaimer: The Chemical Incident Reports Center (CIRC) is an information service provided by the U.S. Chemical Safety and Hazard Investigation Board (CSB). Users of this service should note that the contents of the CIRC are not intended to be a comprehensive listing of all incidents that have occurred; many incidents go unreported or are not entered into the database. Therefore, it is not appropriate to use the CIRC database to perfrom statistical analysis that extends conclusions beyond the content of the CIRC. Also, although the CSB never knowingly posts inaccurate information, the CSB is unable to independently verify all information that it receives from its various sources, much of which is based on initial reports. CIRC users should also note that the CSB receives more comprehensive reports about incidents that occur in the U.S.; comparisons made between U.S. incidents and those in other nations should take this fact into consideration.

Location : , SINGAPORE

Injured : 4 **Dead :** 0

Abstract

An explosion and fire occurred on a pipe carrying diesel during routine work in a steam boiler at a chemical plant. Four workers were injured in the incident. An investigation into the incident found that the workers were trying to switch on an additional source of fuel supply to the boiler when the incident occurred. The cause of the incident is unknown.
[fire - consequence, burns, injury, normal operations]

Lessons

[None Reported]

1320806 December 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, DECEMBER 7, 2000, (http://www.chemsafety.gov), Disclaimer: The Chemical Incident Reports Center (CIRC) is an information service provided by the U.S. Chemical Safety and Hazard Investigation Board (CSB). Users of this service should note that the contents of the CIRC are not intended to be a comprehensive listing of all incidents that have occurred; many incidents go unreported or are not entered into the database. Therefore, it is not appropriate to use the CIRC database to perfrom statistical analysis that extends conclusions beyond the content of the CIRC. Also, although the CSB never knowingly posts inaccurate information, the CSB is unable to independently verify all information that it receives from its various sources, much of which is based on initial reports. CIRC users should also note that the CSB receives more comprehensive reports about incidents that occur in the U.S.; comparisons made between U.S. incidents and those in other nations should take this fact into consideration.

Location : Jal, USA

Injured : 0 **Dead :** 0

Abstract

An explosion occurred on a gas pipeline at a gas plant setting fire to two chemical tanks containing methanol and glycol.
The fire was containing within two hours and fortunately no one was injured in the incident.
Fire fighters used water to cool the tanks and foam on the flaming liquid.
An investigation into the incident is underway.

Lessons

[None Reported]

1321330 November 2000

Source : YAHOO NEWS, NOVEMBER 30, 2000, (http://www.uk.news.yahoo.com)
Location : Bristol, UK

Injured : 0 **Dead :** 0

Abstract

A rail transportation incident. An empty coal train derailed on its way from a power station spilling red diesel fuel onto nearby wetlands injuring many birds. No one was injured in the incident although it is reported that the driver was in shock. An investigation is underway to find the cause of the derailment. [derailment - consequence, freight train, spill, environmental]

Lessons

[None Reported]

1314926 November 2000

Source : BBC NEWS, 26 NOVEMBER, 2000, (http://www.bbc.co.uk).
Location : Cornwall, UK

Injured : 0 **Dead :** 0

Abstract

A marine transportation incident. A cargo ship containing more that 40,000 tonnes of metal ores, 370 tonnes of diesel and a quantity of other fuels suffered steering problems in strong winds. The cargo ship became disabled off the coast of Cornwall raising fears of pollution.
Fortunately the ship managed to gain power and was escorted to safety.
[bauxite, magnesium ore, diesel oil, fuel oil, steering failure, near miss]

Lessons

[None Reported]

1318808 November 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, NOVEMBER 8, 2000, (http://www.chemsafety.gov), Disclaimer: The Chemical Incident Reports Center (CIRC) is an information service provided by the U.S. Chemical Safety and Hazard Investigation Board (CSB). Users of this service should note that the contents of the CIRC are not intended to be a comprehensive listing of all incidents that have occurred; many incidents go unreported or are not entered into the database. Therefore, it is not appropriate to use the CIRC database to perfrom statistical analysis that extends conclusions beyond the content of the CIRC. Also, although the CSB never knowingly posts inaccurate information, the CSB is unable to independently verify all information that it receives from its various sources, much of which is based on initial reports. CIRC users should also note that the CSB receives more comprehensive reports about incidents that occur in the U.S.; comparisons made between U.S. incidents and those in other nations should take this fact into consideration.

Location : Boston, USA

Injured : 0 **Dead :** 0

Abstract

An unknown quantity of hydrochloric acid spilled in to storm drains. The solution was made up of 70 percent water and 30 percent acid. Fortunately no one was injured in the incident.

Lessons

[None Reported]

1319405 November 2000

Source : BBC NEWS, 6 NOVEMBER 2000, (http://www.bbc.co.uk).
Location : Jilin Province, CHINA

Injured : - **Dead :** -

Abstract

A gas explosion occurred in a coal mine trapping thirty one miners underground. It is not known what casualties there are.
[mining]

Lessons

[None Reported]

1319101 November 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, NOVEMBER 3, 2000, (http://www.chemsafety.gov), Disclaimer: The Chemical Incident Reports Center (CIRC) is an information service provided by the U.S. Chemical Safety and Hazard Investigation Board (CSB). Users of this service should note that the contents of the CIRC are not intended to be a comprehensive listing of all incidents that have occurred; many incidents go unreported or are not entered into the database. Therefore, it is not appropriate to use the CIRC database to perfrom statistical analysis that extends conclusions beyond the content of the CIRC. Also, although the CSB never knowingly posts inaccurate information, the CSB is unable to independently verify all information that it receives from its various sources, much of which is based on initial reports. CIRC users should also note that the CSB receives more comprehensive reports about incidents that occur in the U.S.; comparisons made between U.S. incidents and those in other nations should take this fact into consideration.

Location : New Brunswick, CANADA

Injured : 2 **Dead :** 0

Abstract

An explosion occurred when welding sparks ignited gases released from a vacuum truck. Two welders were injured in the incident.
[burns, injury]

Lessons

[None Reported]

1309230 October 2000

Source : YAHOO NEWS, OCTOBER 30, 2000, (http://www.yahoo.co.uk),; CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, OCTOBER 31, 2000, (http://www.chemsafety.gov).

Location : Gloucestershire, UK

Injured : 0 **Dead :** 0

Abstract

A fire and explosion occurred at a chemical factory releasing caustic fumes to atmosphere. The explosion and fire is throught to have been caused by ruptured durms, which released a mixture of toxic chemicals. Nearby residents were evacuated as a precaution due to fumes and nearby flooding. It is now thought that some chemicals have spilled from the damaged containers into the swollen river. Chemical involved; cyanide product, cadmium, mercury and hydrochloric acid]

[fire - consequence, gas / vapour release, evacuation]

Lessons

[None Reported]

1317517 October 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, OCTOBER 17, 2000, (http://www.chemsafety.gov), Disclaimer: The Chemical Incident Reports Center (CIRC) is an information service provided by the U.S. Chemical Safety and Hazard Investigation Board (CSB). Users of this service should note that the contents of the CIRC are not intended to be a comprehensive listing of all incidents that have occurred; many incidents go unreported or are not entered into the database. Therefore, it is not appropriate to use the CIRC database to perfrom statistical analysis that extends conclusions beyond the content of the CIRC. Also, although the CSB never knowingly posts inaccurate information, the CSB is unable to independently verify all information that it receives from its various sources, much of which is based on initial reports. CIRC users should also note that the CSB receives more comprehensive reports about incidents that occur in the U.S.; comparisons made between U.S. incidents and those in other nations should take this fact into consideration.

Location : Kilgore, Texas, USA

Injured : 3 **Dead :** 1

Abstract

An explosion occurred at a truck repair facility when a worker was trying to weld a ball valve onto the back of an oil tanker truck when residue from a gaseous hydrocarbon ignited. The worker was killed and three others injured in the incident.
An investigation into the incident is underway.
[welding, road tanker, fatality, injury]

Lessons

[None Reported]

1318111 October 2000

Source : BBC NEWS, 12 OCTOBER, 2000, (http://www.bbc.co.uk).
Location : Nigeria, AFRICA

Injured : - **Dead :** -

Abstract

A road transportation incident. A road tanker carrying fuel exploded when in collision with a bus carrying fifty-six people.
[explosion]

Lessons

[None Reported]

1269406 October 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, JUNE 21, 2000, (http://www.chemsafety.gov).

Location : Ojima, JAPAN

Injured : 28 **Dead :** 4

Abstract

An explosion occurred in a distilling tower at a chemical plant that produces hydroxylamine and other chemicals used in making computer chips and pesticides. Four workers were killed and twenty-eight were injured.
It is thought that the explosion may have been caused by the hydroxylamine being manufactured at the plant.
[chemical causes, distillation, fatality, fire - consequence, injury]

Lessons

[None Reported]

1046902 October 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, OCTOBER 2, 2000, (http://www.chemsafety.gov).
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Location : Taylor, USA

Injured : 2 **Dead :** 1

Abstract

One worker was killed and two others injured in an explosion during welding operations. The incident occurred during welding on a semitrailer when it is thought fumes ignited.
[road transport, injury]

Lessons

[None Reported]

1321826 September 2000

Source : CNN.COM, SEPTEMBER 26, 2000, (http://www.cnn.com).
Location : New York, USA

Injured : - **Dead :** 1

Abstract

A road transportation incident. An explosion and fire occurred when a road tanker carrying gasoline was in collision with a van. The driver of the van was killed. Nearby residents were evacuated as a precaution.
It is not known whether the road tanker was at full capacity of 9,8000 gallons at the time of the incident.
[fire - consequence, fatality, evacuation

Lessons

[None Reported]

1308318 September 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, SEPTEMBER 20, 2000, (http://www.chemsafety.gov).
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Location : Newark, New Jersey, USA

Injured : 0 **Dead :** 0

Abstract

An explosion and fire occurred in a laboratory at a University forcing the evacuation of the facility. Fortunately no one was injured.
It is thought the incident occurred due to the building up of hydrogen in an inert atmosphere glove box. The equipment had not been used for a couple of months. Damage occurred to equipment.
An investigation into the actual cause of the incident is being carried out.
[fire - consequence, laboratory work, protective safety equipment]

Lessons

[None Reported]

1306213 September 2000

Source : BBC NEWS, 13 SEPTEMBER, 2000, (http:www.bbc.co.uk).
Location : , UK

Injured : 0 **Dead :** 0

Abstract

A fire occurred at in a fuel storage tank containing 30,000 litres of central heating oil. It is thought that the fire occurred due to a faulty thermostat.
[fire - consequence, instrumentation failure, storage tanks]

Lessons

[None Reported]

1320409 September 2000

Source : HAZARDOUS CARGO BULLETIN, NOVEMBER 2000.
Location : Urumqi, Zinjiang, CHINA

Injured : 300+ **Dead :** 60

Abstract

A road transportation incident. An explosion occurred on a truck carrying explosives for disposal. The incident occurred due to an uneven road causing excessive vibration. Sixty people were killed and more than three hundred injured in the incident. A nearby residential area was damaged.
[fatality, injury, damage to equipment]

Lessons

[None Reported]

1306508 September 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, SEPTEMBER 11, 2000, (http://www.chemsafety.gov).
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Location : Rogers City, USA

Injured : 0 **Dead :** 0

Abstract

A fire occurred at a warehouse containing unknown amounts of fertilisers, herbicides, insecticides and pesticides. The fire totally destroyed the building. The cause of the fire is not known.
A half-mile area surrounding the fire was evacuated as a precaution.
[fire - consequence, warehousing, evacuation, unidentified cause]

Lessons

[None Reported]

1303708 September 2000

Source : YAHOO UK & IRELAND NEWS, SEPTEMBER 9, 2000, (http://www.yahoo.co.uk).
Location : , CHINA

Injured : 300+ **Dead :** 60+

Abstract

A road transportation incident. A truck carrying explosives for disposal exploded during transit killing approximately sixty people and injuring at least three hundred others.
An investigation into the incident is underway.
[explosion, fatality, injury]

Lessons

[None Reported]

1306608 September 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, SEPTEMBER 11, 2000, (http://www.chemsafety.gov).
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Location : West Deptford, USA

Injured : 3 **Dead :** 0

Abstract

A fire occurred at a refinery. It is reported that the fire occurred in a dewaxing unit used in the process of crude oil.
An investigation revealed that diesel fuel leaked from tubes that run through the heater into another heater, the fumes caught fire and released nitrogen oxides as a by-product of the fire.
Two workers and one fire fighter were injured in the incident.
[fire - consequence, gas / vapour release, refining, burns, injury]

Lessons

[None Reported]

1304001 September 2000

Source : ALTAVISTA, 5 SEPTEMBER, 2000, (http://www.altavista.com).
Location : Lefkandi, GREECE

Injured : 4 **Dead :** 1

Abstract

A bulk cargo ship broke in half during loading operations resulting in the immediate sinking of the ship. One person was killed and four others injured in the incident.
An estimated 200 to 500 tonnes of fuel was on board.
A large scale clean up is underway to mop up the spilled fuel oil from the tanker. It is thought that local environmental damage will occur as a result of the spill.
[marine transport, fatality, injury]

Lessons

[None Reported]

1320222 August 2000

Source : HAZARDOUS CARGO BULLETIN, NOVEMBER 2000.
Location : Oregon, USA

Injured : 0 **Dead :** 0

Abstract

A road transportation incident. A truck carrying 11,000 litres of herbicide caught fire and spilled an unknown quantity of the product into a nearby river. Ecological damage occurred.
[fire - consequence]

Lessons

[None Reported]

1303021 August 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, AUGUST 22, 2000, (http://www.chemsafety.gov).
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Location : Prudhoe Bay, Alaska, USA

Injured : 0 **Dead :** 0

Abstract

Approximately 29,400 gallons of mixed crude oil and water overflowed a setting tank. Fortunately the spill was contained in lined cells and the surrounding area was not contaminated.
The incident occurred at a processing facility where oil, water and gas are separated from the crude after it comes out of the ground.
In addition to the crude oil mixed with water, ethylene glycol was spilled inside the processing facility. This was also contained in a lined cell and did not contaminate the ground. No one was injured in the incident.
An investigation into the two spills is being carried out.

Lessons

[None Reported]

1302921 August 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, AUGUST 22, 2000, (http://www.chemsafety.gov).
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Location : Huron, USA

Injured : 4 **Dead :** 0

Abstract

An explosion and fire occurred at an ethanol plant injuring four people. Fire fighters were called to the scene and used foam to control the fire that followed the explosion. Two of the four people injured suffered serious burns and were hospitalised.
[fire - consequence, injury]

Lessons

[None Reported]

1301420 August 2000

Source : CNN.COM, U.S. NEWS, 20 AUGUST, 2000, (http://www.cnn.com).
Location : North Carolina, USA

Injured : 0 **Dead :** 0

Abstract

A gas pipeline ruptured forcing the evacuation of a nearby shopping mall. Fortunately no one was injured. The explosion occurred during construction work when workers apparently hit the gas line.
The line was shut off and fire fighters extinguished the fire.
[drilling/digging/ploughing vehicles, fire - consequence]

Lessons

[None Reported]

1303318 August 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, AUGUST 18, 2000, (http://www.chemsafety.gov).
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Location : Terre Haute, USA

Injured : 0 **Dead :** 0

Abstract

A leak of hydrochloric acid occurred at a steam plant power facility. The leak was discovered during routine checks of the equipment at the facility.
Hydrochloric acid is an extremely toxic substance used in water treatment facilities. The acid is used to produce steam for the heating and to clean the system.
Hydrochloric acid can cause nausea, difficulty in breathing, brain damage and death.
The water supply has been tested, and no chemical leaked into the sewer system.
[inspection, spill, power plant]

Lessons

[None Reported]

1301117 August 2000

Source : CNN.COM, U.S. NEWS, AUGUST 17, 2000, (http://www.cnn.com).
Location : Oklahoma, USA

Injured : 2 **Dead :** 0

Abstract

A road transportation incident. A National Guard vehicle carrying rocket pods overturned spilling explosives on a roadway. Two guardsmen were injured in the incident. Nearby residents were evacuated as a precaution.
Fortunately no warheads were attached as they were training rockets.
[explosives, evacuation, injury]

Lessons

[None Reported]

1299214 August 2000

Source : BBC NEWS, 15 AUGUST, 2000, (http://www.bbc.co.uk).
Location : Uganda, AFRICA

Injured : 10 **Dead :** 18

Abstract

A fire occurred killing eighteen people and injuring ten when a burning cigarette caused petrol from a fuel tanker to catch fire as villagers were attempting to siphon fuel from the overturned tanker.
[fire - consequence, road tanker, fatality, burns, injury]

Lessons

[None Reported]

1299312 August 2000

Source : BBC NEWS, 15 AUGUST, 2000, (http://www.bbc.co.uk).
Location : , NIGERIA

Injured : - **Dead :** 18

Abstract

An explosion occurred on a pipeline killing eighteen people. The incident occurred as villagers at the site of the ruptured pipeline were scooping up the leaking fuel.
[fatality, deliberate acts]

Lessons

[None Reported]

1297508 August 2000

Source : CHEMICAL SAFETY AND HAZARDS INVESTIGATION BOARD, AUGUST 9, 2000, (http://www.chemsafety.gov).
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Location : Guelph, Ontario, CANADA

Injured : 0 **Dead :** 0

Abstract

A fire and explosion occurred at a factory releasing corrosive gases. Several nearby companies and residents were forced to evacuate. The cause of the incident is not known.
[fire - consequence, gas / vapour release, evacuation]

Lessons

[None Reported]

1297608 August 2000

Source : CHEMICAL SAFETY AND HAZARDS INVESTIGATION BOARD, AUGUST 9, 2000, (http://www.chemsafety.gov).
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Location : Samut Prakarn, THAILAND

Injured : 54 **Dead :** 0

Abstract

A gas leak occurred on an old chemical tank at a scrap yard. Fifty-four people were taken to hospital for treatment of gas inhalation. The incident occurred as workers opened the tank for cleaning operations.
[people, injury]

Lessons

[None Reported]

1297704 August 2000

Source : CHEMICAL SAFETY AND HAZARDS INVESTIGATION BOARD, AUGUST 9, 2000, (http://www.chemsafety.gov).
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Location : Glenrock, USA

Injured : 0 **Dead :** 0

Abstract

A dust explosion occurred at a power plant. The incident occurred when coal dust was ignited inside an inactive silo. It is thought that the coal inside the silo shifted, resulting in an air-dust mixture hot enough to ignite. The explosion could have been a lot worse as the silo contained 60 tonnes of coal compared to it's 1,000 tonnes capacity. The incident occurred even though the plant had been blanketing the silo with carbon dioxide as a precaution measure.
[silo/hopper]

Lessons

[None Reported]

1320002 August 2000

Source : HAZARDOUS CARGO BULLETIN, NOVEMBER 2000.
Location : , GERMANY

Injured : 1 **Dead :** 0

Abstract

A road transportation incident. A road tanker containing 30m3 of diesel overturned when a tyre blew out causing a diesel spill, which then caught fire. Fortunately the driver managed to escape but received burns.
[fire - consequence, injury]

Lessons

[None Reported]

1295002 August 2000

Source : CHEMICAL SAFETY AND HAZARDS INVESTIGATION BOARD, AUGUST 7, 2000, (http://www.chemsafety.gov).
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Location : Pheonix, USA

Injured : 5 **Dead :** 0

Abstract

A fire occurred at a chemical supply warehouse releasing clouds of toxic smoke. Approximately 100 people were evacuated from the surrounding area. The warehouse stored pesticides, fertilisers, and plastics and possibly cyanide. Five fire fighters were taken to hospital for treatment for exhaustion and smoke inhalation. The fire damaged other businesses in the area. Damage to the warehouse is to be estimated at $100 million (2000).
[fire - consequence, warehousing, damage to equipment, injury, gas / vapour release]

Lessons

[None Reported]

1295101 August 2000

Source : CHEMICAL SAFETY AND HAZARDS INVESTIGATION BOARD, AUGUST 7, 2000, (http://www.chemsafety.gov).
Disclaimer: The Chemical Incident Reports Center (CIRC) is an information service provided by the U.S. Chemical Safety and Hazard Investigation Board (CSB). Users of this service should note that the contents of the CIRC are not intended to be a comprehensive listing of all incidents that have occurred; many incidents go unreported or are not entered into the database. Therefore, it is not appropriate to use the CIRC database to perfrom statistical analysis that extends conclusions beyond the content of the CIRC. Also, although the CSB never knowingly posts inaccurate information, the CSB is unable to independently verify all information that it receives from its various sources, much of which is based on initial reports. CIRC users should also note that the CSB receives more comprehensive reports about incidents that occur in the U.S.; comparisons made between U.S. incidents and those in other nations should take this fact into consideration.

Location : Gulfport, USA

Injured : 0 **Dead :** 0

Abstract

A waste disposal unit was found to be leaking hazardous materials acetone, formaldehyde, crystal violet and ethanol into a room at a hospital. The hospital was closed as a consequence.
An investigation into the leak found that the cause was due to a clogged pipe in the waste system.
The waste system neutralises hazardous chemicals before they are treated along with sewage.
[spill]

Lessons

[None Reported]

13020August 2000

Source : EDIE NEWSROOM, 21 AUGUST, 2000, (http//:www.edie.net/news/).
Location : Costa del Sol, SPAIN

Injured : 0 **Dead :** 0

Abstract

Cleaning emissions have been blamed for pollution that occurred over nine days on beaches across the Costa del Sol resulting in the closure of resorts and constant coastal clean up. The incident occurred during cleaning operations in the crude tanks of the petrol tanker.
[marine tanker, leak, hydrocarbon, cleaning fluid, ecological damage]

Lessons

[None Reported]

1292831 July 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, AUGUST 1, 2000, (http://www.chemsafety.gov).
Disclaimer: The Chemical Incident Reports Center (CIRC) is an information service provided by the U.S. Chemical Safety and Hazard Investigation Board (CSB). Users of this service should note that the contents of the CIRC are not intended to be a comprehensive listing of all incidents that have occurred; many incidents go unreported or are not entered into the database. Therefore, it is not appropriate to use the CIRC database to perfrom statistical analysis that extends conclusions beyond the content of the CIRC. Also, although the CSB never knowingly posts inaccurate information, the CSB is unable to independently verify all information that it receives from its various sources, much of which is based on initial reports. CIRC users should also note that the CSB receives more comprehensive reports about incidents that occur in the U.S.; comparisons made between U.S. incidents and those in other nations should take this fact into consideration.

Location : Convent, USA

Injured : 0 **Dead :** 0

Abstract

An explosion occurred at a phosphate plant. The incident occurred when a 12 inch line carrying processed gas exploded and caught fire an hour after the plant began to shutdown.
Damage is thought to be minor.
[fire - consequence, damage to equipment]

Lessons

[None Reported]

1292229 July 2000

Source : BBC NEWS, 1 AUGUST, 2000, (http://www.bbc.co.uk).
Location : , BRAZIL

Injured : 0 **Dead :** 0

Abstract

Approximately 1,000 litres of toxic fuel additive leaked from a pipeline into a nearby watercourse.
The company was alerted when nearby residents complained of nausea and a strong chemical smell.
An investigation into the leak found a small hole in the pipe.
The company was fined up to $560,000 2000).
This incident occurred just two weeks after the same company spilt approximately four million litres of crude oil into one of the country's main rivers.
[spill, environmental]

Lessons

[None Reported]

1315626 July 2000

Source : HAZARDOUS CARGO BULLETIN, OCTOBER 2000.
Location : New York, USA

Injured : 0 **Dead :** 0

Abstract

A road transportation incident. A road tanker trailer separated from it's tractor unit causing approximately 190 litres of gasoline to spill onto the highway.

Lessons

[None Reported]

1293020 July 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, AUGUST 1, 2000, (http://www.chemsafety.gov).
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Location : Lawrence, USA

Injured : 0 **Dead :** 0

Abstract

An explosion occurred at an industrial plant, the second to have happened in a week.
The explosion is thought to have occurred in the compressor building involving a pipeline containing hydrogen gas as workers were examining the system. It is thought there was approximately 12,000 pounds of gas in the system.
No one is thought to have been injured in the incident.
An investigation is being carried out into the cause of the incident.
[see record 12929]
[maintenance]

Lessons

[None Reported]

1293619 July 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, JULY 21, 2000, (http://www.chemsafety.gov).
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Location : Willoughby, USA

Injured : 1 **Dead :** 0

Abstract

A series of explosions and fires occurred at a plant. The explosion was caused by a spark or static electricity, which ignited gas leaking from overfilled cylinders. One person was injured in the incident.
An investigation found that an estimated 900 of 1,1000 cylinders were leaking from safety relief valves. The building was evacuated.
[burns, fire - consequence, overflow, evacuation, injury]

Lessons

[None Reported]

1286519 July 2000

Source : CNN.COM, U.S. NEWS, JULY 19, 2000, (http://www.cnn.com).
Location : Ohio, USA

Injured : 1 **Dead :** 0

Abstract

An gas explosion occurred at a gas plant forcing nearby residents to evacuate.
Two workers were injured in the incident. One was treated for first degree burns.
[evacuation, injury]

Lessons

[None Reported]

1282716 July 2000

Source : BBC NEWS, 17 JULY, 2000, (http://www.bbc.co.uk) .
Location : Ifie, Ijala, NIGERIA

Injured : - **Dead :** 30+

Abstract

A fire and explosion occurred on a pipeline killing more than thirty people. It is thought that vandals are the main cause of the incident.
This incident occurred less than a week after a similar incident that killed over two hundred people just ten kilometres away in Warri.
[fire - consequence, deliberate acts, fuel, injury]

Lessons

[None Reported]

1284216 July 2000

Source : CNN.COM, U.S. NEWS, JULY 17, 2000, (http://www.cnn.com),; CHEMICAL WEEK, JULY 26, 2000.
Location : Montreal, CANADA

Injured : 0 **Dead :** 0

Abstract

An explosion and fire occurred at a chemical plant sending a cloud of toxic smoke into the atmosphere and forcing the evacuation of thousands of nearby residents.
The explosion occurred in an acid-transformation plant thought to contain approximately 13,000 gallons of toxic materials, including sulphuric, nitric and hydrochloric acid.
Fortunately no injuries occurred in the incident.
Earth and sand was trucked to the site to prepare for any spill of acid-contaminated water and truck loads of lime were put on standby to neutralise any spilled acid.
The cause of the explosion is not known but it is thought that an electrical or mechanical failure may have contributed to the incident.
[fire - consequence, gas / vapour release, processing, sulphuric acid, nitric acid]

Lessons

[None Reported]

1292914 July 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, AUGUST 1, 2000, (http://www.chemsafety.gov).
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Location : Lawrence, USA

Injured : 0 **Dead :** 0

Abstract

An explosion / pressure release occurred whilst bringing a plant on line at an industrial plant involving several occurrences.
The incident occurred when a compressor malfunctioned approximately an hour later the auxiliary boiler malfunctioned, releasing ammonia to atmosphere.
A few hours later a third malfunction occurred when workers again were trying to bring the plant back online when a gasket blew and ignited hydrogen causing an explosion / pressure release.
[see record 12930 for second explosion at the same plant] [gasket failure, gas / vapour release]

Lessons

[None Reported]

1282610 July 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, JULY 12, 2000, (http://www.chemsafety.gov).
Location : Halifax, CANADA

Injured : 2 **Dead :** 0

Abstract

An explosion occurred in a laboratory at a brewery. The incident occurred when a mixture of glycol and sulphuric acid exploded in a beaker. Two workers were injured in the incident.
The plant was shut down and evacuated.
An investigation into the cause of the explosion is underway.
[laboratory work, evacuation, burns, container, injury]

Lessons

[None Reported]

1279710 July 2000

Source : BBC NEWS, 11 JULY, 2000, (http://www.bbc.co.uk)
Location : Warri, NIGERIA

Injured : 100+ **Dead :** 100+

Abstract

An explosion occurred on a pipeline carrying petrol killing and injuring at least one hundred people. Another one hundred are reported missing. The incident occurred when people were using buckets to collect petrol leaking from the pipeline after thieves had apparently punctured it. The area has been sealed off. It is feared that two hundred and fifty people may have been killed in the incident.
[deliberate acts, fatality, gasoline, injury]

Lessons

[None Reported]

1293810 July 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, JULY 21, 2000, (http://www.chemsafety.gov).
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Location : Montvale, USA

Injured : 1 **Dead :** 0

Abstract

A road transportation incident. A tank truck was in collision with a road vehicle causing the release of 1,500 gallons of gasoline to be spilled. The spill caused soil contamination. Gas fumes overcame one fire fighter.
A quick response prevented the gasoline from entering the sewer system.
[gas / vapour release, injury]

Lessons

[None Reported]

1315806 July 2000

Source : HAZARDOUS CARGO BULLETIN, OCTOBER 2000.
Location : Texas, USA

Injured : 0 **Dead :** 0

Abstract

A river transportation incident. A tank barge containing petroleum distillate collided with a moored construction barge causing approximately 70m3 of the distillate to spill into the water.
[river barge, collision]

Lessons

[None Reported]

1278405 July 2000

Source : CHEMICAL SAFETY AND AZARD INVESTIGATION BOARD, JULY 10, 2000, (http://www.chemsafety.gov).
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Location : Bayport, Texas, USA

Injured : 2 **Dead :** 0

Abstract

An explosion occurred at a chemical plant when a leak of glycidol occurred causing a runaway reaction and for a 2,000-gallon reactor to explode. Glycidol and methanol were released as a result.
Two people were injured in the incident.
Glycidol is an intermediate chemical used in sealants for windows and film processing. Exposure can cause burns to the skin.
[reactors and reaction equipment, gas / vapour release, fire - consequence, injury]

Lessons

[None Reported]

1277003 July 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, JULY 5, 2000, (http://www.chemsafety.gov).
(http://www.chemsafety.gov).
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Location : Columbia, USA

Injured : 3 **Dead :** 0

Abstract

A worker was covered with formaldehyde solution whilst loading the chemical on a shelf with a skip loader when the formaldehyde box hit the side of the shelf and broke the containers in side.
Three people were affected by the incident and all involved were decontaminated.
Formaldehyde is used generally as a disinfectant, germicide and preservative.
In large doses, the fumes can become overwhelm and cause eye irritation, coughing, upper respiratory problems, headaches, stuffy nose, nausea and fatigue.
[operation inadequate, contamination, people, spill, injury]

Lessons

[None Reported]

1278503 July 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, JULY 10, 2000, (http://www.chemsafety.gov).
Disclaimer: The Chemical Incident Reports Center (CIRC) is an information service provided by the U.S. Chemical Safety and Hazard Investigation Board (CSB). Users of this service should note that the contents of the CIRC are not intended to be a comprehensive listing of all incidents that have occurred; many incidents go unreported or are not entered into the database. Therefore, it is not appropriate to use the CIRC database to perfrom statistical analysis that extends conclusions beyond the content of the CIRC. Also, although the CSB never knowingly posts inaccurate information, the CSB is unable to independently verify all information that it receives from its various sources, much of which is based on initial reports. CIRC users should also note that the CSB receives more comprehensive reports about incidents that occur in the U.S.; comparisons made between U.S. incidents and those in other nations should take this fact into consideration.

Location : Hadtings, USA

Injured : 0 **Dead :** 0

Abstract

A fire occurred at a agricultural chemical warehouse that stored farm products, pesticide and herbicide chemicals. A dike was dug round the building to stop any chemicals spilling.
The warehouse was completely destroyed in the fire. There are no reports of injuries.
[fire - consequence, storage, damage to equipment]

Lessons

[None Reported]

1277530 June 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, JULY 3, 2000, (http://www.chemsafety.gov).
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Location : Philadelphia, USA

Injured : 1 **Dead :** 0

Abstract

An explosion occurred on a pipeline carrying heated gasoline injuring a worker. The incident occurred as workers were trying to shut down the unit because of a leak.
The fire was eventually brought under control.
[fire - consequence, injury]

Lessons

[None Reported]

1274630 June 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, JUNE 30, 2000, (http://www.chemsafety.gov).
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BBC NEWS, 2 JULY, 2000, (http://www.bbc.co.uk).

Location : Jiangman City, CHINA

Injured : 160+ **Dead :** 36

Abstract

A fire and explosion occurred at a fireworks factory. An estimated thirty six people have been killed and so far one hundred and sixty injured. The report stated that the fire started just as workers were arriving to being their workday.
It is thought that the explosion was caused by sparks made by workers pounding iron nails.
[fire - consequence, fatality, injury]

Lessons

[None Reported]

1274130 June 2000

Source : CNN.COM, U.S. NEWS, JULY 1, 2000, (http://www.cnn.com).
Location : Philadelphia, USA

Injured : 0 **Dead :** 0

Abstract

A fire occurred at a refinery that produces cumene, used to manufacture plastics and synthetics. The fire occurred due to a leak of hydrogen from a ruptured pipeline, which ignited.
The fire was brought under control with in a few hours and fire fighters remained on site to make sure escaping vapours burned out safely.
An investigation into the cause of the incident is being carried out.
[fire - consequence, refining]

Lessons

[None Reported]

1270225 June 2000

Source : BBC NEWS, 25 JUNE, 2000, (http;//www.bbc.co.uk),; CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, JUNE 25, 2000, (http://www.chemsafety.gov).
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Location : Al-Ahmedi, KUWAIT

Injured : 49 **Dead :** 3

Abstract

An explosion occurred at an oil refinery killing three and injuring forty-nine people. Most of the injured suffered burns and cuts from flying glass.
Production was shut down and workers evacuated at the 444,000 barrels per day refinery.
The explosion occurred during attempts to try and control a gas leak in one of the pipelines. The force of the blast shattered windows in the office building at the complex.
Damage is estimated at $324 million (2000).
[refining, fatality, people, evacuation, plant shutdown, damage to equipment, fire - consequence, injury]

Lessons

[None Reported]

1269722 June 2000

Source : BBC NEWS, 22 JUNE, 2000, (http://www.bbc.co.uk).
Location : , NIGERIA

Injured : - **Dead :** 10+

Abstract

An explosion and fire occurred on a pipeline. The explosion enveloped people as they siphoned petrol from the pipeline with buckets. It is thought that ten people were killed after the vandalised oil pipeline caught fire.
[fire - consequence, deliberate acts, fatality, gasoline]

Lessons

[None Reported]

1271019 June 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, JUNE 15, 2000, (http://www.chemsafety.gov).
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Location : Cornerplanter Township, USA

Injured : 0 **Dead :** 0

Abstract

A fire occurred in a furnace involving crystallized heptane, a petrochemical, for unknown reasons.
The fire was extinguished with out incident before the fire service arrived.
Fire crews entered the building and confirmed that a heptane leak had occurred.
[fire - consequence]

Lessons

[None Reported]

1267118 June 2000

Source : CNN.COM, U.S. NEWS, JUNE 18, 2000, (http://www.cnn.com).
Location : Socorro, NEW MEXICO

Injured : 0 **Dead :** 0

Abstract

A fire occurred at a tire-recycling plant. The smoke and fumes created by the fire forced 9,000 residents to evacuate.
[fire - consequence, evacuation]

Lessons

[None Reported]

1271115 June 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, JUNE 15, 2000, (http://www.chemsafety.gov).
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Location : Blue Ash, USA

Injured : 6 **Dead :** 0

Abstract

A flash fire was triggered when a hydraulic fluid leak occurred near a series of electrical switches.
The incident occurred when a worker dropped a mold used in the manufacturing process, the mold hit the hydraulic fluid line causing it to spring a leak. Six workers were affected by smoke.
Slight damage occurred to equipment.
[fire - consequence, flashover, damage to equipment, injury]

Lessons

[None Reported]

1275210 June 2000

Source : CHEMICAL & ENGINEERING NEWS, JUNE 19, 2000.
Location : Gunma, JAPAN

Injured : 28 **Dead :** 4

Abstract

An explosion occurred at a hydroxylamine plant. Four people were killed and twenty-eight injured in the explosion. The incident is thought to have occurred due to hydroxylamine, which when purified has an explosive power similar to TNT, exploded. The material, which is used in the manufacturing of semiconductors, becomes unstable when heated.
Heating in one of the steps in the distillation of unrefined hydroxylamine.
[heating, fatality, injury]

Lessons

[None Reported]

12598June 2000

Source : CHEMICAL WEEK, JUNE 7, 2000
Location : Texas, USA

Injured : 0 **Dead :** 0

Abstract

A rail transportation incident. A rail car derailed and crashed into pipelines carrying crude oil, gasoline, methanol and natural gas. Damage to the pipelines occurred but no release was reported.
Repairs could take up to three weeks to complete.
[damage to equipment, derailment]

Lessons

[None Reported]

1253331 May 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, MAY 31, 2000, (http://www.chemsafety.gov)

Location : Milwaukee, USA

Injured : 0 **Dead :** 0

Abstract

A fire occurred at a fuel plant when a 2,000-gallon fuel tank exploded. The fire was brought under control in about one and a half hours.
No injuries were reported.
An investigation is underway into the cause of the explosion.
[fire - consequence]

Lessons

[None Reported]

1253024 May 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, MAY 26, 2000, (http://www.chemsafety.gov)

Location : Carthage, USA

Injured : - **Dead :** 0

Abstract

An explosion occurred at a dynamite manufacturing plant injuring several workers. The cause of the explosion is not known but an investigation into the incident is being carried out.
No evacuations were ordered as a result of the explosion.
[injury]

Lessons

[None Reported]

1252724 May 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, MAY 26, 2000, (http://www.chemsafety.gov)

Location : Phoenix, Arizona, USA

Injured : 2 **Dead :** 0

Abstract

A hazardous chemical leak occurred at a plastics company forcing the evacuation of 150 people from the building and nearby businesses.
Approximately 75 gallons of 2-ethyl-2-oxoline, a highly flammable chemical used in the production of plastics that can cause respiratory and skin irritation, leaked on to the floor. The material has a flash point of 84 degrees C.
The incident occurred as employees were transferring the chemical from one tank to another when a valve stuck open. Due to the tank having a retention base around it, the leak was contained.
The chemical was absorbed with a product called vermiculite and transferred to other drums.
Fumes affected two employees.
[processing, gas / vapour release, material transfer, valve failure, injury]

Lessons

[None Reported]

1251118 May 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, 19 MAY, 2000, (http://www.chemsafety.gov)

Location : Veroli, ITALY

Injured : - **Dead :** 3

Abstract

Two explosions occurred at a fireworks factory killing three workers. The explosions came after a fireworks disaster at Enchede, Netherlands on 13 May that killed 20 people and left nearly 950 injured. Record 9293.
On 16 May, 6 people were killed when a fireworks factory exploded in the southeastern province of Valencia in Spain. Record 11267.
[fatality, injury]

Lessons

[None Reported]

1126716 May 2000

Source : BBC NEWS, 16 MAY, 2000, (http://www.bbc.co.ukCHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, 15 MAY, 2000, (http://www.chemsafety.gov)

Location : Rafelcofer, SPAIN

Injured : 6 **Dead :** 5

Abstract

An explosion occurred at a fireworks plant killing six people and injuring eight, two people are reported to be missing.
Flames engulfed the factory and spread to a nearby wood before finally being controlled by the fire fighters.
The cause of the explosion is not known.
[fatality, injury]

Lessons

[None Reported]

9293 13 May 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, 15 MAY, 2000, (http://www.chemsafety.gov)
Location : Enschede, NETHERLANDS

Injured : 600+ **Dead :** 20

Abstract

An explosion occurred at a fireworks warehouse killing at least 20 people and injuring 601. 13 people are still missing.
The incident occurred when fire fighters were on what they thought was a routine operation when a blaze ignited in the fireworks warehouse. But soon after, approximately 100 tonnes of explosives ignited.
Residents within the vicinity of the warehouse were evacuated.
Total damage has been estimated at more than euros 100 million (US$89,400,600) (2000).
The Dutch authorities have announced a full enquiry into the incident.
[warehousing, fire - consequence, fatality, evacuation, injury]

Lessons

[None Reported]

1124012 May 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, 13 MAY, 2000, (http://www.chemsafety.gov)
Location : Twin City, USA

Injured : 12 **Dead :** 1

Abstract

A worker was killed when approximately 20 gallons of hydrofluoric acid spilled at a chemical plant.
Twelve other people were injured in the incident.
[fatality, injury]

Lessons

[None Reported]

1248425 April 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, 25 APRIL, 2000, (http://www.chemsafety.gov),
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Location : , USA

Injured : 2 **Dead :** 1

Abstract

An explosion occurred at a liquid petroleum gas plant killing one worker and injuring two others. The incident occurred in a gas bottle storage building at the plant whilst a gas tanker was being loaded.
A cylinder was gassing off at the time of the explosion.
An investigation into the cause of the incident is being carried out.
[loading, fatality, injury]

Lessons

[None Reported]

1251023 April 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, 24 APRIL, 2000, (http://www.chemsafety.gov)

Location : Aberdeen, USA

Injured : 0 **Dead :** 0

Abstract

A gas leak occurred at a hospital forcing the evacuation of more than 100 people from the building. Two hospital workers found the ethylene oxide leak; they contained the leak to the first floor room where it occurred.
It is thought that the leak may have been triggered by a brief power outage.
No one was reported injured in the incident.
Ethylene oxide is used to clean medical equipment.
Ethylene oxide can cause nausea, as well as blisters and burns to the skin.
[gas / vapour release]

Lessons

[None Reported]

1248322 April 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, 24 APRIL, 2000, (http://www.chemsafety.gov),
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Location : Seligman, USA

Injured : 0 **Dead :** 0

Abstract

A rail transportation incident. A freight train derailed causing six cars containing hazardous materials, vinyl acetate and ethanol, to overturn. Two of the overturned cars were reported to be leaking.
No one was injured in the incident.
[derailment, spill, materials - hazardous]

Lessons

[None Reported]

1248221 April 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, 24 APRIL, 2000, (http://www.chemsafety.gov),
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Location : Georgia, USA

Injured : 0 **Dead :** 0

Abstract

A road transportation incident. An explosion occurred when a car collided with a road tanker carrying diesel fuel, which collided with a tractor-trailer carrying a farm chemical.
No injuries were reported.
[collision, unknown chemicals]

Lessons

[None Reported]

1247515 April 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, 17 APRIL, 2000, (http://www.chemsafety.gov),
Disclaimer: The Chemical Incident Reports Center (CIRC) is an information service provided by the U.S. Chemical Safety and Hazard Investigation Board (CSB). Users of this service should note that the contents of the CIRC are not intended to be a comprehensive listing of all incidents that have occurred; many incidents go unreported or are not entered into the database. Therefore, it is not appropriate to use the CIRC database to perfrom statistical analysis that extends conclusions beyond the content of the CIRC. Also, although the CSB never knowingly posts inaccurate information, the CSB is unable to independently verify all information that it receives from its various sources, much of which is based on initial reports. CIRC users should also note that the CSB receives more comprehensive reports about incidents that occur in the U.S.; comparisons made between U.S. incidents and those in other nations should take this fact into consideration.

Location : Burns Habor, USA

Injured : 0 **Dead :** 0

Abstract

A road transportation incident. A road tanker carrying 125,000 cubic feet of flammable liquid hydrogen caught fire when the tankers vent stack malfunctioned. The area within a one-mile radius was evacuated. No one was injured in the incident.
An investigation into the cause of the vent stack failure is underway.
[fire - consequence, mechanical equipment failure, evacuation]

Lessons

[None Reported]

1246813 April 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, 14 APRIL, 2000, (http://www.chemsafety.gov),
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Location : Grand Rapids, USA

Injured : 2 **Dead :** 0

Abstract

Approximately 20,000 gallons of petroleum products including hydraulic oils, starting fluids, automobile carburettor cleaners and racing fuel was spilled during a fire at a warehouse.
55-gallons drums and cases of petroleum products fuelled the fire.
Property damaged was estimated at $1 million (2000). Two fire fighters were treated for smoke inhalation.
[environmental, warehousing, fire - consequence, injury, damage to equipment]

Lessons

[None Reported]

1289609 April 2000

Source : HAZARDOUS CARGO BULLETIN, JULY 2000,; LLOYDS LIST.
Location : , DENMARK OFFSHORE

Injured : 0 **Dead :** 0

Abstract

A marine transportation incident. A marine tanker carrying 15,000 tonnes of gasoline ran aground on a sand bank. No damage or pollution occurred in the incident, although some cargo lightered.
[ship ran aground, transport effects]

Lessons

[None Reported]

1245707 April 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, 7 APRIL, 2000, (http://www.chemsafety.gov),
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Location : Winterset, USA

Injured : 9 **Dead :** 2

Abstract

A fire and explosion occurred on a fuel tank. The explosion occurred when fire broke out during cutting operations on a rusty fuel tank. Two people were killed and nine others injured in the blast.
[fire - consequence, hot work, fatality, hot surface, injury]

Lessons

[None Reported]

1289403 April 2000

Source : HAZARDOUS CARGO BULLETIN, JULY 2000,; IRISH TIMES.
Location : Bray, IRELAND

Injured : 0 **Dead :** 0

Abstract

A marine transportation incident. A barge carrying 28,400 l diesel broke free from its moorings and drifted aground on sands.
[inadequate mooring, transport effects]

Lessons

[None Reported]

1289303 April 2000

Source : HAZARDOUS CARGO BULLETIN, JULY 2000,; LLOYDS LIST.
Location : , UK OFFSHORE

Injured : 0 **Dead :** 0

Abstract

A marine transportation incident. A Ro-ro lost four containers overboard in heavy seas, one contained p-cresol and another contained epichlorohydrin. [environmental]

Lessons

[None Reported]

1241501 April 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, 3 APRIL, 2000, (http://www.chemsafety.gov),
Disclaimer: The Chemical Incident Reports Center (CIRC) is an information service provided by the U.S. Chemical Safety and Hazard Investigation Board (CSB). Users of this service should note that the contents of the CIRC are not intended to be a comprehensive listing of all incidents that have occurred; many incidents go unreported or are not entered into the database. Therefore, it is not appropriate to use the CIRC database to perfrom statistical analysis that extends conclusions beyond the content of the CIRC. Also, although the CSB never knowingly posts inaccurate information, the CSB is unable to independently verify all information that it receives from its various sources, much of which is based on initial reports. CIRC users should also note that the CSB receives more comprehensive reports about incidents that occur in the U.S.; comparisons made between U.S. incidents and those in other nations should take this fact into consideration.

Location : Monroe, Los Angeles, USA

Injured : 0 **Dead :** 0

Abstract

Approximately 10,000 gallons of gasoline spilled during material transfer from a barge into a storage tank.
No one was injured in the incident but about 100 nearby residents were evacuated as a precaution.
The spill was contained with foam, but clean up was delayed due to thunderstorms, which refilled the contaminant pit with rainwater. A powerful pump was brought in the next day to finish clean up.
[storage tanks, transport, evacuation]

Lessons

[None Reported]

1276627 March 2000

Source : CHEMICAL HAZARDS IN INDUSTRY, JUNE 2000,; CHEM. WEEKBL. 29 MAR 2000, (DUTCH WEBSITE: http://chemischweekblad.nl/).
Location : , GERMANY

Injured : 6 **Dead :** 0

Abstract

A rail transportation incident. An unknown amount of vinylbenzene (styrene), leaked from a freight wagon that was coupled to a train waiting at a station. The following day a leak of ethyl acrylate occurred. Six people were affected by the release of styrene fumes including the driver of the train. All passengers were evacuated.
No injuries occurred from the spill of ethyl acrylate.
[gas / vapour release, people, evacuation, rail transport, injury]

Lessons

[None Reported]

1236025 March 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, 26 MARCH, 2000, (http://www.chemsafety.gov).
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Location : Canton, USA

Injured : 0 **Dead :** 0

Abstract

Approximately 360 gallons of gasoline spilled into an lake when a fuel pipe ruptured. Approximately 20 people were evacuated as a precaution. [material of construction failure, evacuation]

Lessons

[None Reported]

1236323 March 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, 24 MARCH, 2000, (http://www.chemsafety.gov).
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Location : Lily, USA

Injured : 48 **Dead :** 0

Abstract

Sulphuric and hydrochloric acid were accidentally mixed resulting in two accidental releases of chlorine gas. The building was evacuated.
Forty eight people were treated for minor respiratory problems.
[sulphuric acid, gas / vapour release, evacuation, accidental mixing, mixer, injury]

Lessons

[None Reported]

1248622 March 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, 25 APRIL, 2000, (http://www.chemsafety.gov),
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Location : Martinez, California, USA

Injured : 2 **Dead :** 0

Abstract

A fire occurred at a refinery when fire fighting water became contaminated with fuel. An investigation into the incident found a small leak in a closed valve that is meant to separate the fire fighting water used to wash out fuel processing vessels.
Four other valves where meant to serve as backup devices to prevent contaminated water from flowing backward into the fire fighting water. But three were stuck in the open position and the forth one had a broken spring.
The incident occurred when the fire fighting water was sprayed underneath a welding job to quickly extinguish sparks that might ignite any stray vapours from refining units. But the water released a cloud of gas that burst into flames. The worker holding the hose and the welder suffered burns in the fire.
[fire - consequence, contamination, mechanical equipment failure, injury]

Lessons

[None Reported]

1234322 March 2000

Source : BBC NEWS, 23 MARCH, 2000, (http://www.bbc.co.uk),; CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, 22 MARCH, 2000, (http://www.chemsafety.gov).

Location : Abia State, NIGERIA

Injured : - **Dead :** 50

Abstract

A fire occurred on a pipeline killing approximately 50 people who at the time is thought to have been siphoning gasoline from the pipeline.
It was not immediately clear what started the fire but sabotage is thought to have been the cause.
[fire - consequence, deliberate acts]

Lessons

[None Reported]

1233921 March 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, 22 MARCH, 2000, (http://www.chemsafety.gov).
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Location : North Powder, Oregon, USA

Injured : 0 **Dead :** 0

Abstract

A rail transportation incident. Approximately 1000 gallons of fuel spilled from one or more tank cars when a freight train derailed. Clean-up operations are underway.
The incident caused damage to about a quarter-mile of track.
[derailment, damage to equipment]

Lessons

[None Reported]

1233320 March 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, 21 MARCH, 2000, (http://www.chemsafety.gov).
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Location : Hollywood, Florida, USA

Injured : 0 **Dead :** 0

Abstract

A rail transportation incident. Nearby businesses and roads were evacuated when four cars of a train derailed and overturned.
One car containing hydrogen peroxide poured thousands of gallons onto the surrounding area, another poured limestone and a petroleum compound spilled from a third car.
Cleanup operations are underway.
[evacuation, derailment]

Lessons

[None Reported]

1236420 March 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, 24 MARCH, 2000, (http://www.chemsafety.gov).

Location : Grand Prairie, CANADA

Injured : 0 **Dead :** 0

Abstract

An explosion occurred during welding operations on a tanker truck. The incident occurred when sparks ignited leftover fumes after the tanker had been emptied of its load of flammable oil well service water.

The explosion blew a hole 8 metres in diameter through the sheet metal roof and dented three overhead garage doors. Fortunately no one was injured in the incident.

Damage was estimated at $350,000 (2000) to the building and $70,000 (2000) to the truck.

[road transport, damage to equipment]

Lessons

[None Reported]

1234420 March 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, 22 MARCH, 2000, (http://www.chemsafety.gov).
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Location : Bello Horizonte, BRAZIL

Injured : 0 **Dead :** 0

Abstract

A rail transportation incident. A fire occurred when a 32-car train carrying thousands of gallons of diesel fuel derailed.
Several explosions occurred when the train derailed.
[derailment, fire - consequence]

Lessons

[None Reported]

1233620 March 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, 20 MARCH, 2000, (http://www.chemsafety.gov).

Location : Corunna, Ontario, CANADA

Injured : 21 **Dead :** 0

Abstract

A refinery stack flare went out causing low levels of hydrogen sulphide and mercaptans to be released into the atmosphere.
At low levels these substances have a very unpleasant odour and may cause headaches, nausea and coughing.
[gas / vapour release, flameout, injury]

Lessons

[None Reported]

1234519 March 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, 22 MARCH, 2000, (http://www.chemsafety.gov).
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Location : Igongwe, TANZANIA

Injured : 40+ **Dead :** 28+

Abstract

A road transportation incident. A fuel tanker overturned and caught fire. The fire occurred when residents in the area rushed to the scene to extract fuel from the overturned tanker, but in the process tampered with the battery, which sparked off the fire.
[fire - consequence, fatality, sabotage, injury]

Lessons

[None Reported]

1233517 March 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, 20 MARCH, 2000, (http://www.chemsafety.gov).

Location : Albany, Kentucky, USA

Injured : 0 **Dead :** 0

Abstract

A fire occurred at a chemical storage forcing the evacuation of the surrounding area. At the time of the report a building fire had been extinguished but four tanks each containing approximately 2,000 gallons of gasoline continued to burn.
The plant stores gasoline, oil and toluene.
[fire - consequence]

Lessons

[None Reported]

1233117 March 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, 20 MARCH, 2000, (http://www.chemsafety.gov).

Location : North Salt Lake City, USA

Injured : 0 **Dead :** 0

Abstract

A fire occurred as an employee was checking equipment while a tank truck was being filled at a loading dock at a refinery. Nearby fuel tanks were damaged in the blaze fortunately they did not explode.

The incident occurred when surplus gas from fuel hoses was being emptied into a steel bucket, which apparently built up static electricity and burst into flames. The operator threw the bucket away from his body causing an explosion.

The refinery offices were evacuated and underground pipes transferring petroleum products were shut-off.

[fire - consequence, road transport, damage to equipment, evacuation]

Lessons

[None Reported]

1244616 March 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, 16 MARCH, 2000, (http://www.chemsafety.gov)

Location : Corunna, Ontario, CANADA

Injured : 21 **Dead :** 0

Abstract

A flare went out on a refinery releasing gasses into the atmosphere. Twenty-one people were taken to hospital suffering affects of the released gas. Two hundred workers in a nearby building complained of nausea and sore throats after a strong sulphur smell was reported.
[gas / vapour release, flameout, people]

Lessons

[None Reported]

1244715 March 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, 16 MARCH, 2000, (http://www.chemsafety.gov)

Location : Rosepine, Los Angeles, USA

Injured : 2 **Dead :** 0

Abstract

Two workers were injured during welding operations when an explosion occurred. The incident occurred when the workers were loading diesel tanks and a gasoline air compressor on a logging truck.
An investigation into the incident is being carried out.
[road transport, injury]

Lessons

[None Reported]

1244514 March 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, 16 MARCH, 2000, (http://www.chemsafety.gov)

Location : Hangzhou, CHINA

Injured : 0 **Dead :** 4

Abstract

Four people were killed during arc-welding operations at a biogas-generating pit.
The incident occurred when the arc-welding device ignited gas in the pit resulting in an explosion.
[hot surface, fatality, fire - consequence]

Lessons

[None Reported]

1230412 March 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, 15 MARCH, 2000, (http://www.chemsafety.gov).
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Location : Mexico City, MEXICO

Injured : 1 **Dead :** 0

Abstract

Seven gas lines at a distribution centre caught fire and sparked off several explosions. Fire fighters manage to contain the blaze after three hours one fire fighter was injured.
Each gas pipeline had a 2,600-gallon capacity.
It is thought that the cause of the explosion was due to a high-pressure release from emergency blowout valves.
[explosion, fire - consequence, high pressure, injury]

Lessons

[None Reported]

1228611 March 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, 13 MARCH, 2000, (http://www.chemsafety.gov).

Location : Jiangxi, CHINA

Injured : 10 **Dead :** 33

Abstract

An explosion and fire occurred at a fireworks factory killing thirty-three people and injuring ten others.
An investigation into the incident is being carried out.
[fire - consequence, fatality, burns, management system inadequate, injury]

Lessons

[None Reported]

1224208 March 2000

Source : BBC NEWS, 8 MARCH, 2000, (http://www.bbc.co.uk),; CNI NEWS, 8 MARCH, 2000, (http://www.cnionline.com),; CHEMICAL HAZARDS IN INDUSTRY, JUNE 2000.

Location : Cheshire, UK

Injured : 7 **Dead :** 0

Abstract

A major gas leak occurred at a chemical plant after an explosion. Approximately half a tonne of hydrogen chloride gas was released from a storage container.
It is thought that the cause of the incident was due to the failure of a set of bellows.
Fire crews used a curtain of water jets to minimise the amount of gas spreading.
Nearby residents were advised to keep windows and doors closed until further notice.
A report stated seven minor casualties.
[gas / vapour release, mechanical equipment failure, injury]

Lessons

[None Reported]

1224406 March 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, MARCH 6, 2000, (http://www.chemsafety.gov).
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Location : Hoover, USA

Injured : 4 **Dead :** 0

Abstract

A road transportation incident. An 18-wheeler carrying approximately 25,000 pounds of military high-explosive rounds was involved in a collision. The highway was evacuated over two miles as a precaution.
All injuries occurred as a result of the collision and not the cargo.
Explosive experts worked with the bomb squad and the hazardous materials team to remove the rounds.
[evacuation, injury]

Lessons

[None Reported]

1225203 March 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, MARCH 6, 2000, (http://www.chemsafety.gov).

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Location : Morral, USA

Injured : 0 **Dead :** 0

Abstract

A chemical spill forced the evacuation of an entire town when two small tanks containing fertiliser collapsed. A dike surrounding the facility successfully contained the spill.

The tank contained non-toxic farm fertiliser, but there was cause for concern that the fertiliser could mix with other chemicals creating a toxic substance.

[mechanical equipment failure, storage]

Lessons

[None Reported]

1225103 March 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, MARCH 6, 2000, (http://www.chemsafety.gov).

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Location : Millsboro, USA

Injured : 0 **Dead :** 0

Abstract

Approximately 600,000 gallons of oil is thought to have leaked over a period of 8-12 years from a hole in an underground pipeline previously discovered.
The problem emerged after contractors sank a well and began pumping oil from the ground.
So far approximately 40,000 gallons of oil had been pumped from the ground at a rate of approximately 3,000 gallons a day.
[diesel fuel, excavation, spill]

Lessons

[None Reported]

1224101 March 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, MARCH 2, 2000, (http://www.chemsafety.gov).
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Location : Clifton, USA

Injured : 1 **Dead :** 0

Abstract

A chemical reaction occurred inside a 5-gallon container creating fumes forcing workers to be evacuated. One person was injured in the incident.
The incident occurred whilst a worker was mixing epoxy sealant for use on a floor being laid.
An investigation into the cause of the chemical reaction is being carried out.
[unwanted chemical reaction, gas / vapour release, injury, evacuation]

Lessons

[None Reported]

1223929 February 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, MARCH 1, 2000, (http://www.chemsafety.gov).
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Location : , USA

Injured : 30 **Dead :** 0

Abstract

A chemical reaction occurred when a contractor driving a road tanker poured a chemical into the wrong tank causing chlorine vapour to be formed.
Approximately 30 people were taken to hospital for treatment for eye, throat and nose irritation. Workers were evacuated in the incident.
The incident occurred when the driver pumped sodium hypochlorite, bleach used for odour control, into the tank with a residue of ferric chloride, another odour control chemical.
An investigation into the incident is being carried out.
[unwanted chemical reaction, evacuation, injury, gas / vapour release, human causes, unloading]

Lessons

[None Reported]

1221624 February 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, FEBRUARY 24, 2000. (http://www.chemsafety.gov).
Disclaimer: The Chemical Incident Reports Center (CIRC) is an information service provided by the U.S. Chemical Safety and Hazard Investigation Board (CSB). Users of this service should note that the contents of the CIRC are not intended to be a comprehensive listing of all incidents that have occurred; many incidents go unreported or are not entered into the database. Therefore, it is not appropriate to use the CIRC database to perfrom statistical analysis that extends conclusions beyond the content of the CIRC. Also, although the CSB never knowingly posts inaccurate information, the CSB is unable to independently verify all information that it receives from its various sources, much of which is based on initial reports. CIRC users should also note that the CSB receives more comprehensive reports about incidents that occur in the U.S.; comparisons made between U.S. incidents and those in other nations should take this fact into consideration.

Location : Witchita, USA

Injured : 0 **Dead :** 0

Abstract

Approximately 100 students were evacuated from a university when a fire occurred in it's engineering department.
The incident occurred after an experiment had been carried out involving hydraulic fluid. Apparently the hydraulic fluid seeped into a burner and smouldered until it finally caught fire. Damage to equipment is estimated at $50,000 to $75,000 (2000).
[evacuation, fire - consequence, leak, heating equipment]

Lessons

[None Reported]

1224823 February 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, FEBRUARY 29, 2000, (http://www.chemsafety.gov).
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Location : Vicksburg, USA

Injured : 0 **Dead :** 0

Abstract

A road transportation incident. A tanker truck carrying approximately 4,700 gallons of formaldehyde overturned forcing the evacuation of nearby residents.
The incident occurred when a tire blew out causing the vehicle to veer sharply.
Approximately five gallons of the toxic chemical, which can cause asphyxiation and death, was spilled.

Lessons

[None Reported]

1221723 February 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, FEBRUARY 23, 2000. (http://www.chemsafety.gov).
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Location : Savannah, USA

Injured : 0 **Dead :** 0

Abstract

A road transportation incident. A truck carrying plastic containers containing 41,000 pounds of ferric chloride buckled under the weight. Three containers ruptured as a result and it is thought that they started to leak from the top. A hazardous response team used granulated absorbent material to soak up diesel fuel that spilled and a baby pool was used to catch diesel fuel still leaking.

Lessons

[None Reported]

1221823 February 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, FEBRUARY 23, 2000. (http://www.chemsafety.gov).
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Location : Florida, USA

Injured : 0 **Dead :** 0

Abstract

A road transportation incident. A tractor-trailer collided with a gasoline tanker causing a spill of approximately 1,000 gallons of volatile fuel onto the road and surrounding area.
Hazardous materials teams used foam to soak up the fuel spill and used a 40 by 40 foot diked area to prevent the fuel from running into the surrounding fragile environment.
[collision]

Lessons

[None Reported]

1220920 February 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, FEBRUARY 20, 2000. (http://www.chemsafety.gov).
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Location : British Columbia, CANADA

Injured : 0 **Dead :** 0

Abstract

A marine transportation and road transportation incident. A semi-trailer tanker aboard a cargo ferry ruptured a tank and spilled its contents of gasoline onto the deck and into the sea.
The dispersement of the gasoline was a priority as concentrated vapours become explosive.

Lessons

[None Reported]

1221317 February 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, FEBRUARY 17, 2000. (http://www.chemsafety.gov).
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Location : Oklahoma City, USA

Injured : 0 **Dead :** 0

Abstract

Approximately 25 barrels of diesel fuel spilled into a creek killing an undetermined amount of fish, the cause is being investigated.
A vacuum truck was sent to the incident to contain the spill.
The diesel was used to run the motors that power the drilling rig at the site, which had been dismantled.
[ecological damage, pollution, demolition]

Lessons

[None Reported]

1244914 February 2000

Source : OIL & GAS JOURNAL, FEBRUARY 2, 2000,; CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, 4 FEBRUARY, 2000, (http://www.chemsafety.gov),

Location : Mailiao, CHINA

Injured : 0 **Dead :** 3

Abstract

Three workers were asphyxiated when argon and hydrogen gas leaked from pipes they were installing on an aromatics plant being built on a cracking complex.
[asphyxiation, gas / vapour release, operational activities]

Lessons

[None Reported]

1220012 February 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, FEBRUARY 14, 2000. (http://www.chemsafety.gov).
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Location : Hong Kong, CHINA

Injured : 4 **Dead :** 3

Abstract

An explosion occurred at a construction site killing three and injuring four workers. The incident occurred when workers were welding near pipes containing highly flammable (unidentified) gases. The pipes exploded and sent metal flying into the air.
An investigation into what caused the leak is underway.
[fatality, gas - flammable, injury]

Lessons

[None Reported]

1219309 February 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, FEBRUARY 9, 2000. (http://www.chemsafety.gov).
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Location : , USA

Injured : 2 **Dead :** 0

Abstract

An explosion occurred when two acids were mixed, injuring two graduate students.
The incident occurred when the two students were mixing nitric acid and hydrochloric acid in a glass container when the chemicals exploded.
An investigation is underway into the possibility that another chemical may have been in the container.
The students were treated for minor injuries.
[mixing, contamination, injury]

Lessons

[None Reported]

1219608 February 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, FEBRUARY 10, 2000. (http://www.chemsafety.gov).
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Location : ,

Injured : 0 **Dead :** 0

Abstract

A gas leak occurred on an 8-inch pipe causing a gas cloud to seep into a residential area.
[gas / vapour release]

Lessons

[None Reported]

1218304 February 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, FEBRUARY 6, 2000. (http://www.chemsafety.gov).
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Location : Mineapolis, USA

Injured : 0 **Dead :** 0

Abstract

A hydrochloric acid spill occurred at a printing plant. Approximately 1,000 gallons of the acid spilled in the plant forcing the evacuation of the entire building.
A 1-inch pipe is thought to have broken on a 4,700-gallon tank, spilling the acid. The spill was contained in the building.
The buildings air system was shut down to keep vapours from being emitted from ducts.
Hydrochloric acid is considered poisonous if inhaled as vapours or absorbed through the skin.
[mechanical equipment failure, normal operations]

Lessons

[None Reported]

1248904 February 2000

Source : CHEMICAL HAZARDS IN INDUSTRY, APRIL 2000.

Location : ,

Injured : 0 **Dead :** 3

Abstract

An incident occurred at a naphtha cracking complex during installation work on an armoatics plant under construction.
Three workers were asphyxiated by argon and hydrogen which was found to be leaking from the pipes that they were installing at the time of the incident.
[asphyxiation, maintenance]

Lessons

[None Reported]

1218404 February 2000

Source : CNI NEWS, 4 FEB, 2000, (www.cnionline.com),; CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, FEBRUARY 4, 2000, (http://www.chemsafety.gov). Disclaimer: The Chemical Incident Reports Center (CIRC) is an information service provided by the U.S. Chemical Safety and Hazard Investigation Board (CSB). Users of this service should note that the contents of the CIRC are not intended to be a comprehensive listing of all incidents that have occurred; many incidents go unreported or are not entered into the database. Therefore, it is not appropriate to use the CIRC database to perfrom statistical analysis that extends conclusions beyond the content of the CIRC. Also, although the CSB never knowingly posts inaccurate information, the CSB is unable to independently verify all information that it receives from its various sources, much of which is based on initial reports. CIRC users should also note that the CSB receives more comprehensive reports about incidents that occur in the U.S.; comparisons made between U.S. incidents and those in other nations should take this fact into consideration.

Location : , USA

Injured : 0 **Dead :** 0

Abstract

A large fire occurred at a chemical plant, facility that process 250,000 tonnes a year of ethylene. The incident occurred during maintenance work.
Leaking fuel gas is thought to have ignited causing the fire.
Fire fighters sealing off a hole in the feeder header using a ceramic-paper plug finally put out the fire.
[fire - consequence]

Lessons

[None Reported]

1217329 January 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, JANUARY 29, 2000, (http://www.chemsafety.gov).
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Location : Flora Vista, USA

Injured : 1 **Dead :** 1

Abstract

An explosion occurred on a gas tank killing one and injuring another. It is thought that a lighter being thrown into the tank caused the explosion.
The incident occurred when two boys were playing on top of the tank. One boy was thrown approximately 90 ft and killed the other suffered serious burns.
[human causes, fatality, injury]

Lessons

[None Reported]

1217428 January 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, JANUARY 28, 2000, (http://www.chemsafety.gov).
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Location : Lowell, USA

Injured : 0 **Dead :** 0

Abstract

A road transportation incident. A road tanker carrying 11,900 gallons of gasoline overturned causing a spillage. The tanker was punctured on the right side causing the fuel to empty into nearby catch basins feeding into a nearby river. The driver was uninjured in the incident.
Clean-up operations were carried out to contain the spill and foam was applied to prevent a fire.
Nearby towns were forced to draw water from alternate sources as a precaution.

Lessons

[None Reported]

1216323 January 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, JANUARY 23, 2000, (http://www.chemsafety.gov).
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Location : Platte City, USA

Injured : - **Dead :** 10

Abstract

A road transportation incident. A truck jack-knifed triggering a 24-vehicle pile-up, killing 10 people.
An unexpected covering of ice and snow had covered the highway.
One tractor-trailer involved in the crash, caught fire upon impact. It took over an hour to contain the blaze, which was fuelled by hydrochloric acid leaking from one of the other trucks involved.
[burns, fire - consequence, fatality, collision, spill, weather effects]

Lessons

[None Reported]

1214411 January 2000

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, JANUARY 12, 2000, (http://www.chemsafety.gov).
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Location : , USA

Injured : 0 **Dead :** 0

Abstract

An 8-inch gas pipeline ruptured creating a large crater on a highway forcing its closure. The release of gas from the pipeline rupture did not ignite. Several nearby homes were evacuated, there were no reports of any injuries.
[gas / vapour release, evacuation, near miss]

Lessons

[None Reported]

1266308 January 2000

Source : HAZARDOUS CARBO BULLETIN, JUNE 2000.
Location : Ohio, USA

Injured : 0 **Dead :** 0

Abstract

A catastrophic failure of a storage tank occurred causing the release of approximately one million gallons of fertiliser into the environment. The most likely cause of the failure is thought to be due to weld failure. Four adjacent tanks were damaged by the outflow of the product.
An estimated 3,300m3 of product was spilt into a nearby river; the remainder was contained in bunds.
[tank failure, spill, pollution, damage to equipment, storage tanks]

Lessons

[None Reported]

129462000

Source : THE ENGINEER, 4 AUGUST, 2000.
Location : , UK OFFSHORE

Injured : 0 **Dead :** 0

Abstract

A major gas leak on an offshore oil platform lead to the evacuation of sixty workers. Several personnel remained on the rig to bring the leak under control.

Lessons

[Non Reported]

1215729 December 1999

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, JANUARY 28, 2000, (http://www.chemsafety.gov).
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Location : Dalian, CHINA

Injured : 11 **Dead :** 4

Abstract

A hydrogen sulphide leak occurred at a chemical plant killing four and injuring approximately eleven people. Workers were immediately evacuated. Passers-by reported a foul smell emanating from the plant.
It is not known what caused the leak.
[evacuation, fatality, gas / vapour release, injury]

Lessons

[None Reported]

8093 12 December 1999

Source : BBC NEWS, 20 DECEMBER, 1999, (http://www.bbc.co.uk).
Location : , BAY OF BISCAY

Injured : 0 **Dead :** 0

Abstract

A marine transportation incident. A marine tanker containing more than 20,000 tonnes of diesel oil, split in two. More than 10 million litres of oil was spilled causing severe environmental damage. The sunken wreckage still contains approximately 23 million litres. So far approximately 100,000 birds have been killed. 'An ecological catastrophe'.
[sinking]

Lessons

[None Reported]

4677 04 December 1999

Source : BBC NEWS, DECEMBER 4, 1999.
Location : Guatemala, SOUTH AMERICA

Injured : 80+ **Dead :** 15+

Abstract

A road transportation incident. An explosion occurred at a chemical warehouse when two lorries collided.
A fire occurred from spilled petrol which then spread to the warehouse. It is thought that the explosion was caused by a spontaneous ignition of fertilisers stored in the warehouse.
The explosion was felt up to 5 km away, destroying cars and shattering windows in nearby buildings.
Hundreds of people including emergency services, helped to combat the flames in a bid to stop them spreading to a nearby refinery.
At least 15 people were killed and 80 injured.
[fire - consequence, collision, fatality, gasoline, injury]

Lessons

[None Reported]

1288202 December 1999

Source : ICHEME
Location : , THAILAND
Injured : 13 **Dead :** 8

Abstract

A fire occurred on a tank farm at a refinery killing eight people and injuring thirteen others.
The incident occurred when a gasoline tank overflowed releasing vapours, which entered several nearby buildings.
Two operators went to investigate and it is thought that the vehicle they were driving ignited the vapours causing a number of explosions, starting fire on a tank containing 1.5 million litres gasoline which quickly spread to four other larger tanks.
A large quantity of foam was used in extinguishing the fire.
An investigation into the incident is underway.
[fire - consequence, gas / vapour release, refining, fatality, injury]

Lessons

[None Reported]

9685 19 November 1999

Source : CNN.COM, U.S. NEWS, NOVEMBER 19, 1999, (http://www.cnn.com).
Location : Northwest Iowa, USA

Injured : 1+ **Dead :** 2

Abstract

A rail transportation incident. A freight train collided with an empty grain train, killing a conductor and the driver of a van that was parked by the tracks. Six of the freight cars derailed and four others overturned. A fire occurred from a diesel spill from the engine but was quickly extinguished.
The grain train was parked on the main tracks when the freight train collided with it at the junction with a side track.
An investigation is being carried out as to why the freight train didn't go on to the side track.
[collision, derailment - consequence, fire - consequence, fatality]

Lessons

[None Reported]

12370November 1999

Source : CHEMICAL HAZARDS IN INDUSTRY, MARCH 2000.

Location : ,

Injured : 0 **Dead :** 0

Abstract

A fire occurred during start-up of a cold section of a gas-cracker with imported ethylene causing deep cracks to appear in the top 25 m of an ethylene cracker. [fire - consequence]

Lessons

[None Reported]

1206824 October 1999

Source : BBC NEWS, OCTOBER 25, 1999, (http://www.bbc.co.uk).
Location : , PAKISTAN

Injured : 35 **Dead :** 11

Abstract

A gas explosion occurred whilst workers were digging up a gas pipeline, killing at least eleven people and injuring thirty five. The incident was brought under control by cutting the gas supply, but the fires took several hours to burn out.
Several houses were damaged in the blast and local people were evacuated.
[excavation, fatality, evacuation, fire - consequence, injury]

Lessons

[None Reported]

1207021 October 1999

Source : BBC NEWS, OCTOBER 25, 1999, (http://www.bbc.co.uk).
Location : Hebron, MIDDLE EAST

Injured : - **Dead :** 14

Abstract

A fire occurred at a factory, destroying the whole building. The fire was started by an explosion, it is thought this was caused by a canister containing gas which fell on the ground and exploded. Fourteen people were killed.
[fire - consequence, container, fatality]

Lessons

[None Reported]

1210204 October 1999

Source : CHEMICAL HAZARDS IN INDUSTRY, DECEMBER 1999,; BUISINESS DAY, 7 OCT 1999, http://www.bday.net
Location : , SOUTH KOREA

Injured : 22 **Dead :** 0

Abstract

A leak of 45 litres of heavy water occurred at a nuclear power plant exposing twenty-two workers to small levels of radiation. It is thought that the incident occurred due to human error when two workers were carrying out maintenance work. The nuclear reactors were not operating at the time of the incident. The heavy water was recovered with in hours.
[radioactive, people, human causes, injury]

Lessons

[None Reported]

11953October 1999

Source : BBC NEWS, OCTOBER 2, 1999, (http://www.bbc.co.uk).
Location : Kent, UK

Injured : 0 **Dead :** 0

Abstract

A marine transportation incident. A large spillage of diesel oil polluted a lake, a stream and drainage systems. The oil leaked from an oil tanker. [pollution]

Lessons

[None Reported]

1186427 September 1999

Source : BBC NEWS, SEPTEMBER 27, 1999, (http://www.bbc.co.uk).
Location : Celaya, MEXICO

Injured : 348+ **Dead :** 50+

Abstract

Huge explosions ripped through a crowded market in a town of Central Mexico. It is thought that the first explosion occurred in a fireworks warehouse.
Emergency services were attempting to extinguish the fire when further explosions hit the area.
The fire is thought to have caused cooking gas tanks in restaurants to ignite.
Electricity supplies were cut off and the sale of petrol was banned throughout the city until the fire had been extinguished.
[fire - consequence, storage, fatality]

Lessons

[None Reported]

1219124 September 1999

Source : HAZARDOUS CARGO BULLETIN, JANUARY 2000.
Location : Damper, AUSTRALIA

Injured : 0 **Dead :** 0

Abstract

Approximately 60 m3 of diesel oil spilt from storage tanks onboard a production platform. The spill dispersed quickly.
[spill, offshore]

Lessons

[None Reported]

1186821 September 1999

Source : CNN.COM, U.S. NEWS, SEPTEMBER 21, 1999, (http://www.cnn.com).
Location : New Jersey, North Carolina, USA

Injured : - **Dead :** -

Abstract

People were told to boil their tap water after fears of contamination caused by Hurricane Floyd.
Drinking water was found to have been contaminated by overflow from sewage plants and animal waste lagoons.
Floodwaters were contaminated by fuel, farm chemicals and manure. Flooding also swept at least 1,000 containers of explosive and toxic materials into waterways. Officials warned people not to come into contact with any drums, cylinders or other unfamiliar objects. The biggest danger comes from flammable materials like gasoline, cleaning solvents and propane gas.
More than a million gallons of waste water thought to contain chromium, spilled at a chemical plant during the hurricane.
[toxic chemical]

Lessons

Water contaminated by sewage and animal waste could cause a host of gastrointestinal illnesses.

1187020 September 1999

Source : BBC NEWS, SEPTEMBER 20, 1999, (http://www.bbc.co.uk).
Location : , UK

Injured : 13 **Dead :** 0

Abstract

A road transportation incident. Thirteen people were injured in a head on collision involving a minibus and a road tanker. The tanker was carrying low hazard liquid fertiliser. No spillage occurred. Cause is not known.
[injury]

Lessons

[None Reported]

1176111 September 1999

Source : U.S. CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, (http://www.chemsafety.gov).

Location : Quebec, CANADA

Injured : 4 **Dead :** 0

Abstract

An explosion and fire occurred at a plant which manufactures explosives. The blast badly burnt one person and injured three others.
[processing, burns, fire - consequence, explosive, injury]

Lessons

[None Reported]

1176309 September 1999

Source : U.S. CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, (http://www.chemsafety.gov).

Location : Alberta, CANADA

Injured : 1 **Dead :** 1

Abstract

An explosion occurred whilst using a perforating gun, which is designed to explode inside an oil well, at an oil well site. The gun detonated above ground. [exploration, fatality, explosive]

Lessons

[None Reported]

1175208 September 1999

Source : BBC NEWS, SEPTEMBER 8, 1999, (http://www.bbc.co.uk).
Location : Bristol, M5, UK

Injured : 0 **Dead :** 4

Abstract

Four construction workers fell 80 ft from a motorway viaduct. They were working on a bridge when the platform on which they were standing gave way. A large part of the gantry, about 35 ft long and 12 ft wide, ended up dangling underneath the bridge. Workers on a nearby industrial estate were evacuated after gas bottles fell off the gantry.
No-one else was hurt in the accident.
Two of the workers were welders and two were specialist steel platers.
An investigation is underway into the cause of the accident.
[fall, fatality, evacuation]

Lessons

[None Reported]

1176608 September 1999

Source : CNN.COM, U.S. NEWS, SEPTEMBER 9, 1999, (http://www.cnn.com).
Location : Michigan, USA

Injured : 0 **Dead :** 0

Abstract

A car plant was evacuated after an envelope containing a bomb was found in a mailbox. The warning was given out and the bomb squad was brought in to dismantle the device. It was found that the device would of had to been lit manually to explode and could not have been detonated from an outside location. [evacuation, deliberate acts, explosive]

Lessons

[None Reported]

1174903 September 1999

Source : YAHOO NEWS UK & IRELAND, SEPTEMBER 3, 1999, (http://www.yahoo.co.uk).
Location : , UK

Injured : 31 **Dead :** 0

Abstract

Thirty one workers were sent to hospital suffering breathing problems and nausea after a chemical leak at a warehouse. The workers were under observation after formaldehyde escapes from a container at the warehouse.
It is thought that a forklift truck punctured a container in a chemical handling area.
[gas / vapour release, warehousing, fracture, operator error, people]

Lessons

[None Reported]

12093September 1999

Source : CHEMICAL HAZARDS IN INDUSTRY, DECEMBER 1999,; BUISINESS DAY, 28 SEP 1999, http://bday.net
Location : , USA

Injured : 0 **Dead :** 0

Abstract

Approximately 600 and 700 drums in a warehouse caught fire. Chemicals involved in the incident included glycol ethers, acrylics, epoxy resins, plasticizers, polyurethane and surfactants. Fortunately no one was injured. An investigation into the cause of the incident is being carried out.
[fire - consequence, warehousing]

Lessons

[None Reported]

1164819 August 1999

Source : YAHOO NEWS, 19 AUGUST, 1999, (http://www.yahoo.co.uk),; HAZARDOUS CARGO BULLETIN, NOVEMBER 1999.
Location : , UK

Injured : 2 **Dead :** 2

Abstract

Two factory workers were found dead on the ground floor of a paint-stripping factory after being overcome by fumes in a suspected chemical leak.
It is thought that they had mixed some chemicals, different to the normal process, causing a gas to be released, possibly methylene chloride which is a fast acting asphyxiant.
Fire crews were at the scene wearing protective clothing, but the first two ambulance attendants who had rushed in were unprotected. They attended hospital for a check up.
[fatality, asphyxiation, mixing, accidental mixing, gas / vapour release]

Lessons

[None Reported]

7785 10 August 1999

Source : CHEMICAL HAZARDS IN INDUSTRY, NOVEMBER 1999,; HAZARDOUS CARGO BULLETIN, NOVEMBER 1999.
Location : Texas, USA

Injured : 0 **Dead :** 1

Abstract

An explosion occurred when a worker punctured an ethane propane pipeline whilst digging holes for electric utility poles. The worker was killed.
[excavation, fatality]

Lessons

[None Reported]

1147202 August 1999

Source : BBC NEWS, AUGUST 2, 1999,
(http://www.bbc.co.uk),; HAZARDOUS CARGO BULLETIN, NOVEMBER 1999.

Location : Gaisan, WEST BENGAL

Injured : 1000+**Dead :** 286+

Abstract

A rail transportation incident. An express train collided with a mail train head on killing at least 250 people and injuring at least 1000.
Explosions were heard and initially a bomb attack was suspected, but investigations found that both trains ended up on the same track after a signal failure.
One of the trains was carrying explosives in a military compartment which may have caused the trains to catch fire after the crash.
The engine of the express train was blasted into the air by the impact of the explosion.
[collision, derailment - consequence, rail incidents, explosion, fire - consequence, fatality, explosive, injury]

Lessons

[None Reported]

1148526 July 1999

Source : BBC NEWS, JULY 26, 1999, (http://www.bbc.co.uk).

Location : Kuzbass Region, RUSSIA

Injured : 3+ **Dead :** 3

Abstract

A gas explosion occurred in a coal mine killing three people and injuring at least three others. The mine has been closed and an investigation has started. [fatality, injury, mining]

Lessons

[None Reported]

1149014 July 1999

Source : CHEMICAL WEEK, JULY 28, 1999.
Location : , GERMANY

Injured : 0 **Dead :** 0

Abstract

An explosion occurred at a fine chemicals plant causing damages exceeding DM100,000 ($52,000) (1999). Three workers inside escaped unhurt and no toxic substances were released. Hydrogen peroxide in the plant's water treatment unit is thought to have caused the blast. The plant was shut down. [contamination, plant shutdown]

Lessons

[None Reported]

1179310 July 1999

Source : HAZARDOUS CARGO BULLETIN, SEPTEMBER 1999.
Location : ,

Injured : 0 **Dead :** 0

Abstract

A marine transportation incident. A fire occurred aboard a container ship. The fire started in a hypochlorite box and then spread to 100 other boxes. The crew had to abandon ship.
[fire - consequence, evacuation]

Lessons

[None Reported]

1207205 July 1999

Source : CHEMICAL HAZARDS IN INDUSRY, OCTOBER 1999.
Location : , USA

Injured : 150+ **Dead :** 0

Abstract

A series of explosions occurred at a chemical plant, injuring 21 workers. Clouds of bauxite dust were dispersed into the atmosphere.
Over one hundred and fifty residents were treated at hospital. The cause of the incident is not yet known but it is thought that an explosion in a powerhouse burst a gas line which then caused the caustic soda facility to explode.
[processing, gas / vapour release, bauxite, injury]

Lessons

[None Reported]

1178005 July 1999

Source : HAZARDOUS CARGO BULLETIN, SEPTEMBER 1999.
Location : California, USA

Injured : 0 **Dead :** 0

Abstract

A rail transportation incident. Two freight trains collided head on at low speed. Over 37,000 l of diesel was spilled when more than a dozen engines and cars derailed.
[derailment - consequence, collision]

Lessons

[None Reported]

1261302 July 1999

Source : ENVIRONMENTAL TIMES, VOLUME 6, ISSUE 3, SPRING 2000.

Location : Cornwall, UK

Injured : 1 **Dead :** 0

Abstract

A road transportation incident. A road tanker overturned spilling approximately 5,000 litres of red diesel fuel into a nearby stream.
The driver of the tanker was seriously injured in the incident and an investigation is being carried out into the caused of the incident.
The company of the vehicle was fined £250 and costs of £255 (2000).
[injury]

Lessons

All vehicles for transporting fuel must be properly maintained at all times to guard against pollution of the environment.

1179101 July 1999

Source : HAZARDOUS CARGO BULLETIN, SEPTEMBER 1999.
Location : , SINGAPORE

Injured : 0 **Dead :** 0

Abstract

A marine transportation incident. A bulk carrier sank after colliding with a tanker in ballast. Damage occurred to the tanker. Bunkers leaked potash fertiliser from the bulk carrier. None toxic.
[sinking, collision, damage to equipment, spill]

Lessons

[None Reported]

1149130 June 1999

Source : FIRE PREVENTION 323, AUGUST 1999.
Location : Dorset, UK

Injured : 6 **Dead :** 0

Abstract

Several containers of dry cleaning mixture tetrachloroethaline were spilled. Six people were treated for the effects of inhaling chemical fumes. The spill was quickly contained and there was no danger to the environment.
[cleaning fluid, people, gas / vapour release]

Lessons

[None Reported]

1179030 June 1999

Source : HAZARDOUS CARGO BULLETIN, SEPTEMBER 1999.
Location : Washington, USA

Injured : 0 **Dead :** 0

Abstract

A marine transportation incident. A bulk carrier spilt 750 l fuel oil while loading from a bulk barge. Skimmers and booms failed to stop the slick from moving up-river.
[spill, pollution]

Lessons

[None Reported]

1178827 June 1999

Source : HAZARDOUS CARGO BULLETIN, SEPTEMBER 1999.
Location : , GALAPAGOS ISLANDS

Injured : 0 **Dead :** 0

Abstract

A marine transportation incident. A cargo ship ran aground while docking at a port. Some diesel fuel was spilt. Divers checked for leaks before lightering fuel to barges.
[ship ran aground, spill]

Lessons

[None Reported]

1180325 June 1999

Source : HAZARDOUS CARGO BULLETIN, SEPTEMBER 1999.
Location : Illinois, USA

Injured : 2 **Dead :** 0

Abstract

Two workers were hospitalised after being affected by fumes after sulphuric acid and bleach had been mixed to clean drains.
[cleaning, gas / vapour release]

Lessons

[None Reported]

1179920 June 1999

Source : HAZARDOUS CARGO BULLETIN, SEPTEMBER 1999.
Location : , NIGERIA

Injured : 0 **Dead :** 15

Abstract

An explosion occurred on an oil pipeline killing 15 people. Approximately 100 m3 unspecified fuel was lost.
[fuel, fatality, product loss]

Lessons

[None Reported]

1179610 June 1999

Source : HAZARDOUS CARGO BULLETIN, SEPTEMBER 1999.
Location : Washington, USA

Injured : 0 **Dead :** 3

Abstract

A leak occurred on a pipeline releasing vapours over a nearby creek. The vapours ignited causing a fireball which killed three people. Approximately 1,100 m3 of gasoline was spilt into the creek.
[gas / vapour release, explosion, fire - consequence, fatality, spill]

Lessons

[None Reported]

1271810 June 1999

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, JUNE 27, 2000, (http://www.chemsafety.gov).
Disclaimer: The Chemical Incident Reports Center (CIRC) is an information service provided by the U.S. Chemical Safety and Hazard Investigation Board (CSB). Users of this service should note that the contents of the CIRC are not intended to be a comprehensive listing of all incidents that have occurred; many incidents go unreported or are not entered into the database. Therefore, it is not appropriate to use the CIRC database to perfrom statistical analysis that extends conclusions beyond the content of the CIRC. Also, although the CSB never knowingly posts inaccurate information, the CSB is unable to independently verify all information that it receives from its various sources, much of which is based on initial reports. CIRC users should also note that the CSB receives more comprehensive reports about incidents that occur in the U.S.; comparisons made between U.S. incidents and those in other nations should take this fact into consideration,;
CNN.COM, U.S. NEWS, JUNE 2, 2000, (http://www.cnn.com).

Location : Bellingham, USA

Injured : 0 **Dead :** 3

Abstract

Approximately 277,000 gallons of fuel spilled from a ruptured pipeline killing three people. Nearby residents were evacuated and other parts of the area were asked to conserve water after a pump station was damaged in the fire and explosion.
The pipeline was later tested. During the first test the pipeline ruptured and spilled 10,000 gallons of water.
Further testing was carried out and all defects were found and repaired.
It is thought that the company will apparently be fined an estimated $3.05 million (2000), the largest fine ever sought against a pipeline operator.
[fire - consequence, evacuation, fatality, material of construction failure]

Lessons

[None Reported]

1177708 June 1999

Source : HAZARDOUS CARGO BULLETIN, SEPTEMBER 1999.
Location : Pambla, AUSTRALIA

Injured : 1 **Dead :** 0

Abstract

A road transportation incident. A fire occurred when a road tanker overturned spilling 38,000 l of diesel and gasoline into a river. Fire crews extinguished the blaze and booms were used on the river.
[fire - consequence]

Lessons

[None Reported]

1102108 June 1999

Source : BBC NEWS, JUNE 8, 1999,
(http://www.bbc.co.uk).

Location : , NORTH SEA

Injured : 0 **Dead :** 0

Abstract

About 30 workers were airlifted from an oil platform after a gas leak. Safety systems operated as designed and shutdown production.
There were 91 people on the platform at the time, all had been accounted for and there were no injuries reported.
[offshore, evacuation]

Lessons

[None Reported]

1287104 June 1999

Source : NATIONAL TRANSPORTATION SAFETY BOARD, DCA99MZ006, (http://www.ntsb.gov).
Location : Michigan, USA

Injured : 1 **Dead :** 1

Abstract

A chemical reaction occurred during unloading from a road tanker of sodium hydrosulphide solution into a storage tank containing ferrous sulphate at a tannery. Sodium hydrosulphide solution reacts with ferrous sulphate solution to produce hydrogen sulphide, a poisonous gas.
An employee in the basement of the building smelled a pungent odour and lost consciousness, and fortunately regained consciousness ten minutes later. The driver of the road tanker was found unconscious and was later pronounced dead at the scene. It was determined that he had died from the effects of hydrogen sulphide gas.
[storage tanks, unwanted chemical reaction, fatality, management system inadequate, human causes, injury, evacuation]

Lessons

[None Reported]

1100826 May 1999

Source : CHEMICAL WEEK, JUNE 2, 1999.
Location : Texas, USA

Injured : 0 **Dead :** 0

Abstract

A four hour electrical outage halted production at a plant which includes a 427,000-bbl/day refinery and adjacent chemical operations such as ethylene and polyolfins.
The power loss forced flaring at the refinery and some chemical units, there were no fires or measurable toxic emissions. There were no reported injuries.
An investigation into the outage is being carried out.
[electrical equipment failure, near miss, refining]

Lessons

[None Reported]

1148423 May 1999

Source : CNN.COM, U.S. NEWS, MAY 24, 1999, (http://www.cnn.com).; BBC NEWS, MAY 24, 1999, (http://www.bbc.co.uk).
Location : Khuzestan, IRAN

Injured : 70 **Dead :** 0

Abstract

An explosion and fire occurred on a gas pipeline injuring 70 workers, 30 seriously, but causing no major damage. The blast occurred whilst workers were repairing the pipeline. The injured workers suffered burns.
It is thought that the cause of the explosion was due to a gas leak.
[fire - consequence, repair, injury]

Lessons

[None Reported]

1147916 May 1999

Source : BBC NEWS, MAY 16, 1999,
(http://www.bbc.co.uk).

Location : Pakistan, SOUTH ASIA

Injured : 50+ **Dead :** 40+

Abstract

A road transportation incident. At least 40 people were burnt to death when a petrol tanker caught fire after overturning on a highway.
Hundreds of villagers gathered around the vehicle to collect the leaking fuel, before it caught fire, engulfing people in the flames.
More than 50 victims were taken to hospital with serious burns.
[road tanker, fire - consequence, gasoline]

Lessons

[None Reported]

1199414 May 1999

Source : CHEMICAL HAZARDS IN INDUSTRY, JULY 1999.
Location : , SOUTH KOREA

Injured : 3 **Dead :** 0

Abstract

A fire occurred on a unit making kerosene and gas oil at a refinery. The hydrocracker where the fire occurred used fuel oil to make middle distillates and had a desulphuriser which made low sulphur fuel oil. The fire was brought under control within two hours.
At least three people were injured.
At the time of the incident the refinery was operating normally.
[fire - consequence, processing, injury]

Lessons

[None Reported]

1148113 May 1999

Source : CNN.COM, U.S. NEWS, MAY 14, 1999, (http://www.cnn.com).

Location : Texas, USA

Injured : 7+ **Dead :** 0

Abstract

A series of explosions occurred in a gasoline production unit at a refinery, injuring at least seven people, five of them critically.
One big explosion was followed by two smaller blasts at the refinery.
Emergency officials did not evacuate the area, but told residents to shut their windows and stay in doors as a precaution. Later it was determined that the fire involved a petroleum product, but was not producing toxic smoke.
The cause of the explosion has not yet been determined and is under investigation.
[processing, injury]

Lessons

[None Reported]

11246May 1999

Source : BBC NEWS, 16 MAY, 1999, (http://www.bbc.co.uk),; CNN.COM, U.S. NEWS, 15 MAY, 1999, (http://www.cnn.com).
Location : , AFRICA

Injured : 0 **Dead :** 0

Abstract

A team of specialist fire-fighters were sent to tackle a huge oil tank fire that had been burning for two days which threatened strategic oil stocks near a refinery.
The refinery next to the burning tank was not seriously threatened, however, one of the 13 tanks in the storage complex contained highly inflammable jet fuel which could have triggered a wider inferno, if the fire had reached it. The fire was eventually extinguished after a two day effort by fire-fighters.
The fire destroyed approximately 30,000 cubic metres of petroleum products.
It is not immediately clear what started the blaze, but witnesses said they heard an explosion before the tank, containing super grade gasoline, caught fire.
[storage tanks, fire - consequence, damage to equipment]

Lessons

[None Reported]

1199820 April 1999

Source : CHEMICAL HAZARDS IN INDUSTRY, JULY 1999.
Location : , USA

Injured : 0 **Dead :** 2

Abstract

An explosion occurred at a chemical plant, killing two workers. The plant produces nitroglycerine for pharmaceutical products and explosive substances for propellants.
[fatality, processing]

Lessons

[None Reported]

1250108 April 1999

Source : CNN.COM, U.S. NEWS, APRIL 8, 1999, (http://www.cnn.com).
Location : Florida, USA

Injured : 50 **Dead :** 2

Abstract

A generator exploded inside a coal-fired power plant killing two workers and injuring fifty others. At least three of the injured suffered serious burns.
An investigation into the incident found that a hydrogen gas leak may have caused the explosion.
The explosion occurred as the generator was being tested following routine maintenance.
The plant was shut down whilst investigations took place to make sure that none of the other generators were affected by the blast.
[testing, plant shutdown, fatality, injury]

Lessons

[None Reported]

1208830 March 1999

Source : CHEMICAL ENGINEERING IN AUSTRALIA, JUNE-AUGUST 1999.
Location : , AUSTRALIA

Injured : 0 **Dead :** 0

Abstract

An acid plant and plant smelter were put out of action when a blower taking the off-gasses from the smelter to the acid plant failed causing severe damage to the blower, the blower building and some equipment surrounding the area.
The failure of the sulphur dioxide blower appears to have been caused by failure of the liners in the mist precipitators during start-up, giving off combustible gases.
[mechanical equipment failure, damage to equipment, gas / vapour release, gas - flammable]

Lessons

[None Reported]

8099 28 March 1999

Source : ICHEME
Location : , USA

Injured : 0 **Dead :** 0

Abstract

A fire occurred at the start of a routine gasoline wash operation of lines containing concentrated TEL fluid. The vent valve inside an enclosed ethyl blending building was inadvertently left open by the operator. The enclosed transite building housed an 8,500 gal weigh tank, scales, eductor, eductor pump and manifold. TEL and gasoline were pumped through the vent line and spilled down on to the transite road. Ignition occurred from an unknown source and the resulting fire caused significant damage to about three quarters of the building transite. The fire was brought under control and extinguished in approximately 35 minutes with no loss of TEL fluid from the storage tanks. Repair work commenced soon after the fire and 3 days later, blending was done from the reserve tank.
[fire - consequence, damage to equipment, operational activities, unidentified cause]

Lessons

The source of ignition is unknown but evidence points to it being immediately outside the front (east) door. Possible sources such as the operator's jeep, another passing vehicle, faulty electrical fixtures, an enclosed light over the doorway, the air-purged instrument panel just inside the front door, several motors inside the building and static electricity have all been considered but no particular reason was pointed at.
Through discussion with TEL suppliers, it was concluded that the following revisions should be made:
1. Relocate vent line from a point just above valve No.12 out through the building to a point a safe distance away. The lateral piping would be installed at a sufficient angle to avoid low spots in the line.
2. Relocate eductor pump to minimise hazards which would occur in the ethyl building from leakage at the pump.
3. Ventilation in the ethyl building will be improved as much as possible.
4. Fire protection - an investigation to determine the feasibility of a fail-safe interlocking device to prevent operation of the gasoline wash valve unless vent valves are closed.

1053624 March 1999

Source : BBC NEWS, MAR 23, 1999,
(http://www.bbc.co.uk).

Location : France, Italy, EUROPE

Injured : 30+ **Dead :** 30+

Abstract

A road transportation incident. A fire broke out on board a food truck carrying flour and margarine whilst being driven through a tunnel linking France and Italy.
At least 30 people are reported to have been killed.
Thick smoke trapped about 30 people inside the tunnel, they sought refuge in an emergency tunnel and were later evacuated.
The driver of the truck was unhurt.
[fire - consequence, fatality, evacuation]

Lessons

[None Reported]

1054223 March 1999

Source : CNN.COM, U.S. NEWS, MAR 23, 1999, (http://www.cnn.com).
Location : Illinois, USA

Injured : 3 **Dead :** 0

Abstract

A rail transportation incident. A train hauling auto parts collided with a freight train at an intersection, flinging boxcars off the tracks. Fortunately the crew on the trains suffered only minor injuries.
Police began to evacuate the nearby town but stopped after it was determined that no hazardous materials had been spilled and that there was no danger of an explosion from spilled diesel.
However, there was concern that fuel spilled into the nearby creek would reach the nearby river, a source of drinking water for 80,000 people in the area.
A supply of sand was used to dam the creek and contain the spilled oil.
Apparently both trains were moving considerably slower than the 50 miles per hour limit allowed at the intersection at the time of the incident. Investigations are under way as to the cause of the incident.
[collision, derailment - consequence, evacuation, near miss, injury]

Lessons

[None Reported]

1052219 March 1999

Source : YAHOO NEWS, MAR 20, 1999, (http://www.yahoo.co.uk).
Location : Offshore, SCOTLAND

Injured : 0 **Dead :** 0

Abstract

A marine transportation incident. A marine tanker carrying flammable chemical fluids caught fire off the northern coast of Scotland, rousing fears of an ecological disaster.
Some 200 residents of two tiny villages were evacuated as the vessel caught fire and drifted just off the rocky coastline.
The tanker was carrying 1,750 tonnes of potentially explosive vinyl acetate which is used in the manufacturing of paints and adhesives, 76 tonnes of bunker fuel and 20 tonnes of fuel oil.
The engine room was sealed and power shut down when the fire was first reported, causing the 102 metre vessel to drift in high winds and stormy seas before being stopped by its anchor less than half a mile from the coastline. The ships captain stayed on board for three more hours, whilst the rest of the crew were airlifted to safety, to set up tow lines, drop anchor and flood the compartment separating the fire from the explosive cargo.
The vessel was eventually towed to a safe haven and the fire was successfully put out.
[evacuation, fire - consequence, near miss]

Lessons

[None Reported]

1187415 March 1999

Source : CNN.COM, U.S. NEWS, SEPTEMBER 13, 1999, (http://www.cnn.com),; CNN.COM, U.S. NEWS, SEPTEMBER 14, 1999, (http://www.cnn.com).
Location : Bourbonnias, USA

Injured : 11 **Dead :** 122

Abstract

A rail transportation and road transportation incident. A collision between a passenger train and a road truck occurred on a railroad crossing, killing 11 passengers and injuring 122. The crash derailed several cars behind the locomotives. Many of the dead were in a sleeping car which was totally destroyed by a diesel fire. It is not yet known the exact cause of the incident.
The crash caused more than £14 million (1999) in damage.
[derailment - consequence, fire - consequence, damage to equipment, fatality, injury]

Lessons

[None Reported]

1101012 March 1999

Source : CHEMICAL HAZARDS IN INDUSTRY, MAY 1999, ISSN 0265-5271,; BUISINESS LINE, 13 MAR, 1999, 1.

Location : ,

Injured : 0 **Dead :** 0

Abstract

A gas leak occurred at an offshore well. Three multi support vessels were put into service, and efforts were made to cap the well. The cause of the gas leak is not known.

Lessons

[None Reported]

11025March 1999

Source : CHEMICAL HAZARDS IN INDUSTRY, JUNE, 1999, ISSN 0265-5271,; CHEM ENG NEWS, 1 MAR, 1999, 77(9), 11.

Location : , USA

Injured : 11 **Dead :** 5

Abstract

Investigations are underway into the cause of an explosion at a plant producing hydroxylamine, killing five people and injuring six. Five fire fighters were also injured.

The site purifies and concentrates free-base hydroxylamine solutions at 50% and 30% concentrations. The material is used to clean electronic chips. It is reported that the company was distilling hydroxylamine under vacuum at 120 degrees F when the explosion occurred.

[purification, distillation, fatality, injury]

Lessons

[None Reported]

1052019 February 1999

Source : CNN.COM, U.S. NEWS, FEB 20, 1999, (http://www.cnn.com),; LOSS PREVENTION BULLETIN, 146, 24.
Location : Pennsylvania, USA

Injured : 13 **Dead :** 5

Abstract

An explosion on a chemical plant occurred while workers were making hydroxylamine, a chemical used in etching computer semiconductors.
The blast created a 4 foot crater inside the two-storey building and blew out its concrete walls. The explosion shook buildings and homes for miles and sent metal studs, concrete and insulation flying for several hundred yards.
The explosion was probably caused by improper mixing of chemicals inside the building.
The chemicals involved in making hydroxylamine include potassium hydroxide and hydroxylamine sulphate.
The explosion caused an estimated $4 to $5 million (1999).
[chemical causes, processing, fatality, damage to equipment]

Lessons

Hydroxylamine can become volatile if it gets too hot or dry.

1100919 February 1999

Source : CHEMICAL HAZARDS IN INDUSTRY, MAY 1999, ISSN 0265-5271,; CHEM.MARK. REP., 1 MAR 1999, (WEBSITE: HTTP://WWW.CHEMEXPO.COM/CMRON-LINE)

Location : Pennsylvania, USA

Injured : 13 **Dead :** 5

Abstract

Five people were killed and thirteen injured in an explosion at a plant. The premises were flattened and several neighbouring units were seriously damaged.
The plant was processing hydroxylamine.
It is thought that the explosion may have been caused by the improper mixing of hydroxylamine and potassium hydroxide.
An investigation is underway.
[fatality, damage to equipment, injury, operation inadequate]

Lessons

[None Reported]

1054317 February 1999

Source : BBC NEWS, FEB 19, 1999,
(http://www.bbc.co.uk).

Location : Teesside, UK

Injured : 0 **Dead :** 0

Abstract

A chemical leak occurred at a chemical plant when hydrochloric acid leaked from a pipe into a stone drain and then onto a nearby marshland, polluting 70,000 square metres of marshland.
The area was diluted with sea water to minimise the effect of the pollution.
[drains & sewers, pollution]

Lessons

[None Reported]

1054004 February 1999

Source : CNN.COM, U.S. NEWS, MAR 12, 1999, (http://www.cnn.com).
Location : Oregon, USA

Injured : 0 **Dead :** 0

Abstract

A marine transportation incident. A 640 foot cargo ship carrying 400,000 gallons of fuel dragged anchor while waiting out a storm to pick up a load of woodchips. The cargo ship subsequently ran aground.
After constant battering by the pounding surf the ship began to leak.
Plans to pull the whole ship off the beach were scrapped, instead it was decided to burn the fuel oil to prevent anymore spillage.
Attempts to burn off the fuel were partially successful, but disaster struck when the ship broke in half, spilling 70,000 gallons.
[ship ran aground, pollution, weather effects]

Lessons

[None Reported]

1260522 January 1999

Source : ENVIRONMENTAL TIMES, VOLUME 6, ISSUE 3, SPRING 2000.
Location : North Wales, UK

Injured : 0 **Dead :** 0

Abstract

A six-kilometre stretch of a river was affected by pollution due to the release of slate dust. The company was fined £2,400 and costs of £180 (2000).
[leak, solids processing

Lessons

[None Reported]

1053814 January 1999

Source : BBC NEWS, JAN 15, 1999,
(http://www.bbc.co.uk).

Location : , CHINA

Injured : 13 **Dead :** 8+

Abstract

At least eight people were killed when a gas explosion occurred in an underground shaft of a mine. Thirteen people were injured.
[fatality, injury, mining]

Lessons

[None Reported]

1082413 January 1999

Source : BBC NEWS 1999, (http://www.bbc.co.uk).
Location : , CHINA

Injured : 0 **Dead :** 22+

Abstract

An explosion occurred at a fireworks factory killing at least twenty two people. The blast caused the collapse of the two storey workshop.
[fatality]

Lessons

[None Reported]

1188013 January 1999

Source : CHEMICAL HAZARDS IN INDUSTRY, SEPTEMBER 1999.
Location : , UK

Injured : 0 **Dead :** 0

Abstract

A company was fined on several occasions, the first occurred on 13 January 1999, when an uncontrolled chemical reaction caused a fire at a chemical plant. The company was fined £15,000 (1999).
The second incident occurred on 20 January 1999, a gas release incident. The company was fined £10,000 (1999).
The third incident occurred when special waste, mixed in a skip, reacted to produce a cloud of steam and formaldehyde causing environmental pollution and harm to human health. The company was fined £15,000 (1999). Employees from an adjacent comapany suffered breathing difficulties and eye irritation.
[unwanted chemical reaction, fire - consequence, gas / vapour release, people]

Lessons

[None Reported]

1260608 January 1999

Source : ENVIRONMENTAL TIMES, VOLUME 6, ISSUE 3, SPRING 2000.
Location : Colwyn Bay, North Wales, UK

Injured : 0 **Dead :** 0

Abstract

Diesel spilled from a surface water outfall into the sea. The company was fined £4,000 and costs of £150 (2000).
[pollution]

Lessons

[None Reported]

120801999

Source : CHEMICAL HAZARDS IN INDUSRY, OCTOBER 1999,; LOSS PREVENTION BULLETIN, 147, PAGE 18-19.

Location : ,

Injured : 6 **Dead :** 0

Abstract

A hyper ethylene compressor on a low-density polyethylene manufacturing unit, suddenly stopped with bang. This was due to the failure of the second stage front feed crosshead pin through-bolt which resulted in the fracture of both plungers of the front feed cylinders. The leaking ethylene was automatically diverted to the reactor enclosure though emergency vent piping. Damage occurred to the compressor.
It is thought that the failure was due to problems resulting from replacement of the pin a year earlier.
[mechanical equipment failure, damage to equipment, normal operations]

Lessons

Improvements in inspection and repair of the bolts were recommended.

2113 1999

Source : CHEMICAL HAZARDS IN INDUSRY, OCTOBER 1999,; LOSS PREVENTION BULLETIN, 147, PAGE 15-16.

Location : ,

Injured : 0 **Dead :** 0

Abstract

A fire occurred on two separate offshore compressor stations on the same day. Considerably damage occurred to the electrical systems. Purge gas was ignited in both incidents by static generated by a snow-storm. Fires occurred later on, in the power turbine exhaust compressor units. Venting, in one case, caused a severe increase in the stack flame such that the crew had to take shelter.
[fire - consequence, damage to equipment, weather effects, fuel gas]

Lessons

The following recommendations were made:
1. Investigation of the reliability of fuel gas supply.
2. Improvement in the instrument air supply.
3. Check unit vent valves.
4. Review choice of actuators and location of systems under winter conditions and reconsidering certain venting and staffing issues.

110331999

Source : CHEMICAL HAZARDS IN INDUSTRY, JUNE, 1999, ISSN 0265-5271,; ENDS REPORT, FEB 1999, (289), 5-6.

Location : , UK

Injured : 0 **Dead :** 0

Abstract

A leak of hydrochloric acid occurred at a site. The area contains a Greenabella Marsh bird and is a roosting and feeding site for wading birds. Acid contaminated over half of the marsh.
The leak was from a fractured underground pipeline taking waste to storage lagoons.
[pollution, ecological damage, material transfer]

Lessons

[None Reported]

124341999

Source : ICHEME
Location : ,
Injured : 0 **Dead :** 0

Abstract

An explosion occurred in an acid relief neutraliser vessel of an HF alkylation plant. The explosion blew off the top section of the vessel rupturing process and flare lines, the section landed in a pipe bridge some 40 metres away causing damaged to process and utility lines. Fire broke out at both locations.
Amongst the severed lines was the reboiler return line of the main fractionator, causing this column to depressurise into the fire. The failure of utility lines in the pipe track led to the loss of fuel gas, instrument air pressure and cooling water, which in turn led to a cascaded shutdown of the refinery.
No major injuries occurred in the explosion or in the fire fighting effort.
The situation was brought under control in 4 hours and all fires were extinguished in 6 hours. Approximately 5 tonnes of the HF (hydrofluoric acid) inventory was lost to the environment. This loss is thought to have come from the severed reboiler return line because the main fractionator lost pressure and reverse flow occurred in parts of the plant. The firewater absorbed the spilled HF.
Sodium bicarbonate was added to the out-fall canal and helped to control the pH of the effluent water. No damage to the environment has been recorded.
The damage to the equipment by the explosion and subsequent fires was considerable. The refinery was shutdown for 2 weeks and it took 3 months to repair and re-start the alkylation plant.
[damage to equipment, fire - consequence, plant shutdown, processing, mechanical equipment failure]

Lessons

[None Reported]

114931999

Source : CHEMICAL HAZARDS IN INDUSTRY, JUNE 1999.
Location : , USA

Injured : 6 **Dead :** 5

Abstract

An explosion occurred at a plant producing hydroxylamine, killing five people and injuring six. Five fire fighters were also injured. The plant was distilling hydroxylamine under vacuum at 120 degrees F when the explosion occurred.
An investigation into the cause is being carried out.
[processing, fatality, distillation, injury]

Lessons

[None Reported]

110111999

Source : CHEMICAL HAZARDS IN INDUSTRY, MAY 1999, ISSN 0265-5271,; CHEM. WEEK, 3 MAR, 1999, 161(8), 37.
Location : Ludwigshafen, GERMANY

Injured : 39 **Dead :** 0

Abstract

An explosion of an ethyl propionate storage tank at a plant resulted in eye and throat irritations in 39 workers. The incident involved 2 tonnes of ethyl propionate.
The cause of the incident was due to human error.
[storage tanks, chemical, people, human causes, processing]

Lessons

The following recommendation was made:
Safety training for maintenance contractors to be carried out.

1059924 December 1998

Source : ICHEME
Location : , MALAYSIA
Injured : 12 **Dead :** 0

Abstract

An explosion occurred on an air separation unit on a middle distillate synthesis plant.
The plant is designed to convert natural gas to naphtha, kerosene, gas oil, paraffins and wax. The synthesis gas for the gasification process is produced by partial oxidation of methane using pure oxygen.
Pure oxygen at 2,500 tonnes/day is produced by an air separation plant. Its understood that the explosion/detonation took place inside the N2/02 separation column due to contamination (CO, NO or hydrocarbons).
Although the incident is still under investigation, the source of the contamination may have been be due to the heavy haze in the region from forest fires. The air feed to the separation unit is water-washed and passes through a molecular sieve. Preliminary calculations, however, show that concentrations of contaminants as low as ppm in the inlet air feed could build up to kilogram quantities in the bottom of the fractionator.
Windows were broken 1.5 km away. Missiles landed in an adjacent liquefied natural gas (LNG) plant (500m away). One piece of metal (1.5 tonne) landed 800 m away.
Heavy damage occurred to the plant.
Fortunately, there were no fatalities and fortunately, the control room was designed for blast resistance.
Twelve injuries were reported on adjacent properties.
[separation equipment, damage to equipment, injury]

Lessons

The report stated the following recommendations:
Sites operating air separation units are to be made aware that contaminants can build up in these units to cause substantial explosions.

1232811 December 1998

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, 24 FEBRUARY, 1999, (http://www.chemsafety.gov).
Disclaimer: The Chemical Incident Reports Center (CIRC) is an information service provided by the U.S. Chemical Safety and Hazard Investigation Board (CSB). Users of this service should note that the contents of the CIRC are not intended to be a comprehensive listing of all incidents that have occurred; many incidents go unreported or are not entered into the database. Therefore, it is not appropriate to use the CIRC database to perfrom statistical analysis that extends conclusions beyond the content of the CIRC. Also, although the CSB never knowingly posts inaccurate information, the CSB is unable to independently verify all information that it receives from its various sources, much of which is based on initial reports. CIRC users should also note that the CSB receives more comprehensive reports about incidents that occur in the U.S.; comparisons made between U.S. incidents and those in other nations should take this fact into consideration.

Location : California, USA

Injured : 1+ **Dead :** 1+

Abstract

An explosion occurred at a fireworks factory. One worker was killed and one other injured in the incident. At the time of the report several workers were unaccounted for.
The incident is under investigation.
[fatality, injury]

Lessons

[None Reported]

1301911 December 1998

Source : NATIONAL TRANSPORTATION SAFETY BOARD ABSTRACT OF FINAL REPORT, PIPELINE ACCIDENT REPORT, NTSB/PAR-00/01, NATURAL GAS PIPELINE RUPTURE AND SUBSEQUENT EXPLOSION, ST. CLOUD MINNESOTA, DECEMBER 11, 1998.

Location : St. Cloud, Minesota, USA

Injured : 13 **Dead :** 4

Abstract

An explosion occurred on a 1-inch diameter high-pressure plastic gas pipeline. The incident occurred when an installation crew struck and ruptured the pipeline causing a gas leak. Approximately forty minutes later an explosion occurred. Four people were killed and thirteen people injured in the incident. Damage to buildings and equipment is estimated at $399,000 (1998).

An investigation into the incident revealed the following:

1. The marked location of the ruptured gas line was accurate and therefore was not a factor in the incident.
2. Installation procedures were inadequate in that they did not address steps to take under unusual circumstances such as striking a significant underground obstacle, to ensure that buried utilities were protected during the entire installation process including the underground portion.
3. Has someone immediately called for emergency assistance after the rupture, they may have had time to fully assess the risk and to take actions that could have helped either to prevent the explosion or to avoid the resulting loss of life.
4. The risk to people and property was not fully addressed by emergency personnel.
5. Had the gas line in this incident been equipped with an excess flow valve, the valve may have closed after the pipeline ruptured and the explosion may not have occurred.

[excavation damage, human causes, fatality, injury]

Lessons

[None Reported]

1260309 December 1998

Source : ENVIRONMENTAL TIMES, VOLUME 6, ISSUE 3, SPRING 2000.

Location : Wales, UK

Injured : 0 **Dead :** 0

Abstract

A spillage of approximately 20 tonnes of hydrochloric acid occurred and an unauthorised discharge of mercury into a nearby estuary.
The incident occurred when a tank flange failed on a 150 tonne storage tank containing acid. The tank contained only 40 tonnes at the time of the incident, half of which was quickly discharged into a nearby road tanker.
The 20 tonne spillage generated a gas cloud, which required dousing with water to minimise its off-site impact.
Te bund containing the tank breached after 30 minutes and allowed diluted acid to spill into the surface water systems that were contaminated with mercury.
The acid mobilised the mercury and one third of a kilogram was discharged into the estuary.
The cause of the incident was due to completely inadequate procedures for maintenance and inspection of plant and equipment.
The company was fined £21,000 and costs of £17,950 (2000).
[flange failure, storage tanks, gas / vapour release, environmental, ecological damage, human causes]

Lessons

Mercury is highly toxic and cumulative poison, which in the environment continues to be recycled within living plants and animals.
After the investigation the following was addressed to ensure compliance with IPC authorisation:
1. To ensure the tank farm bund was acid resistant.
2. To review the integrity of effluent drains on site.
3. To review the location and performance of environmental acid gas detectors.
4. Review the best available techniques for monitoring tank levels on site.

1044909 December 1998

Source : 1998 REUTERS LIMITED.
Location : , INDIA

Injured : 2+ **Dead :** 50

Abstract

A road transportation incident. Fifty people died when an overcrowded bus hit an oil tanker. The petrol from the tanker caught fire, causing an explosion. Two of the six people who managed to escape from the bus by jumping through the rear door were injured.
The oil tanker driver sustained burn injuries.
[road tanker, fire - consequence, fatality, burns, collision, gasoline, injury]

Lessons

[None Reported]

1045601 December 1998

Source : ICHEME
Location : , CHINA
Injured : 18 **Dead :** 38

Abstract

A gas explosion in a coal mine killed 38 miners and seriously injured 18. More than 80 people were working in the mine No.2 shaft when the explosion occurred. Six miners unaccounted for.
The miners were dynamiting the shaft, touching off the gas explosion.
[design or procedure error, vapour cloud explosion, injury, mining]

Lessons

[None Reported]

1078901 December 1998

Source : 1998 CABLE NEWS NETWORK.
Location : , CHINA

Injured : 18 **Dead :** 38+

Abstract

A gas explosion in a coal mine killed 38 miners and seriously injured 18. More than 80 people were working in the mine No.2 shaft when the explosion occurred. Six miners unaccounted for.
The miners were dynamiting the shaft, touching off the gas explosion.
[solids processing, injury, mining]

Lessons

[None Reported]

10970December 1998

Source : ICHEME
Location : , UK

Injured : 0 **Dead :** 0

Abstract

A blockage occurred on a pipe of a thermal oxide reprocessing plant. The pipe transfers dissolved fuel from the plant to its separation units. The partial blockage forced the plant to halt operations at the head end, meaning it could only operate the rest of the plant for two weeks as it depleted the buffer tank of dissolved fuel.
The blockage was removed and the pipework flushed out.
An investigation is to be carried out to find the cause of the build-up of fragments of cladding inside the pipe.
[flow restriction, plant / property / equipment]

Lessons

[None Reported]

10458December 1998

Source : BIRMINGHAM POST, 15 DECEMBER, 1998.
Location : Birmingham, UK

Injured : 0 **Dead :** 0

Abstract

Firemen had to dam part of a river when a fuel spill threatened to cause an environmental disaster. More than 100 gallons of diesel poured out of a broken fuel pump at a bakery and started to run down nearby storm drains.
The fuel flooded on to the company's loading yard and covered an adjacent road before running into the drainage system and a nearby river.
Fire crews later joined by clean-up experts battled to contain the spill. The area was hosed down with detergent and a special lorry brought in to suck up the diesel.
Inflatable bungs were used to try to block the storm drains where they met the river.
Absorbent booms and pads, specially developed to deal with ocean oil spills, were laid across the river to suck up the fuel.
A driver failing to turn off a pump after filling up a lorry was to blame for the spill, confusion about how to close down the diesel system had added to the problem.
Water and wildlife suffered minimal damage.
[environmental, pump failure, loading, operation inadequate]

Lessons

[None Reported]

1249818 November 1998

Source : BBC NEWS, NOVEMBER 18, 1998, (http://www.bbc.co.uk).
Location : , UK

Injured : 1 **Dead :** 0

Abstract

An explosion and fire occurred at a fireworks factory forcing nearby residents to be evacuated.
The fire sparked off several explosions inside the building, which were followed by a major explosion.
[fire - consequence, evacuation, injury]

Lessons

[None Reported]

1044414 November 1998

Source : BBC ONLINE NETWORK, 1998, (http://www.bbc.co.uk).
Location : , HONG KONG

Injured : 0 **Dead :** 0

Abstract

A marine transportation incident. Two oil tankers collided causing a major oil slick.
There are fears the spillage will pose a serious threat to marine life in the area, including the endangered white dolphin.
The diesel oil poured into an area near the mouth of a river. Both the tankers were carrying thousands of tonnes of oil. Two tanks on one vessel were badly damaged, each with a capacity of 1,000 tonnes of oil.
The oil formed a slick reported to be about 10km long and five metres to 50 metres wide.
[collision, spill, environmental, damage to equipment]

Lessons

[None Reported]

1290707 November 1998

Source : ICHEME

Location : ,

Injured : 0 **Dead :** 0

Abstract

A storage sphere partially collapsed due to vacuum. The incident occurred during blending operations. Blending was immediately stopped and the sphere blocked in, the area was evacuated and nitrogen was introduced into the sphere to relieve the vacuum. The material in the sphere was transferred to a crude tank.

An investigation into the cause revealed that introduction and removal of flow natural gasoline to and from the sphere, which was not designed for a vacuum. [evacuation, design or procedure error]

Lessons

The following lessons were learned:

1. Vessels designed for a low pressure may not withstand a vacuum.
2. Vacuum may be created by a number of factors including a high pumping out rate, lower ambient temperature, lower vapour pressure of the liquid in the vessel.

622 November 1998

Source : BBC ONLINE NETWORK 1998.
Location : , OFFSHORE CHINA

Injured : 0 **Dead :** 0

Abstract

A marine transportation incident. Two oil tankers collided causing a major oil slick.
There are fears the spillage will pose a serious threat to marine life in the area, including the endangered white dolphin.
The diesel oil poured into an area near the mouth of a river. Both the tankers were carrying thousands of tonnes of oil. Two tanks on one vessel were badly damaged, each with a capacity of 1,000 tonnes of oil.
The oil formed a slick reported to be about 10km long and five metres to 50 metres wide.
[collision, damage to equipment, pollution]

Lessons

[None Reported]

1072815 October 1998

Source : BBC NEWS, OCT 19, 1998, (http://www.bbc.co.uk).
Location : , AFRICA

Injured : - **Dead :** 100+

Abstract

A fire and explosion occurred on a ruptured pipeline.
Local people were scooping up the leaking fuel from the pipeline when there was an explosion.
It is thought that ignition was caused by a spark from either a cigarette or a motorbike engine.
Many of the victims had become saturated by fuel.
[burns, fatality, fracture, transportation]

Lessons

[None Reported]

1232913 October 1998

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, 14 OCTOBER, 1999, (http://www.chemsafety.gov).
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CHEMICAL HAZARDS IN INDUSTRY, JANUARY 1999.

Location : Baltimore, USA

Injured : 5 **Dead :** 0

Abstract

An explosion and fire occurred at a chemical plant resulting in the release of benzene and hydrochloric acid. Five people were injured in the incident. Most suffered severe burns; one employee suffered back injuries after falling 30 feet.
The explosion is thought to have occurred in a 3000 gallon reactor in the alkylation unit during routine maintenance. Sediment is believed to have remained in the tank despite having been purged of benzene and hydrochloric acid.
[fire - consequence, reactors and reaction equipment, spill, design or procedure error, injury]

Lessons

[None Reported]

1232512 October 1998

Source : CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD, 29 JULY, 1999, (http://www.chemsafety.gov).
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Location : Michigan, USA

Injured : 0 **Dead :** 1

Abstract

A worker died during decontamination operations after being exposed to 2,4-dichlorophenol.
[operational activities, fatality, contamination]

Lessons

[None Reported]

11383October 1998

Source : EUROPEAN CHEMICAL NEWS, 26 OCT, 1 NOV, 1998.
Location : , UK

Injured : 0 **Dead :** 0

Abstract

Approximately 80 tonnes of 36% hydrochloric acid leaked from a 200 tonne stock tank.
A pipe at the base of the failed, causing a gas cloud.
[storage tanks, pipeline failure, gas / vapour release, spill]

Lessons

[None Reported]

11478October 1998

Source : BBC NEWS, MAY 10, 1999,
(http://www.bbc.co.uk).

Location : , OFFSHORE

Injured : 2 **Dead :** 0

Abstract

An explosion occurred on an oil platform injuring two men. The mechanics were installing a pump and motor unit when flammable gases near a drain ignited causing an explosion and fire in which both men suffered burns. The explosion possible resulted from static electricity igniting the gases.
It took 30 minutes to extinguish he blaze but damage to the platform was minor.
The company was fined £20,000 (1999).
[fire - consequence, exploration, offshore, maintenance, injury]

Lessons

[None Reported]

1140025 September 1998

Source : ICHEME
Location : , AUSTRALIA
Injured : - **Dead :** 0

Abstract

A series of explosions occurred on the Rich Oil Demethaniser (ROD) of a gas plant. Several explosions continued over a period of about one hour.
The explosions were caused by a release of approximately 10 tonnes of gas and oil from a catastrophic failure that occurred on the ROD bottoms reboiler. The overall loss was 25 tonnes. The vapour cloud was believed to have been ignited at its leading edge which reached operational gas-fired heaters some 130 meters away. The reboiler shell-and-tube heat exchanger functioned normally to heat incoming rich oil on the tube-side by using the heat given-up by lean oil leaving the distillation column and passing through the shell side. Prior to the event the heat exchanger was not functioning properly. It was believed to have been operating with broken tubes allowing rich and lean oil to mix and cause upset to the distillation process. Consequent upon this and other problems the heat exchanger had been allowed to cool to -48 degrees C compared with a normal temperature of 100 degrees C. This temperature drop threatened the integrity of the steel of the reboiler. It is further believed that the actual cause of failure of the reboiler was a short duration surge of hot lean oil pumped into the heat exchanger during one of the many attempts to get some pumps working again. A large number of failures in the operation of the plant was reported.
The official report on the accident concluded that the basic cause was the failure of a weld in the steel of the heat exchanger as a result of low temperature embrittlement and thermal shock caused by a short-duration flow of hot oil into the cold vessel. The underlying cause was inadequacy of training of personnel, the inadequacy of operating procedures and the absence of adequate formalised risk assessment.
[fire - consequence, evacuation, methane, ethane, propane, butane, oil, reboiler, low temperature, management system inadequate, separation, separation equipment]

Lessons

The report stated the following conclusions and lessons:
1. The loss of lean oil circulation was caused when pumps stopped depriving the plant of its heat source which caused the temperature to drop dramatically and to remain some time. This threatened the integrity of the plant.
2. Brittle fracture occurred at a weld possibly caused by a hot lean oil flow.
3. Correct actions following the failure of the pumps would have averted the accident by preventing the hot oil surge. The operators nor the supervisors had knowledge of the effect of cold temperatures. This was attributed to inadequate training.
4. If a HAZOP had been conducted as intended rather than postponed, the hazards evident on the day would have been understood in advance and operating procedures and training would have provided for appropriate responses.
5. Lack of training contributed to the accident.
6. A cold temperature incident that occurred on the 28 August 1998, did not cause or contribute to the accident but had this incident been properly reported and acted upon, the accident could have been averted.

1033017 September 1998

Source : YAHOO NEWS, ASSOCIATED PRESS, (http://www.yahoo.com).
Location : , USA

Injured : 0 **Dead :** 0

Abstract

Bomb incident leads to evacuation. Workers loading a bomb from a B-52 accidentally dropped the 500 pound explosive on a runway, prompting the evacuation of more than 700 nearby homes.
The bomb did not explode, however the bomb was transported to a remote bomb range where it was placed 15 feet deep, covered with dirt and detonated.
[human causes, near miss]

Lessons

[None Reported]

8043 September 1998

Source : BBC NEWS, 7 SEP, 1998, (http://www.bbc.co.uk).
Location : , UK

Injured : 0 **Dead :** 0

Abstract

Up to half a million litres of diesel was spilt into a harbour when fuel escaped after vandals tampered with a tank. Around 600,000 litres were released.
Much of the diesel was contained within a protective concrete barrier but some spilled into the harbour and a large quantity has soaked into the soil and drainage pipes.
About 24 fire fighters with four tenders and the fire brigade dinghy were on the scene to prevent anymore fuel from leaking into the water.
Two 100m booms were being used to contain the diesel in the harbour while absorbent mats were used to mop up on land.
No wildlife was thought to have been harmed as yet, but efforts were being concentrated on stopping any oil reaching a nearby beach and river.
[spill, ecological damage, vandalism]

Lessons

[None Reported]

10243September 1998

Source : BBC NEWS ONLINE NETWORK, 1998, (http://www.bbc.co.uk).
Location : , SPAIN

Injured : 50 **Dead :** 0

Abstract

Fifty people were injured when gas explosion occurred wrecking a café. Nearly 200 people were crowded into the café, when a propane gas tank exploded bringing down the roof and walls. Shards of glass and pieces of concrete were blown across the room, fortunately there were no fatalities.
It is not clear what caused the gas tank to explode.
[near miss, injury]

Lessons

[None Reported]

1245422 August 1998

Source : FIRE PREVENTION 331, APRIL 2000.
Location : Gilberdyke, Humberside, UK

Injured : 0 **Dead :** 0

Abstract

A fire occurred in a factory warehouse where waste rubber was processed and remoulded into tyres.
At the time of the incident a worker was welding a bracket in a metal container and had burned through the container's metal wall, which resulted in sparks and molten metal falling onto the floor. The sparks and molten metal ignited diesel residue under an adjacent tank. The building was destroyed in the fire.
Estimated loss is thought to be £810,000.
[fire - consequence, damage to equipment, metal - molten]

Lessons

[None Reported]

1290902 August 1998

Source : ICHEME

Location : ,

Injured : 0 **Dead :** 0

Abstract

A fire occurred at a refinery when a crude splitter pump around line ruptured due to sulphidation corrosion. The rupture released hydrocarbons with a composition from naphtha to diesel. The pump around stream was released as a vapour with an ensuing fire jet ignited by autoignition. The fire caused subsequent ruptures in the main fractionator and other equipment.
No one was injured.
[fire - consequence, gas / vapour release, damage to equipment, refining]

Lessons

[None Reported]

10207August 1998

Source : REUTERS LIMITED, 1998.
Location : Cambridge, Massachusetts, USA

Injured : 1 **Dead :** 0

Abstract

A rail transportation incindent. A rail car carrying 66,000 gallons of hydrochloric acid began leaking, releasing a vapour cloud of deadly fumes causing injury to one . A diluted form of highly corrosive acid, with a concentration of 28 percent, began leaking on to the rail bed and caused a small vapour cloud to form. One man working in the rail yard was taken to a local hospital. 100 to 150 people from two nearby light manufacturing buildings were evacuated and part of a six-lane highway was closed as hazardous materials units tried to patch the hole. An almost windless morning and heavy rains helped toward the quick shrinking of the vapour cloud.
[gas / vapour release, evacuation, injury]

Lessons

[None Reported]

10272July 1998

Source : CNN.COM, U.S. NEWS, 28 JULY, 1998, (http://www.cnn.com).
Location : Chicago, USA

Injured : 0 **Dead :** 0

Abstract

An explosion and fire occurred on a coal fired electric generating station. Emergency crews were on the scene as heavy black smoke and flames rose from the large steel framed building.
A power surge was reported at various points within the area at the time of the blast.
The cause of the incident may have been due to coal dust and at the time of the incident an outside cleaning contractor was vacuuming in the area where possible ignition may have occurred.
[fire - consequence, dust explosion]

Lessons

[None Reported]

11035July 1998

Source : CHEMICAL HAZARDS IN INDUSTRY, JUNE, 1999, ISSN 0265-5271,; ENDS REPORT, FEB 1999, (289), 54.

Location : , UK

Injured : 0 **Dead :** 0

Abstract

A company was fined £13,500 (1999) for the pollution of ground water from around 7000 litres of unleaded petrol which had leaked from a petrol station. The company was also found guilty for causing polluting matter to enter controlled waters. Fuel had escaped from underground piping.
The leak detection system at the petrol station did not function. About 1000 litres of fuel has been recovered but it is not known what happened to the remaining 5000-6000 litres of petrol.
[pipeline, spill, gasoline]

Lessons

[None Reported]

10208July 1998

Source : REUTERS LIMITED, 1998.
Location : North Carolina, USA

Injured : - **Dead :** -

Abstract

Hundreds of thousands of fish have were killed along a lower part of the Neuse River in a major outbrake of the toxic pfiesteria microbe. Heavy spring rains and a dry summer made conditions ripe for emergence of the deadly toxin. The outbrake has killed an estimated 500,000 fish over the past five days, and is an ominous sign for fisherman and boaters along the East Coast.
The pfiesteria microbe has covered a seven-mile stretch of the Neuse River about 15 miles downstream from New Bern in coastal North Carolina. About half the fish caught in one section of the river had ulcerated lesions on their skin associated with an active pfiesteria outbrake.
Pfiesteria in recent years has been linked to several major fish kills on East Coast waterways, where scientists say the micro organism thrives in nutrients generated by sewage, animal waste and fertilisers flushed into rivers and streams. It was first discovered swarming in a major fish kill on the nearby New River in May 1991, causes lesions and stupefies fish, and may have similar effects on people exposed to the toxin.
[hot weather, rain, ecological damage, leak]

Lessons

[None Reported]

12630July 1998

Source : ENVIRONMENTAL TIMES, VOLUME 6, ISSUE 3, SPRING 2000.
Location : , UK

Injured : 0 **Dead :** 0

Abstract

Approximately 213,000 litres of fuel was lost over a period of eight months from an underground pipeline resulting in groundwater pollution.
Two companies involved were fined, one £125,000 and the other £125,000, both companies split costs of £25,000 (2000).
[human causes]

Lessons

[None Reported]

1188108 June 1998

Source : CHEMICAL HAZARDS IN INDUSTRY, SEPTEMBER 1999.
Location : , GERMANY

Injured : 0 **Dead :** 0

Abstract

An explosion occurred in a chemical plant. The incident occurred during production of toltrazuril, an ingredient used in production of a parasiticide.
It was originally thought that the explosion occurred during production of a fungicide.
Apparently a worker used potassium hydroxide instead of potassium carbonate in a reaction with 2-chloro-5-toluene and dimethyl sulphoxide.
The plant was completely destroyed.
[operator error, accidental mixing, processing, damage to equipment]

Lessons

[None Reported]

1261202 June 1998

Source : ENVIRONMENTAL TIMES, VOLUME 6, ISSUE 3, SPRING 2000.
Location : Somerset, UK

Injured : 0 **Dead :** 0

Abstract

Gas oil leaked from a large storage tank at a cellophane and film manufacturer and contaminated a wide area of land and underground water. An investigation found a small hole in the storage tank.
Approximately 160,000 litres (35,000 gallons) leaked into the ground around the tank compound. Checks revealed that the floor of the bund had not been properly converted from a previous use.
Decontamination of the site is thought to cost over £500,000 (2000).
The company was fined £30,000 and costs of £4,885 (2000).
[storage tanks, corrosion, design or procedure error, pollution, environmental]

Lessons

[None Reported]

1162302 June 1998

Source : ICHEME
Location : , UK

Injured : 0 **Dead :** 0

Abstract

A factory effluent consent breach ocurred following an upset on an ethylene plant. The incident arose from commissioning problems on the plant, after the plant had been shutdown for maintenance work. Emulsified water was sent to the nearby river foreshore via the plant effluent outlet. The sample of the effluent at the foreshore showed the hydrocarbon content to be 62 ppm against a maximum consent limit for spot samples of 45 ppm.
The incident was caused by a short term loss of efficiency of the waste water stripper. The performance of the stripper was reduced for about two hours due to the base section being full of liquid.
[mechanical equipment failure, spill]

Lessons

1. Contingency plans for holding up any contaminated water should be developed prior to restarting the ethylene plant.
2. The waste water stripper level instrumentation should be reviewed to assess if it is feasible to avoid false zeros.
3. The stripper Operating Instructions should be reviewed to give guidance on the actions to be taken if the tower is not operating efficiently.
4. This incident should be used as a learning event to provide refresher training to plant operators.
5. The ethylene plant radio performance should be reviewed to improve the reliability of the system.

1265005 May 1998

Source : ENGINEERS AUSTRALIA, JANUARY 2000.
Location : , AUSTRALIA

Injured : - **Dead :** 4

Abstract

A marine transportation incident. A fire occurred onboard a ship when diesel fuel leaked from a burst flexible hose onto a hot engine component in the main machinery space. Four people were killed in the incident.
[fire - consequence, hose failure, hot surface, fatality]

Lessons

[None Reported]

1174513 April 1998

Source : ICHEME
Location : , UK

Injured : 0 **Dead :** 0

Abstract

An ethanol day storage facility consisted of five tanks within a bund.
In preparation for sampling one of the tanks, a technician put it on re-circulation and jet mixing. This involved lining up the tank and starting the pump.
About half an hour later he returned to the tank to take a sample and noticed that ethanol was spilling into the bund from an open drain valve on the jet mix line.
He closed the valve, stopped the pump and called for assistance.
The fire service arrived at the scene. The ethanol spill, assessed at 2.5 tonne, was dealt with by allowing some to evaporate, the remainder was diluted with fire water and soaked away within the bund.
[storage tanks, operation inadequate]

Lessons

Company recommendations following the accident included the following:
Shutdown documentation should be formalised to link the documentation for maintenance activities with the process reinstatement and line checks based on marked P&ID's.

1060608 April 1998

Source : ICHEME

Location : ,

Injured : 0 **Dead :** 0

Abstract

A diesel fire occurred on a production platform as operators were filling the diesel tank for the essential generator. The operator noticed that it was taking too long to fill the diesel tank and began to check for a problem. He found that the float indicator on the diesel tank cover was reading three quarter full. He removed the level gauge to determine the exact fuel level which resulted in fuel spraying into the generator enclosure. The diesel oil contacted the generator exhaust which ignited the fuel.

The cause of this incident is related to the design of the fuel tank and filling system. The safe filling procedure relied entirely on the mechanical level gauge and the operators ability to judge when the tank was full. The design faults are as follows:

1. Inadequate level indication on the tank.
2. No high level alarm or switch.
3. No overfill protection to shut-off pump.
4. Gauge connection located inside enclosure.

[fire - consequence, material transfer, design inadequate, mechanical equipment failure]

Lessons

[None Reported]

1234830 March 1998

Source : NATIONAL TRANSPORTATION SAFETY BOARD, 1999, (http://www.ntsb.gov),; ENVIRONMENTAL PREVENTION BULLETIN, 068.
Location : Sandy Springs, Georgia, USA

Injured : 0 **Dead :** 0

Abstract

A pipeline rupture caused approximately 30,000 of gasoline of which 17,000 gallons were recovered.
The incident occurred on a 40-inch diameter steel pipeline, which ran through a landfill site.
An employee at the site detected the odour of gasoline flowing up through the ground in the vicinity of the site and immediately reported the leak to the pipeline owner. The pipeline was subsequently shutdown.
An investigation into the leak found that the pipeline had buckled and cracked.
It is thought that the stress damage was due to soil settlement underneath the pipe.
Clean-up costs exceeded $3.2 (1998).
[material of construction failure, spill, design or procedure error]

Lessons

[None Reported]

1260117 March 1998

Source : ENVIRONMENTAL TIMES, VOLUME 6, ISSUE 3, SPRING 2000.
Location : Wales, UK

Injured : 0 **Dead :** 0

Abstract

Approximately 500 - 1,000 litres of heating oil spilled from a tank into a nearby watercourse. An investigation found that vandals had tampered with the tank.
Poor pollution prevention at the site had indirectly been the cause of the pollution.
It was found that the oil storage tank was unbunded and was situated directly over a surface water drain.
The company was fined £1,000 and costs of £2,662 (2000).
[storage tanks, vandalism, design or procedure error, pollution]

Lessons

[None Reported]

1041404 March 1998

Source : LOSS PREVENTION BULLETIN, 140, 23.; CONGLETON CHRONICLE, 6 MARCH 1998.; CONGLETON CRONICLE, 5 MARCH 1998.
Location : , UK

Injured : 0 **Dead :** 0

Abstract

An explosion occurred in a grain hopper, located within a mill building. The employees working in the mill at the time of the explosion all escaped without injury. Witnesses reported flames and clouds of blue-black smoke being emitted from the mill building after the explosion, which sent debris over a wide area around the mill, including the railway line, which was temporarily closed while checked for any damage caused to the track by flying debris.
[silo/hopper, damage to equipment, milling, fire - consequence, solids processing equipment]

Lessons

[None Reported]

1060731 January 1998

Source : ICHEME

Location : ,

Injured : 1 **Dead :** 1

Abstract

An explosion and flash fire occurred on the a drilling rig while drilling a well. The explosion on the drilling floor caused one injury and one fatality, both employees of the drilling contractor.

The investigation revealed that gas which broke out from the drilling mud collected in the enclosed space between the drill floor and the pollution pan used to prevent accidental discharge of oil based mud to sea. The gas was ignited by either stray currents or frictional sparks caused by metal parts from the floor covers and supports rubbing together.

It would appear that the basic cause of this incident was a failure in the design to recognise that by installing the collection pan, and thus creating a confined space, there was potential for gas to accumulate below the floor when the rotary motor was not operating providing ventilation for the enclosure.

There is no practical way to prevent gas breakout in the immediate vicinity of the pollution pan.

The rig is designed so that mud returns which do not immediately divert to the mud return line are captured here and drain to the return system.

[fire - consequence, fatality, design or procedure error, injury]

Lessons

The following recommendations from the report focus on preventing gas accumulation, and guarding against ignition possibilities:

1. Ensure that there is adequate ventilation below the drill floor to prevent gas accumulation during all operations.
2. Install gas detectors with visual and audible alarms to monitor gas below the drill floor.

1109908 January 1998

Source : EAST ANGLIAN DAILY NEWS, 9 JANUARY, 1998.
Location : , UK

Injured : 0 **Dead :** 0

Abstract

A fire occurred over four floors in a grain mill. Workers were evacuated and traffic held up as fire-fighters tackled the blaze.
When fire-fighters arrived they found about two tonnes of grain well alight in a silo. They had problems getting at the fire, and had to cut away sections of the silo and remove quantities of grain.
[fire - consequence, evacuation, silo/hopper]

Lessons

[None Reported]

1039507 January 1998

Source : BBC NEWS, INTERNET, 1998, (http://www.bbc.co.uk).

Location : Off Coast, UNITED ARAB EMIRATES

Injured : 0 **Dead :** 0

Abstract

A marine transportation incident. Approximately 4,000 tonnes of fuel oil is thought to have leaked from a marine barge which sank off the north coast in high winds.

Mangrove swamps in the area were threatened by the oil spill. The trees were grown by a marine research centre to provide a habitat for shrimps and small fish.

[marine transport, environmental]

Lessons

[None Reported]

9054 January 1998

Source : CNN.COM, U.S. NEWS, (http://www.cnn.com).
Location : Kentucky, USA

Injured : 1 **Dead :** 0

Abstract

A fire occurred at a fertiliser plant causing severe damage to the building and the evacuation of 2,500 people within two miles of the surrounding area. The basement of the plant contained 400 tonnes of ammonia nitrate and fears of applying water or foam to the fire which could create dangerous vapour clouds and cause a toxic run-off into the nearby river.
Firefighters avoided run-off by building an impromptu dike and plugging two underpasses and there were no toxic plumes or any odour reported.
[fire - consequence, damage to equipment, processing]

Lessons

[None Reported]

9057 January 1998

Source : CNN.COM, U.S. NEWS, (http://www.cnn.com).
Location : Shaanxi Province, CHINA

Injured : 50+ **Dead :** 100+

Abstract

A liquefied nitrogen pipeline exploded in a fertiliser plant. About 60 workers were on night shift during the incident.

Lessons

[None Reported]

9060 January 1998

Source : CNN.COM, U.S. NEWS, (http://www.cnn.com).
Location : Serbia, YUGOSLAVIA

Injured : 2 **Dead :** 29

Abstract

A methane gas explosion occurred in a coal mine killing 29 miners.
Methane, a naturally occurring colourless and odourless gas that seeps out of coal seams, can build up in poorly ventilated mine shafts and is easily ignited by a spark.
[fatality, mining, injury]

Lessons

[None Reported]

106031998

Source : ICHEME

Location : ,

Injured : 0 **Dead :** 0

Abstract

During the removal of a 42 inch blind (after maintenance) on an overhead vapour line, fuel gas from the opened flange ignited, resulting in a flash fire.
Fortunately, seven contractors working at the scaffolding platform at the time escaped without injury.
Fuel gas had entered the tower from the flare and overhead drum. The source of ignition was considered to be the hot surface of the temporarily fixed halogen lights located directly
downwind. Steam was injected into the base of the tower to extinguish the flange fire.
The immediate cause of the flash fire was the removal of an isolation blind when there was flammable gas present (reverse flow of fuel gas from the flare system) with potential sources of
ignition nearby.
The basic causes were:
1. Inadequate control and coordination of the various activities that were being carried out simultaneously by the maintenance contractors and operations personnel.
2. Changes to plant conditions after the issue of a hot work permit for the removal of the blind (work on desalters, increase in fuel gas flow to flare).
3. Failure to thoroughly check the unit to identify potential remaining hazards for the deblinding tasks (tower open to flare, use of temporary non-flameproof equipment).
4. Failure to recognise the risks and prepare a written procedure in accordance with in-house rules.
[fire - consequence, design or procedure error]

Lessons

[None Reported]

104151998

Source : LOSS PREVENTION BULLETIN, 140, 23.; CNN.COM, U.S. NEWS, 15 FEBRUARY 1998.
Location : ,

Injured : 150 **Dead :** 0

Abstract

A rail transportation incident. More than 150 people suffered burns, 120 critically, after huge flames swept through a crowd of people following the collision of two petroleum tanker trains.
Most of the people were soaked in petrol because, prior to the explosion, they were carrying buckets laden with petrol to and from their houses. Some witnesses suggested the source of ignition was a cigarette from one of the crowd.
The cause of the collision of the two trains is not immediately clear.
[fire - consequence, gasoline]

Lessons

[None Reported]

1075327 December 1997

Source : CHEMICAL HAZARDS IN INDUSTRY, FEBRUARY 1998.
Location : , UK

Injured : 0 **Dead :** 0

Abstract

A rail transportation incident. A tank wagon containing vinyl chloride monomer (VCM) a liquefied gas derailed at low speed. Although the wagon came off the rails and turned on its side there was no leak of gas.
[derailment]

Lessons

[None Reported]

1139913 December 1997

Source : LOSS CONTROL NEWSLETTER, 1997.
Location : , TAIWAN

Injured : 2 **Dead :** 3

Abstract

An explosion and fire destroyed an LPG tank and nearby gas oil and fuel oil pipelines. Cigarettes and a bottle of wine were found at the site.
[storage tanks, fire - consequence, fatality]

Lessons

[None Reported]

1136811 December 1997

Source : LLOYDS LIST, 15 DEC, 1997.
Location : , USA

Injured : 1 **Dead :** 1

Abstract

A flash explosion occurred on a 6,000 gallon underground gasoline tank, which was being prepared for lining with fibreglass. One person was inside the tank and another by the 3ft by 3 ft manhole.
[storage tanks, fatality, entry into confined space, underground storage, injury]

Lessons

[None Reported]

1040609 December 1997

Source : LOSS PREVENTION BULLETIN, 139, 22-23. THE CHEMICAL ENGINEER, 15 JANUARY 1998. CEEFAX, 9 DECEMBER.; CNN.COM, U.S. NEWS, 9 DECEMBER 1997.

Location : , GERMANY

Injured : 100 **Dead :** 0

Abstract

A rail transportation incident. A freight train and passenger train collided injuring some one hundred people, two critically.
Three tanker cars loaded with diesel exploded during the collision. Fire fighters took two hours to extinguish the flames, and prevented the fire from spreading to the remaining nineteen tanker cars on the freight train. The cause of the collision has not yet been identified.
[fire - consequence, explosion, injury]

Lessons

[None Reported]

9065 20 November 1997

Source : COPYRIGHT 1996, THE DAILY IOWAN.
Location : , USA

Injured : 0 **Dead :** 0

Abstract

A rail transportation incident. A railroad train derailed due to striking a truck on a crossing spilling almost 100 tonnes of . All three locomotives and eight of the train's 53 car jumped the tracks.
Warning lights on the crossing were working at the time of the derailment.
[derailment - consequence, collision]

Lessons

[None Reported]

1138808 November 1997

Source : LOSS CONTROL NEWSLETTER, 1997.
Location : , INDIA

Injured : 0 **Dead :** 0

Abstract

A spillage of diesel occurred on one of two lines carrying petroleum products from ship to terminal.
The explosion occurred in the sewage and storm water drains around the area. Following the explosions, the line was shutdown and filled with water to locate the possible source of the leakage.
[unloading, pipework, marine transport, drains & sewers]

Lessons

[None Reported]

1145308 November 1997

Source : ICHEME
Location : , UK

Injured : 0 **Dead :** 0

Abstract

A process plant upset resulted in a smoky flare lasting 8 minutes. The smoke drifted across a local road, causing nuisance and potential hazards to drivers. Four external complaints were received, including one from the local police. The IPC limit was not exceed by the incident. A seized non-return valve meant that the gas was vented to a different stack from normal, in addition, a steam control valve, which aids smokeless flaring had been removed in error, as it was assumed that the warm-up line would provide sufficient heating for smokeless venting.
[processing, gas / vapour release, valve failure]

Lessons

The lessons learnt covered the following areas:
1. Establishing ownership of the various sections of the system to ensure responsibility for maintenance, operation and modifications work.
2. Review of the flare system design against best practice for smokeless flaring.
3. Updating of operating and maintenance procedures for the flare system.
4. Review of procedures to inform the Scottish EPA in the event of work which might effect smokeless flaring capabilities.
5. A review of the radio system to ensure staff can be contacted effectively.
6. Review of the plant operating procedures to minimise the potential for a similar process upset.

896 02 November 1997

Source : LLOYDS LIST, 3 NOV, 1997.
Location : , ISRAEL

Injured : 0 **Dead :** 1

Abstract

A fire occurred in a diesel storage tank following explosion caused fatality. Worker had gone for a test sample when the explosion occurred.
[storage tanks, fire - consequence, fatality, sampling, explosion / pressure release]

Lessons

[None Reported]

1120121 October 1997

Source : ICHEME
Location : , USA

Injured : 3 **Dead :** 0

Abstract

H2S (hydrogen sulphide) was released while a relief valve was being replaced. The pipe fitters working on the valve were wearing air supplied breathing apparatus and were not injured. However, other nearby workers were exposed to H2S, three of which were hospitalised overnight.
The incident occurred during schedule maintenance on a hydrodesulphurization and regeneration unit. Eight relief valves had been removed from various parts of the units and two had already been replaced prior to the incident. Battery limit blinds had been installed on the majority of key lines. As a result, turnaround personnel believed they could cover all maintenance work on a single work permit. Therefore, no specific work permits were prepared authorising the replacement of the relief valves. The relief valves were located in the line going into the 24 inch blowdown header to flare. The 24 inch blowdown valve had been open throughout the turnaround. The 8 inch valve in the line to the blowdown header was also open since it was inoperable and could not be closed. On the 21 October 1997, two contractor pipe fitters had removed the 6 inch and 8 inch blind flanges and began to replace the west side safety relief valve. During this sequence of work, H2S was released.
[gas / vapour release, flare line, flare system, blind/spade/slip plate, safety relief valve, isolation inadequate, maintenance procedure error, injury]

Lessons

The following recommendations were made:
1. A hazard analysis must be carried out before commencing any work involving opening a flare line.
2. Work on a live flare system requires special dispensation from a senior manager.
3. A detailed procedure covering isolation, draining and purging requirements must be prepared prior to maintenance work.
4. Detailed safety instructions for the opening of any pipeline must be included in the work permit.

1138715 October 1997

Source : LOSS CONTROL NEWSLETTER
Location : , SINGAPORE

Injured : 0 **Dead :** 0

Abstract

A marine transportation incident. Two marine tankers collided spilling 29,000 tonne of fuel oil into the sea. 51 anti-pollution craft were involved in cleanup. [collision, pollution]

Lessons

[None Reported]

8846 23 September 1997

Source : HAZARDOUS CARGO BULLETIN, 1997, NOV. REUTER.
Location : , FRANCE

Injured : 0 **Dead :** 1

Abstract

An explosion and fire occurred at a fireworks killing one person, rockets sprayed hundreds of metres and several parked cars were set ablaze.
[fire - consequence, damage to equipment, fatality, processing]

Lessons

[None Reported]

8845 21 September 1997

Source : HAZARDOUS CARGO BULLETIN, 1997, NOV. LLOYDS LIST.
Location : Alberta, CANADA

Injured : 0 **Dead :** 0

Abstract

A split of a weld joint led to the rupture of a 64,000 litter tank, a cloud of hydrochloric acid spread over 30 km, residents sealed up homes and stayed in doors. [material of construction failure]

Lessons

[None Reported]

8843 18 September 1997

Source : HAZARDOUS CARGO BULLETIN, 1997, NOV. REUTER.
Location : Spitsbergen, NORWAY

Injured : 0 **Dead :** 23

Abstract

An explosion occurred in a coal mine which was fuelled by methane and coal dust. The blast occurred 300m down and 4.5 km from the main shaft.
[fatality, mining]

Lessons

[None Reported]

8832 17 September 1997

Source : HAZARDOUS CARGO BULLETIN, 1997, NOV. REUTER.
Location : , NORWAY

Injured : 0 **Dead :** 0

Abstract

A marine transportation incident. A ro-ro ship with 27 people on board grounded and took on water, cargo of water sensitive ferrosilicon was made secure. [ship ran aground]

Lessons

[None Reported]

8823 14 September 1997

Source : HAZARDOUS CARGO BULLETIN, 1997, NOV, REUTER.
Location : Maryland, USA

Injured : 0 **Dead :** 0

Abstract

An air transportation incident. A fighter plane carrying 5,000kg of fuel broke up and crashed while performing at an air show. The explosion destroyed several buildings. The pilot ejected. No fatalities.

Lessons

[None Reported]

8841 14 September 1997

Source : HAZARDOUS CARGO BULLETIN, 1997, NOV. REUTER.
Location : , TAIWAN

Injured : 0 **Dead :** 0

Abstract

An explosion occurred on a gas pipeline which was accidentally ruptured by workers. The leaking gas ignited by sparks from passing motorcycles.
[human causes, transportation]

Lessons

[None Reported]

1106813 September 1997

Source : ICHEME
Location : , USA

Injured : 0 **Dead :** 0

Abstract

During the changing over of vacuum bottoms pumps due to cavitation problems, an electrical switchboard tripped out. This was due to a failure of the vacuum bottoms pump motor windings. The electrical outage caused the shutdown of most pump-around circuits. Loss of pump-around caused the vacuum tower off-gas effluent separator to overflow liquid to the off-gas burner in the furnace. This caused fire within the furnace. Although the fuel gas was shut off, the vacuum tower off-gas supply is separate from the fuel gas system and continued to burn. Feed through furnace coils was continued using turbine driven pumps, but the naphtha preheat convection coils flow was shutdown and a tube in this section burst adding to the fire. Shortly after 17:00 hrs. the South vacuum bottoms pump began cavitating slightly. This continued off and on until approximately 19:45 hrs. when the decision was made to swing to the North pump. The operator pushed the switch to start the North pump and sparks came out of the conduit junction box at the motor. Immediately the call came from the inside operator that the other pumps on the crude and vacuum unit had failed. The operator immediately started the turbine driven raw crude charge and vacuum charge pumps, maintaining flow through the heater coils. Flow of naphtha through the convection section and vacuum bottoms rundown were not lost since these particular pumps motors came from a different electrical supply. When the pumps shutdown, the inside operator reduced the crude rate. Some steam was also cracked open to the furnace passes to maintain velocity. The furnace temperature controllers were left on automatic during this time. The individual motor circuit breakers on the unit's main switch rack were all switched off and attempts were made to reset the switch rack's feeder breaker at the electrical substation without any success. At approximately 20:05 hrs., fire was reported under the furnace and smoke was coming from the stack. The operator checked the fuel gas knock out drum and finding no liquid level shut off the fuel gas to the furnace, including the pilots. Shortly thereafter the crude overhead line was opened to the flare to control the tower pressure. Snuffing steam was put into the furnace and the pass steam was opened fully and the crude and vacuum charge pumps were shutdown. The naphtha charge pump feeding convection back coils was shutdown at approximately 20:10 hrs. The fire continued burning and at 20:30 hrs. a "pop" was heard coming from the furnace, which was the naphtha coil rupturing. At this time the Emergency Response Team was called out. The Vac 2 System effluent off gas was blocked in at the separator at 21:00 hrs. The fire was extinguished at 22:30 hrs.
This incident was initiated by the failure of the North Vacuum Bottoms pump motor and the tripping out of the CrudeVac Unit's primary electrical switch rack. However, the heater fire that followed was caused by the continual combustion of the Vacuum Tower off-gases after the main fuel gas was shut-off and the heater blocked in. The switch to divert this stream was not located near the fuel gas valves and was not activated until later. In addition, the loss of pump-around cooling in the Vacuum Tower resulted in carry over of heavy oil to the heater via a full separator drum. (The high level alarm is located in a satellite control station which was not manned in the emergency and the pumps for discharging the separator were out of action due to the power failure). Fuel was also added to the heater due to back flow from the gas oil stripping tower due to a connection downstream of the main fuel gas emergency isolation valves. A previous safety review had identified a number of shortcomings in instrumentation design and process piping design. This resulted in the emergency fuel shut off valves being relocated in the 1994 turnaround to keep the operator further away from the furnace during emergencies. However, the HAZOP which formed part of the Management of Change procedure did not cover process considerations focusing only on mechanical and installation issues.
The rupture of the naphtha convection coil provided considerable additional fuel to the fire. The naphtha charge pump kept operating because its electrical supply is taken from a separate switch rack, but was shut down 25 minutes after the other pumps lost power. The line ruptured 20 minutes later causing major damage to the heater. After the incident decoking of the radiant bank coils in crude service was required, even though some steam was cracked into the furnace passes, with the charge rate reduced, due to the furnace temperature controllers being left on automatic.
[refining, electrical equipment failure, fire - consequence, furnace, damage to equipment, operation inadequate, mechanical equipment failure]

Lessons

The following recommendations were made:
1. Emergency shutdown procedures must cover the actions for all types of breakdowns/failures.
2. Operator/instrumentation interfaces must be thoroughly evaluated during HAZOPs or safety reviews that form part of the Management of Change procedure.
3. P&IDs must be field checked prior to a HAZOP in case of non-recorded, past modifications.
4. Refresher training must cover all aspects of safe furnace operations including emergency response plans.
5. All fuel sources to be isolated in an emergency to be clearly identified.
The following corrective actions were taken in the refinery:
1. Relocate the vacuum effluent off-gas diversion switch to a position near the emergency fuel gas shut-off valves for the furnaces.
2. As part of an Instrument Upgrade Project, re-route the diversion switch into the Central Control Center.
3. Provide alarms for the vacuum effluent system to the North Inside Operator as part of the Instrument Upgrade Project.
4. Disconnect two tie-ins to the fuel gas line between the emergency shut off valves and the furnace burners. Provide an alternative source of fuel gas for these two existing users that includes the connection with the gas oil stripping tower.
5. When management of change reviews are held for the purpose of relocating process piping, the HAZOP and the P&IDs should be reviewed along with a field check for verification of other process tie-ins and potential process consequences.

8840 10 September 1997

Source : HAZARDOUS CARGO BULLETIN, 1997, NOV. REUTER,; CHEMICAL HAZARDS IN INDUSTRY NO: 1, JANUARY 1998.
Location : Ohio, USA

Injured : 7 **Dead :** 1

Abstract

A fire and explosion occurred at a resin plant killing a worker and injuring seven others.
The incident occurred in a vessel in which phenol, formaldehyde and sulphuric acid were being mixed to make binding agent, which is used in sandings coatings for automotive metal moulding.
An investigation is being carried out into the cause of the incident.
[fatality, fire - consequence, injury]

Lessons

[None Reported]

8828 09 September 1997

Source : HAZARDOUS CARGO BULLETIN, 1997, NOV. LLOYDS LIST.
Location : , THAILAND

Injured : 2 **Dead :** 3

Abstract

An explosion occurred on a small tanker during transfer of diesel oil from an unidentified tanker.
[material transfer, fatality]

Lessons

[None Reported]

9062 04 September 1997

Source : NANDO NET, THE ASSOCIATED PRESS, COPYRIGHT 1997.
Location : , PARIS

Injured : 53 **Dead :** 1

Abstract

Two explosions occurred in a six story apartment building. A gas leak was found to be the cause of the explosion. Fires that followed both of the explosions were extinguished quickly.
[fire - consequence, fatality]

Lessons

[None Reported]

8974 September 1997

Source : CNN INTERACTIVE, US NEWS STORY PAGE, JULY, 1997. CABLE NEWS NETWORK INC, (http://www.cnn.com).
Location : Ohio, USA

Injured : 0 **Dead :** 0

Abstract

An explosion occurred heavily damaging a chemical plant which caused a cloud of irritating fumes that forced the evacuation of nearby areas, the explosion was felt up to seven miles away.
The cause of the explosion was a kettle in which chemicals were being heated to form a resin, overheated and exploded. Two toxic chemicals, phenol and formaldehyde were being mixed along with sulphuric acid to produce a non toxic resin used as a binder in the manufacture of wood products such as plywood and particle board.
[high temperature, processing]

Lessons

[None Reported]

8838 30 August 1997

Source : HAZARDOUS CARGO BULLETIN, 1997, NOV. LLOYDS LIST.
Location : , NIGERIA

Injured : 0 **Dead :** 0

Abstract

A fire occurred on a spilling several million litres of gasoline. Fire fighters battled blaze for three days, the spill was possibly due to vandalism.
[fire - consequence, transportation]

Lessons

[None Reported]

1198427 August 1997

Source : ICHEME
Location : ,
Injured : 4 **Dead :** 0

Abstract

A plant was evacuated when a small leak of ethylene diamine occurred causing toxic fumes to be released. Three workers and a fire officer were injured. [evacuation, gas / vapour release, injury]

Lessons

[None Reported]

1137820 August 1997

Source : BLAYE DISASTER: SOME FACTS AND INTERIM CONCLUSIONS. SEBTI CHAABANE H&S UNIVERSITY OF BORDEAUX.
Location : , FRANCE

Injured : 0 **Dead :** 10

Abstract

A dust explosion occurred on the cereal plant when the 30 metre high, 54,000 tonne grain silo collapsed and buried everything on the ground under tonnes of grain and concrete. The cost to restart the plant is estimated at 7 to 8 million French francs (1997).
[silo/hopper, fatality, operational activities]

Lessons

[None Reported]

8813 17 August 1997

Source : CHEMICAL HAZARDS IN INDUSTRY, 1997, NOV.

Location : ,

Injured : 0 **Dead :** 0

Abstract

A leak in a trichlorosilane pipe occurred in a silicone manufacturing plant causing 5600 lbs of hydrogen chloride to be released. It took about four hours to locate and contain the leak because of the location of the pipe.
[processing, spill]

Lessons

[None Reported]

8933 03 August 1997

Source : HAZARDOUS CARGO BULLETIN, 1997, SEP. LLOYDS LIST.
Location : , MALACCA STRAITS

Injured : 0 **Dead :** 0

Abstract

A marine transportation incident. A marine tanker collided with a bulk carrier causing a No.2 port side tank the be holed and 150 tonnes of fuel oil spilt, consequential widespread pollution occurred.
[collision]

Lessons

[None Reported]

8965 August 1997

Source : THE SAFETY AND HEALTH PRACTITIONER, APRIL, 1997.
Location : Iowa, USA

Injured : 0 **Dead :** 0

Abstract

Contractors carrying out spot welding on the steel doors of an explosive magazine ignited the fireworks within. Approximately 17 tones of fireworks were consumed in the fire. Fortunately no one was injured but in addition to the destruction of the stock, the magazine suffered considerable damage. A permit to work system was not operated containing advise on precautions.
The company was fined £1000.
[explosion, fire - consequence, damage to equipment, permit to work system inadequate]

Lessons

[None Reported]

1135023 July 1997

Source : LOSS CONTROL NEWSLETTER, 1997.
Location : , USA

Injured : 0 **Dead :** 0

Abstract

A self-elevating drilling platform broke loose from her moorings and collided with an offshore supply vessel, with spillage of 3,500 gallons of diesel oil. The platform then drifted against two double hulled barges.
[inadequate mooring, collision, marine transport]

Lessons

[None Reported]

9069 22 July 1997

Source : ICHEME

Location : Indianapolis, USA

Injured : 1 **Dead :** 1

Abstract

A gas pipeline exploded and touched off a fire, destroying six houses and damaging 50 others in an affluent subdivision.
Construction workers using a backhoe apparently punctured the gas 20 inch main and left 10 to 15 minutes before the explosion. One person suffered burns.
[damage by backhoe, fatality]

Lessons

[None Reported]

8938 17 July 1997

Source : HAZARDOUS CARGO BULLETIN, 1997, SEP. LLOYDS LIST.
Location : Texas, USA

Injured : 0 **Dead :** 0

Abstract

A fire destroyed a chemical storage tank containing a gasoline blending component, the cause was due to a lightning strike. At the time the tank was being emptied for maintenance. There were no injuries.
[fire - consequence]

Lessons

[None Reported]

1133917 July 1997

Source : LLOYDS LIST, 21 JUL, 1997,; LOSS CONTROL NEWSLETTER, 1997.
Location : , USA

Injured : 0 **Dead :** 0

Abstract

Lightning struck a storage tank containing a gasoline blending component causing a fire. Material was being pumped out in preparation for maintenance work. Roadway closed.
[storage tanks, fire - consequence]

Lessons

[None Reported]

1060016 July 1997

Source : ICHEME

Location : ,

Injured : 0 **Dead :** 0

Abstract

Fuel oil spill from failed pipe. A routine transfer of heavy fuel oil was initiated. This was to move product from one tank to the utilities bunker tank. The pumping rate was approximately 1500 bbls/hr and the system was checked prior to shift change by the area operator.
During routine surveillance (after shift change) the area operator noticed a quantity of product within the drainage ditches inside the bunded area. Further investigations identified a leak from pipework underneath a road crossing. The transfer was immediately stopped and the system isolated.
Using tank dips it was estimated the spill was approximately 1000 bbls.
The area is bunded and penstocks have been fitted to protect the refinery surface water system from contamination should an incident like this occur. The vulnerability, particularly with
the age of some of the pipework, had already been recognised. The protection system worked well and the spill was contained within the drainage system inside the bund. There was no
product escape into any other area. Initially, a bowser was organised to recover product. This was replaced by a steam driven pump to speed up the operation. All oil was recovered back into the fuel oil component tankage.
It has been concluded that the pipework failure occurred due to external corrosion and that initial construction specification offered inadequate protection for the local environment.
[material transfer, design or procedure error]

Lessons

[None Reported]

8712 14 July 1997

Source : LOSS PREVENTION BULLETIN, 136, 24.
Location : Gwynedd, UK

Injured : 0 **Dead :** 0

Abstract

Sixty residents were evacuated after a major petrol leak at a filling station. Properties within 200 m of the station were evacuated, due to the danger of flammable vapour from the estimated 1,500 gallons of petrol that may have leaked underground.
[evacuation, gas / vapour release, gasoline]

Lessons

[None Reported]

8922 11 July 1997

Source : HAZARDOUS CARGO BULLETIN, 1997, SEP.
Location : , UNITED ARAB EMIRATES

Injured : 0 **Dead :** 0

Abstract

A marine transportation incident. A barge carrying 5,000 tonnes of diesel hit breakwater after towrope snapped, 2,500 tonnes spilled.

Lessons

[None Reported]

8795 11 July 1997

Source : CHEMICAL HAZARDS IN INDUSTRY, 1997, NOV.
Location : , CANADA

Injured : 8 **Dead :** 0

Abstract

Hundreds of residents were evacuated when a fire occurred at a plastics recycling centre released dangerous levels of hydrogen chloride and benzene into the air. Eight fire fighters were injured. The fire started in a 71,000 sq. ft warehouse. It was estimated that about 1 M lbs of scrap plastic were stored in the warehouse.
[fire - consequence, evacuation, warehousing, injury]

Lessons

[None Reported]

8921 09 July 1997

Source : HAZARDOUS CARGO BULLETIN, 1997, SEP. LLOYDS LIST.
Location : , CHILE

Injured : 0 **Dead :** 0

Abstract

A marine transportation incident. A marine tanker carrying 27,000 tonnes of gasoline grounded. Two tugs were used to pull the vessel clear averted, possible ecological disaster.
[ship ran aground]

Lessons

[None Reported]

1135409 July 1997

Source : LOSS CONTROL NEWSLETTER, 1997,; LLOYDS LIST, 14 JUL, 1997.
Location : , CANADA

Injured : 100+ **Dead :** 0

Abstract

An entire recycling plant was destroyed in the fire. Air was contaminated with benzene and hydrogen chloride released by the burning 400 tonnes of PVC which was being stored at the site. At least 100 firemen were reported as being ill, having worked at the scene. Residents within 8 blocks were evacuated. [fire - consequence, contamination, gas / vapour release, storage, evacuation, injury]

Lessons

[None Reported]

1136308 July 1997

Source : LOSS CONTROL NEWSLETTER, 1997.
Location : , UK

Injured : 0 **Dead :** 0

Abstract

A gas release occurred when workers ruptured a gas main. The leak was quickly repaired. People in nearby houses were forced to evacuate. The gas was dispersed using high pressure water spray.
[gas / vapour release, evacuation, pipeline, maintenance]

Lessons

[None Reported]

1198207 July 1997

Source : ICHEME
Location : , UK
Injured : 0 **Dead :** 0

Abstract

A small fire occurred on a plant after a solvent (ethyl acetate) leak from a pump, the plant was shutdown. Subsequently a storage tank overflowed approximately 10 tonnes.
[fire - consequence, plant shutdown, storage tanks, spill, pump failure]

Lessons

[None Reported]

1134006 July 1997

Source : LLOYDS LIST, 26 JUL, 1997.
Location : , TAIWAN

Injured : 0 **Dead :** 0

Abstract

A leak in a fuel oil tank caused a nearby river to be seriously polluted. The spillage was caused by a malfunction in an automatic control system on the tank.
[pollution, mechanical equipment failure, process control & instrumentation, storage, environmental]

Lessons

[None Reported]

1136503 July 1997

Source : LOSS CONTROL NEWSLETTER, 1997.
Location : , USA

Injured : 0 **Dead :** 0

Abstract

Power failure due to lightning caused a plant to shut down for approximately one hour. Safety valves, which opened automatically when the plant shut down, released large plumes of gas over the plant. These were not toxic.
[power supply failure, plant shutdown, gas / vapour release, safety relief valve, operational activities]

Lessons

[None Reported]

8900 02 July 1997

Source : HAZARDOUS CARGO BULLETIN, 1997, AUG,; LOSS PREVENTION BULLETIN, 136, 24.
Location : Valencia, SPAIN

Injured : 0 **Dead :** 18

Abstract

A marine transportation incident. A fire occurred onboard a tanker whilst under construction in a shipyard. A welding spark allegedly ignited diesel fuel being pumped aboard.
[fire - consequence, fatality]

Lessons

[None Reported]

8960 July 1997

Source : CNN INTERACTIVE, US NEWS STORY PAGE, JULY, 1997, ASSOCIATED PRESS, INTERNET, (http://www.cnn.com).
Location : Indiana, USA

Injured : 0 **Dead :** 1

Abstract

A gas pipeline exploded causing a fire which destroyed four houses killing one person.
Construction workers apparently punctured the gas main, they left the area ten to fifteen minutes before the explosion which caused flames to burn out of control for more than half an hour.
[transportation, human causes, fatality]

Lessons

[None Reported]

8811 25 June 1997

Source : CHEMICAL HAZARDS IN INDUSTRY, 1997, NOV.
Location : , CANADA

Injured : 50 **Dead :** 0

Abstract

A release of chlorine gas occurred on a unit at a vinyl plant causing evacuation of the area. An instrumentation failure caused vent lines to build excess pressure which backed chlorine into an air line and released a mixture of chlorine and air for about five minutes. The chlorine gas drifted south of the vinyl unit towards an adjacent polyethylene plant, which was evacuated. 50 people were treated for eye and throat irritation.
[vapour release]

Lessons

[None Reported]

8897 19 June 1997

Source : HAZARDOUS CARGO BULLETIN, 1997, AUG. REUTER.
Location : , INDIA

Injured : 0 **Dead :** 24

Abstract

A marine transportation incident. A bulker with 12,700 tonnes of sulphur and 200 tones of fuel/diesel oil on board sank in rough seas, nine of the crew were rescued.
[weather effects, sinking]

Lessons

[None Reported]

8896 18 June 1997

Source : HAZARDOUS CARGO BULLETIN, 1997, AUG.
Location : Calcutta, INDIA

Injured : 0 **Dead :** 0

Abstract

A river transportation incident. A cargo ship carrying 5,700 tones of steel, collided with a tug and sank causing a spill of fuel oil which polluted river banks. [pollution, sinking]

Lessons

[None Reported]

8908 16 June 1997

Source : HAZARDOUS CARGO BULLETIN, 1997, AUG. ENERGY DAY.
Location : Louisiana, USA

Injured : 0 **Dead :** 0

Abstract

A gas well blowout occurred on a rig/posted barge. The barge caught fire and dry gas flowed and burned until capped.
[offshore, fire - consequence]

Lessons

[None Reported]

1135215 June 1997

Source : LOSS CONTROL NEWSLETTER, 1997.
Location : , BANGLADESH

Injured : 4 **Dead :** 0

Abstract

A fire broke out after drilling operation hit trapped gas. The drilling rig and all equipment were destroyed. It took approximately 1 month to extinguish the blaze. Thousand of villagers were evacuated from the area. Total losses as a result of the fire were approximately US$50 million (1997).
[drilling/digging/ploughing vehicles, damage to equipment, evacuation, fire - consequence, exploration, product loss, drill, injury]

Lessons

[None Reported]

8895 13 June 1997

Source : HAZARDOUS CARGO BULLETIN, 1997, AUG. LLOYDS LIST.
Location : Louisiana, USA

Injured : 0 **Dead :** 0

Abstract

A transportation incident. A hole occurred in a barge holding 600 tonnes of hydrochloric acid causing a spillage of 7,500 l of acid.

Lessons

[None Reported]

8893 12 June 1997

Source : HAZARDOUS CARGO BULLETIN, 1997, AUG. LLOYDS LIST.
Location : Lobito, ANGOLA

Injured : 0 **Dead :** 0

Abstract

A ation incident. A fire occurred in the holds of a cargo ship involving maize and sorghum this was due to ignition of fumes of chemicals used earlier and poor ventilation.
[fire - consequence]

Lessons

[None Reported]

1114810 June 1997

Source : ICHEME
Location : , TURKEY
Injured : 0 **Dead :** 1

Abstract

A shift supervisor received severe burns and later died after a flexible hose used to transfer hydrogen to the catalytic reformer was overpressured and caught fire.
Hydrogen is supplied from three modules each consisting of 12 x 1m3 cylinders at 150 bar (2205 psig) pressure. Each cylinder is fitted with a needle valve and the twelve are connected together with steel tubing. Each module has a filling connection (with no pressure regulator) and a discharge connection equipped with a pressure regulator and a pressure safety relief valve set at 14 bars (206 psig) pressure. The Cat Reformer has two hydrogen connecting points to the recycle gas compressor's discharge line which is normally used to charge the unit. Only one of these connecting points is fitted with a pressure relief valve in addition to the PSVs fitted to the individual modules. Each hydrogen module is connected to the Cat Reformer's injection points with 1 inch flexible steel hoses from the outlet of the H2 module's pressure regulator. On June 9, 1997, No. 1 and No. 2 hydrogen modules were connected to the recycle gas compressor using the correct outlet points after the pressure regulators. No.1 module was emptied and replaced by No.3 module. Hydrogen from No.2 module was still connected to the injection without the PSV and 3 cylinders had emptied into the unit. The normal sequence of hydrogen injection is to open the block valves starting at the recycle gas compressor downstream from the injection point and then open the valve on the hydrogen module after the regulator. Whenever the operation is stopped these block valves are closed in the reverse sequence. On June 10, the process operators continued to empty No.2 module (9 cylinders were left). They noticed that the pressure in the unit was building up too slowly. The Shift Supervisor decided to switch the flexible hose from the end, after the regulator on the module, to the module's filling line which is not equipped with a regulator. The switch over was authorized under a cold work permit and carried out by maintenance department personnel who warned the Shift Supervisor against it. Six cylinders were then emptied one by one by the area operator in 35 minutes and the unit was pressured up to 7 bars (103 psig) . The area operator then closed the cylinder needle valve at the hydrogen module followed by the three block valves on the filling line to the recycle gas compressor. As the Cat Reformer's pressure decreased and as the area operator had other tasks in hand, the Shift Supervisor decided to discharge the remaining three cylinders alone. Failing to remember that the block valves downstream to the compressor were shut, he opened a cylinder discharge needle valve and the module's filling valve. The flexible steel hose was subjected to the full cylinder pressure of 150 bar. The hose connection flew off and hit the Shift Supervisor causing him to faint from a broken shoulder bone. The hydrogen immediately ignited whereupon the Shift Supervisor became exposed to flames.
It was discovered that process operators had used the module's filling line connection before whenever they had difficulty with the pressure regulator at the module's proper discharge connection.
The pressure regulator and some needle valves were dismantled. Broken pieces of Teflon seats from the needle valves were blocking the pressure regulator's passage ways. The needle valves were damaged due to over tightening with wrenches. The shift supervisor was wearing a cotton shirt with trousers (pants) made of special material at the time. Although these suits (jacket and trousers) are issued to all process personnel, many complain about wearing the complete suits in hot weather.
There is no operating procedures manual covering the discharge of hydrogen from the modules to the plant. Only one of the connection points to the recycle gas compressor has a PSV fitted upstream of the block valves.
Flexible hoses used for the transfer of hydrogen from the modules to the plant had been tested to 70 barg (4 times their normal working pressure) when they were originally received from the supplier. They had not been tested since. These hoses were placed in store when not being used for hydrogen transfer.
The immediate cause of the accident was the use of the wrong connection at the hydrogen module which bypassed the pressure regulator.
Major contributory factors to the accident were the absence of a pressure relief valve at the recycle compressor's injection point upstream of the isolation valve and failure to operate the system valves in the correct sequence
[material transfer, overpressurisation, fire - consequence, fatality, operation inadequate]

Lessons

The following recommendations were made:
1. Non routine (startup, shutdown, etc.) and maintenance activities must be included in the periodic hazard analysis (e.g., HAZOPS) of process units.
2. Stepwise operating instructions must be available for all high risk activities.
3. Changes to normal operating practices must be subject to a formal "Management of Change" review with the appropriate level of management approval.
4. The failure to apply the Management of Change to the bypassing of any critical safety device (in this case the pressure regulator) without the appropriate level of authority in writing should be identified as a "Near Miss" and investigated in respect of its potential severity.

8809 07 June 1997

Source : CHEMICAL HAZARDS IN INDUSTRY, 1997, NOV.

Location : ,

Injured : 2 **Dead :** 1

Abstract

A rail transportation incident. A transportation freight train carrying hazardous chemicals crashed into a coal train. The freight train burst into flames as its two engines and 13 of its cars derailed. Homes within a half-mile radius of the crash site were evacuated for 24 hours. One freight crew member was killed and two were injured but there were no injuries on the coal carrier.

Tank cars carrying bleach, sulphuric acid and ammonium nitrate were initially reported to be on fire at the scene. The sulphuric acid was transferred and a car partially loaded with hydrogen peroxide was removed.

A tank car carrying acetaldehyde continued burning through to the next day.

[fire - consequence, collision, derailment - consequence, evacuation, fatality, injury]

Lessons

[None Reported]

8958 06 June 1997

Source : ENVIRONMENTAL INFORMATION BULLETIN, 1997, JUL.

Location : , UK

Injured : 0 **Dead :** 0

Abstract

A leak of light gasoline oil occurred which drained into the nearby estuary, fortunately the spill was contained by fixed booms.

Lessons

[None Reported]

1134204 June 1997

Source : LOSS CONTROL NEWSLETTER, 1997,; ENDS REPORT 269, JUN, 1997,; ECN, 16-22 JUN, 1997.
Location : , UK

Injured : 0 **Dead :** 0

Abstract

About 5 tonnes titanium tetrachloride leaked into cooling water system in a heat exchanger, corroding a pipe and was released into the atmosphere. A dense white cloud of hydrochloric acid and titanium oxychloride occurred. Prohibition notice issued.
[cooling equipment, gas / vapour release, corrosion]

Lessons

[None Reported]

8891 04 June 1997

Source : HAZARDOUS CARGO BULLETIN, 1997, AUG. TRADE WINDS.
Location : , TURKEY

Injured : 0 **Dead :** 4

Abstract

A marine transportation incident. An explosion occurred in a tank on a marine tanker the cause was due to welding operations during repairs on a "gas free ship" at anchorage.
[hot surface, fatality]

Lessons

[None Reported]

8962 June 1997

Source : CNN INTERACTIVE, US NEWS STORY PAGE, JULY, 1997. CABLE NEWS NETWORK INC, (http://www.cnn.com),; HAZARDOUS CARGO BULLETIN, 1997, AUG. LLOYDS LIST.

Location : Indiana, USA

Injured : 34 **Dead :** 1

Abstract

An employee was killed and thirty four people injured when an explosion at an aerosol packaging plant that was caused by a release of toxic gas. About 2,500 people were evacuated from the area because of fumes from toxic ethylene oxide. The colourless gas which escaped can be used as a fumigant, insecticide and sterilising agent.
[leak, evacuation, fatality, toxic gas, injury]

Lessons

[None Reported]

8885 28 May 1997

Source : HAZARDOUS CARGO BULLETIN, 1997, AUG. THE TIMES.
Location : Liaoning, CHINA

Injured : - **Dead :** 0

Abstract

A gas explosion occurred in a coal mine killing many miners.
[fatality, mining]

Lessons

[None Reported]

8968 28 May 1997

Source : CNN INTERACTIVE, US NEWS STORY PAGE, JULY, 1997. CABLE NEWS NETWORK INC, (http://www.cnn.com).
Location : Liaoning Province, NORTH EASTERN CHINA

Injured : 0 **Dead :** 68

Abstract

A gas explosion at a coal mine occurred. The cause of the explosion is under investigation.
[fatality, mining]

Lessons

[None Reported]

1198124 May 1997

Source : ICHEME
Location : , UK

Injured : 1 **Dead :** 0

Abstract

Cleaning operations were being carried out on an acetyl chloride drum. Residual acetyl chloride reacted with the water releasing hydrogen chloride and acetic acid. The drum exploded across the yard, puncturing a drum of ethyl acetate. No ethyl acetate was lost. A worker was injured in the incident, receiving burns.
[drums, explosion, unwanted chemical reaction, injury]

Lessons

[None Reported]

8901 16 May 1997

Source : HAZARDOUS CARGO BULLETIN, 1997, AUG. LLOYDS LIST.
Location : Fushun, CHINA

Injured : 50+ **Dead :** 4

Abstract

An explosion occurred in a process unit of an ethylene petrochemical plant killing four and injuring over 50.
[processing, fatality, injury]

Lessons

[None Reported]

8793 12 May 1997

Source : CHEMICAL HAZARDS IN INDUSTRY, 1997, NOV.
Location : Texas, USA

Injured : 0 **Dead :** 0

Abstract

An explosion and fire occurred in an alkylation unit releasing a mixture of propane, isobutane and HF (hydrofluoric acid/hydrogen fluoride) from a ruptured feed line. The HF was dispersed into the atmosphere by the fire's updraft. An estimated 20 barrels of HF was diluted by fire fighters.
Tests did not indicate an HF release in the surrounding neighbourhood.
[fire - consequence, leak, spill]

Lessons

[None Reported]

8867 09 May 1997

Source : HAZARDOUS CARGO BULLETIN, 1997, AUG. LLOYDS LIST.
Location : , SOUTH CHINA SEA

Injured : 0 **Dead :** 0

Abstract

A marine transportation incident. A fire occurred when a coastal tanker carrying gasoline collided with a cargo ship and sank shortly afterwards. Eight crew rescued.
[fire - consequence, collision, sinking]

Lessons

[None Reported]

8861 08 May 1997

Source : HAZARDOUS CARGO BULLETIN, 1997, AUG. LLOYDS LIST.
Location : Karachi, PAKISTAN

Injured : 0 **Dead :** 10

Abstract

An air transportation incident. An explosion occurred when a plane jettisoned two laden fuel tanks over a populated area, the plane had engine trouble. [fatality, mechanical equipment failure]

Lessons

[None Reported]

8866 07 May 1997

Source : HAZARDOUS CARGO BULLETIN, 1997, AUG. FAIR PLAY.
Location : , JAPAN

Injured : 0 **Dead :** 0

Abstract

A marine transportation incident. A tanker carrying 630,000 litres of gasoline collided with 1,000m3 LPG carrier, 50,000 litres of gasoline spilt.
[spill, collision]

Lessons

[None Reported]

1135707 May 1997

Source : LOSS CONTROL NEWSLETTER, 1997,; CHEMICAL HAZARDS IN INDUSTRY, OCTOBER 1997.
Location : , USA

Injured : 0 **Dead :** 0

Abstract

A fire resulted from the failure of a large pump. 50% of production was lost as a result of the incident. The company makes hexamethylene diamine for the production of nylon. The fire dramatically affected nylon fibre supplies for a couple of months. The cause of the pump failue is thought to have been due to metal fatigue.
[fire - consequence, pump failure, product loss, operational activities]

Lessons

[None Reported]

8821 07 May 1997

Source : ENERGETIC EVENTS, THE NEWSLETTER OF WILFRED BAKER ENGINEERING INC.
Location : , CHINA

Injured : 20 **Dead :** 7

Abstract

An explosion occurred during the production of emulsion explosives in a factory. The accident killed seven workers and injured twenty. The production line was totally destroyed and surrounding buildings were damaged. Only a crater of 6.6m in diameter and 2.8m in depth was left.
[damage to equipment, fatality, processing, injury]

Lessons

The most important lesson learned from this accident is the significant sensitivity of the emulsion matrix before sensitisation. This was verified by sensitivity tests conducted by the investigation team. Under room temperature, cartridges of emulsion matrix (100mm in diameter and 3kg in weight) completely detonated by a single No.8 detonator. The detonation of regular 32mm cartridges of emulsion matrix was not complete when initiated by a single No.8 detonator because the minimum detonation diameter of matrix under room temperature conditions is well above 32mm. Experiments also showed that this critical diameter decreases significantly with the increase of temperature. Experiments conducted in several other factories also proved the above data.
In this incident the ignition source was not clearly defined. However, the inner diameter of the emulsifying kettle was 600mm and was operated under the temperature of 85-100 degrees C. The system was well above the critical conditions of detonation propagation. Severe extrusion and friction due to extraordinary agitation conditions may have resulted in local overheating which may have served as the initiation source. In particular, the operating conditions on the production lines were abnormal because a new composition, with much higher viscosity, was being produced. This high viscosity composition was a mis-match with the existing emulsifying machine.
The factory also had a tunnel which connected production buildings. The consideration was to protect the workers from the rain since the factory was located in the area with a rain-forest climate. Tunnel like structures to be avoided because they will direct blast waves during an explosion. In this incident, the confined tunnel structure functioned as a shock tube. The building at the other end of the tunnel, which was far away from the explosion centre, suffered heavy damage from the blast. It's doors and windows were broken out due to the directional blast effect of the tunnel which it faced.

8887 07 May 1997

Source : HAZARDOUS CARGO BULLETIN, 1997, AUG. LLOYDS LIST.
Location : , CANADA

Injured : 0 **Dead :** 0

Abstract

A rail transportation incident. A fuel tank of a locomotive punctured by part of a swing bridge mechanism while crossing the bridge, 12,000 l of diesel oil spilt into the river.
[spill, collision]

Lessons

[None Reported]

8860 06 May 1997

Source : HAZARDOUS CARGO BULLETIN, 1997, AUG. THE DAY.
Location : Connecticut, USA

Injured : 0 **Dead :** 0

Abstract

A road transportation incident. A road tanker overturned after swerving to avoid a car causing 10,000 litres of heating oil to onto the road, two truckloads of sand was used to contain the oil.

Lessons

[None Reported]

8876 05 May 1997

Source : HAZARDOUS CARGO BULLETIN, 1997, AUG. UPI.
Location : , INDIA

Injured : 0 **Dead :** 0

Abstract

An explosion occurred at a dye factory, forensic experts are investigating bomb reports, the explosion is believed to have been caused by a cooking gas cylinder.
[terrorism]

Lessons

[None Reported]

8981 May 1997

Source : CHEMICAL HAZARDS IN INDUSTRY, 1997, OCT.
Location : ,

Injured : 0 **Dead :** 0

Abstract

A gas cylinder exploded in a van taking the roof off. The incident happened when bitumen which was being heated for road repair work overflowed and set the van alight. The workers had placed a drum containing bitumen on a gas ring to heat while they carried out road resurfacing work.
[explosion]

Lessons

[None Reported]

8990 May 1997

Source : CHEMICAL HAZARDS IN INDUSTRY, 1997, OCT.
Location : , FRANCE

Injured : 0 **Dead :** 0

Abstract

A marine transportation incident. One hundred and twenty tonnes of fuel oil leaked into a dock when a tanker hit the quay while trying to dock. [collision]

Lessons

[None Reported]

11665May 1997

Source : TANKER CASUALTY REPORT NO. 21, TANKER CASUALTY DATA EXCHANGE SCHEME, INTERNATIONAL CHAMBER OF SHIPPING, LONDON.
Location : ,

Injured : 0 **Dead :** 0

Abstract

A marine transportation incident. An explosion occurred on a ship at sea whilst it was transferring dirty ballast. No one was injured.
The ship was proceeding in ballast after having discharged a cargo of crude oil. Four holds contained dirty ballast, two holds clean ballast and the remaining empty holds had been cleaned. Dirty ballast was being discharged from a hold which was three-quarters full when an explosion occurred which blew the open hatch covers overboard and caused slight damage to the hatch conning. There was a force 6 wind blowing with rough seas and the ship rolling at the time of explosion (0702 hours).
No definite cause for the explosion was apparent. The possibility of a spark generated by steel to steel friction was discounted. It was concluded that a charged mist and charged water slugs may have formed which on discharge could have caused a spark.
The accepted approach regarding gas concentrations in tanks was that an overrich atmosphere was safe because it was not within the flammable range. Overrich atmospheres are, however, difficult to maintain with any reliability in tanks. Accurate gas measurements now indicate that this assumption may be erroneous and consequently the atmosphere in the tank at the time of the explosion was probably within the flammable range and therefore adequate to propagate an explosion.
[material transfer]

Lessons

1. The operational procedures for the discharge of ballast and tank cleaning were changed following the accident. The assumption that an overrich atmosphere is safe is not now accepted and tanks are now kept gas free during operations. This is achieved by ventilating with fans throughout the discharging and cleaning operations. Measurements are taken at regular intervals to ensure that the atmosphere is below the lower explosive limit.
2. Following the accident, a recommendation was issued by the International Chamber of Shipping to the effect that OBO type ships should be operated in such a manner as to avoid slack tanks, thus obviating the possibility of ignition by compression or by static electricity.

8874 May 1997

Source : HAZARDOUS CARGO BULLETIN, 1997, AUG. STATUS WEEKLY.
Location : Ronningen, NORWAY

Injured : 0 **Dead :** 0

Abstract

A plate suffered a blowout followed by a loud bang when a rupture disc broke during a reactor shutdown. 1,800kg of ethylene gas escaped.
[reactors and reaction equipment, leak, bursting disc]

Lessons

[None Reported]

8865 May 1997

Source : HAZARDOUS CARGO BULLETIN, 1997, AUG. FAIR PLAY.
Location : Muang, THAILAND

Injured : 20 **Dead :** 4

Abstract

An explosion occurred when workers were welding a barge at dock. The hull was full of thinner and gas after being painted.
[marine transport, hot surface, fatality]

Lessons

[None Reported]

8943 30 April 1997

Source : CHEMICAL HAZARDS IN INDUSTRY, 1997, JULY.
Location : Cherbourg, FRANCE

Injured : 12 **Dead :** 2

Abstract

A marine transportation incident. A navy ship carrying explosives blew up and sank. About a dozen people were injured in the blast on board the 450 tonne support ship which had been carrying grenades. The explosion was heard up to 19 miles away.
[sinking, fatality, injury]

Lessons

[None Reported]

2714 04 April 1997

Source : LOSS CONTROL NEWSLETTER, FEB, 1997.
Location : , JAPAN

Injured : 0 **Dead :** 0

Abstract

A fire occurred when ethylene was released from safety valves after pressure built up inside a reactor. The fire was controlled within 5 minutes.
[fire - consequence, safety relief valve, high pressure, operational activities]

Lessons

[None Reported]

9006 01 April 1997

Source : CHEMICAL HAZARDS IN INDUSTRY, 1997, SEP.
Location : , SINGAPORE

Injured : 0 **Dead :** 0

Abstract

A leak of hydrogen sulphide from an xylene production unit at an aromatic plant. The incident occurred during a scheduled maintenance.

Lessons

[None Reported]

8804 April 1997

Source : CHEMICAL HAZARDS IN INDUSTRY, 1997, NOV.

Location : ,

Injured : 10 **Dead :** 0

Abstract

A chemical explosion occurred releasing small amounts of plutonium to the environment and exposed 10 workers to airborne chemical contamination.
The incident occurred in a shut down plutonium reclamation facility when 370 gal of hydroxylamine nitrate in dilute nitric acid spontaneously exploded. The mixture had been in "short term" storage for four years, and water had been slowly evaporating from the solution. Eventually, a concentration was reached that resulted in the chemical explosion.
[accidental mixing, environmental]

Lessons

[None Reported]

8998 25 March 1997

Source : CHEMICAL HAZARDS IN INDUSTRY, 1997, SEP.

Location : New Jersey, USA

Injured : 2 **Dead :** 0

Abstract

An explosion occurred in the facility plant. A container of diazidostilbene disodium sulphonate, a photographic chemical exploded.

Lessons

[None Reported]

1495 24 March 1997

Source : LOSS CONTROL NEWSLETTER, FEB, 1997.
Location : , UK

Injured : 0 **Dead :** 0

Abstract

Six hundred litres of hydrofluoric acid, sulphuric acid and phosphoric acid was spilt from a tank. A drain to the local water supply had to be blocked off as a result of the incident.
[spill, pollution, operational activities]

Lessons

[None Reported]

1113820 March 1997

Source : ICHEME
Location : , FRANCE
Injured : 1 **Dead :** 0

Abstract

A mechanic was exposed to H2S (hydrogen sulphide) during maintenance work on a slops/drain tank at a de-sulfurizer unit. The maintenance work involved the removal of a submerged pump followed by the installation of a full face flange cover at the pump entry nozzle on the top of the vessel. The nozzle is 27 inch diameter and the blind flange contained 28 bolts. Four out of the 28 bolts had been fitted to the full face blind/cover when plant operations agreed with a mechanic to recommission the vessel. However, in order to engage the remaining 24 bolts, the flange seal had to be adjusted which required the loosening/unfastening of the existing four bolts. It was during this task that the mechanic who was assisting others on the job was exposed to H2S as it escaped from the released flanged cover. The mechanical supervisor (Team Leader) was unaware that the vessel had been recommissioned. A number of the systems drain into the vessel including liquid from a compressor's suction side knockout pot. The level controller on this knockout pot initiated a H2S rich hydrocarbon liquid discharge into the vessel just at the time the flange cover seal was loosened. The mechanic, after a brief period of unconsciousness, was transferred to hospital for treatment and observation which resulted in 10 lost workdays.
The basic cause was a breakdown in the planning, communication, coordination and control of the job particularly related to the effectiveness of the work permit system and associated safety rules.
A number of contributory factors were associated with the incident:
1. There was a requirement to keep this vessel in operation because it collected drains from critical equipment, e.g., the liquid from the knock out drum on the suction side of a compressor.
2. The tasks suffered too many delays which required the vessel to be put back in service each time these occurred.
3. The delays related to planning (scaffolding not completed, crane not available, cover plate in poor condition, size of bolts) and the breakdown of equipment (pneumatic bolting machine)
[leak, asphyxiation, management system inadequate]

Lessons

The effective application of a permit-to-work prevents:
1. Tasks being undertaken at the wrong time.
2. Ignorance of the risks involved.
3. Ignorance of the necessary precautionary measures to be followed.
4. Possibility for miscommunication on matters associated with the job between the parties involved.

1134320 March 1997

Source : ENDS REPORT, MARCH 1997.
Location : , UK

Injured : 0 **Dead :** 0

Abstract

Staff were attempting to clear a blocked feed pipe at a plant making green pigments when a release of aluminium chloride occurred. Works emergency plan activated when the molten aluminium chloride and salt was released and reacted with water to form hydrogen chloride gas. The roads around the site were closed for two hours and local residents evacuated.
[flow restriction, gas / vapour release, evacuation, processing]

Lessons

[None Reported]

1133417 March 1997

Source : LOSS CONTROL NEWSLETTER, 1997.
Location : , USA

Injured : 0 **Dead :** 0

Abstract

A marine transportation incident. A marine barge capsized after it hit a bridge in fast moving currents. Nitrogen was pumped into the barge to lessen the risk of fire. The volatile cargo of benzene and gasoline was removed and the barge righted.
[vessel overturned, collision]

Lessons

[None Reported]

9070 11 March 1997

Source : ICHEME
Location : Beijing, CHINA
Injured : 12 **Dead :** 68

Abstract

A gas explosion occurred at a coal mine caused by an accumulation of gases inside the mine.
[fatality, mining]

Lessons

[None Reported]

9005 March 1997

Source : CHEMICAL HAZARDS IN INDUSTRY, 1997, SEP.
Location : , SPAIN

Injured : 0 **Dead :** 0

Abstract

15,000 litres of hydrochloric acid were accidentally released at a chemical plant. The spill occurred during the unloading of a tanker.
[road tanker, human causes]

Lessons

[None Reported]

9010 March 1997

Source : CHEMICAL HAZARDS IN INDUSTRY, 1997, SEP.

Location : ,

Injured : 0 **Dead :** 0

Abstract

A leak of molten aluminium and salt. About 100 kg of aluminium chloride mixture was released. The incident occurred whilst staff were attempting to clean a blocked feed pipe. The molten material reacted with atmospheric water from a toxic vapour cloud of hydrogen chloride gas.
[cleaning, unwanted chemical reaction, gas / vapour release]

Lessons

[None Reported]

1132921 February 1997

Source : LOSS CONTROL NEWSLETTER, 1997.
Location : , USA

Injured : 0 **Dead :** 0

Abstract

Fumes were released when a leak occurred from a vat of organic solvents, resulting in the surrounding area being sealed off to traffic. The situation was brought under control within 2 hours.
[gas / vapour release]

Lessons

[None Reported]

9004 27 January 1997

Source : CHEMICAL HAZARDS IN INDUSTRY, 1997, SEP.

Location : ,

Injured : 0 **Dead :** 0

Abstract

An accident occurred at a pesticides factory, releasing about 1 tonne of phenylurea herbicide isopropuron. The production area and neighbouring industrial and residential buildings were contaminated. The herbicide has been produced for 20 years and is not mutagenic, teratogenic, irritant or sensitising, but as a precaution , workplace air and production workers urine have been regularly monitored and in-house "no observable effect levels" have been established. After decontamination measures were taken, biomonitoring was carried out on 168 workers. The pesticide was determined via its metabolite by liquid chromatography. From the 454 analyses done, 299 were below the detection limit of 50 microgrammes per litter. In the production area, only one analysis exceeding the in-house limit. Levels in neighbouring plants were much lower still, with a mean value just above the detection limit.
[leak, spill, processing , contamination]

Lessons

[None Reported]

8716 27 January 1997

Source : LOSS PREVENTION BULLETIN, 136, 26.

Location : ,

Injured : 1 **Dead :** 0

Abstract

A company has been fined and ordered to pay costs totalling almost £4,000 (1997) after a barrel containing hazardous fumes exploded and injured an employee. The incident occurred when an employee was removing the tops of barrels with a flame cutter. The employee had removed the tops of three barrels, which had once contained a polyester resin, with no problems. But when he applied the torch to a fourth, which still contained styrene vapour, there was a loud bang. The top of the 205-litre drum, measuring about two feet in diameter and weighing about 2.7 kilos, was ejected and flew past the employee, landing 70 m away on top of a house. The employee suffered minor burns but was wearing suitable protective clothing.
[explosion, drums, safety procedures inadequate, hot work, injury]

Lessons

[None Reported]

8452 18 January 1997

Source : OBSERVER, 1997, JAN, 19,; GUARDIAN, 1997, JAN, 20.
Location : English Channel,

Injured : 0 **Dead :** 0

Abstract

A marine transportation incident. Two marine tankers in collision in fog, 32 miles from Dover. One marine tanker holed and leaked gasoline into sea. 3000 tonnes of gasoline leaked into sea.
[spill]

Lessons

[None Reported]

1132612 January 1997

Source : LLOYDS LIST, 15 JAN, 1997.
Location : , USA

Injured : 0 **Dead :** 0

Abstract

A fire which broke out in refinery burnt itself out without causing injuries or environmental damage. Water was brought to site after company's own water pumps failed. The fire was located in a pressurised blending unit containing flammable gas took about 5 hours to burn out after fuel source was shut off. [fire - consequence, refining]

Lessons

[None Reported]

8878 09 January 1997

Source : LOSS CONTROL NEWSLETTER, JAN, 1997.
Location : , AZERBAIJAN

Injured : 0 **Dead :** 0

Abstract

A fire began in the basement of the offshore platform when diesel storage tanks burst into flames during drilling operations. Fifty people were evacuated. [evacuation, fire - consequence]

Lessons

[None Reported]

1113708 January 1997

Source : ICHEME
Location : , UK

Injured : 0 **Dead :** 0

Abstract

Passing diesel fuel oil valves on a burner allowed fuel to vaporise in a boiler, which had been shut down by interlock due to either low water level or low fuel pressure. The fuel reached the autoignition temperature in the economiser section and exploded twice. The first, smaller, explosion consumed the oxygen in the shutdown boiler, the main explosion occurred when mixed with air during the start-up purge cycle. The nitrile seats of the valves were affected by an additive in the fuel while those with fuel oil seats remained with tight shut off.

Three boilers were firing diesel fuel owing to a gas supply restriction. During the morning rounds the fuel supply was changed to tanks 2 and 3 from tanks 4 and 5 in readiness for the 11:00 am delivery to tanks 4 and 5. At approximately 2:30 pm, boilers 1 and 3 went to the lock-out position; and there was a dull thud in Boiler 3 with a smoky atmosphere and a smell of fuel oil. It was noticed that the fuel oil supply pressure was lower than usual and so the supply tanks were changed to feed from the refilled tanks 4 and 5. The Boilerhouse Supervisor decided to restart the lead boiler, Boiler 3, and switched off Boiler 1. The purge cycle for start-up of Boiler 3 was commenced and at 2:45 pm the explosion occurred within Boiler 3. The fire detection system was activated which automatically called the Fire Brigade. The operator isolated the fuel oil pumps and tanks from Boiler 3 before leaving the Boilerhouse, a major incident forward control team attended the site, along with the external emergency services.

An investigation concluded that fuel gas was not the source of the Boiler 3 incident. Isolation procedures used by the Boilerhouse Operator had been correct, and all valve interlocks on the gas isolation system had functioned correctly. Pressure tests carried out on the shutoff valves showed that one was passing. While reports of fluctuating oil pressure leading to boiler lock out could have been caused by air in the fuel, the tank levels were never low enough to allow ingress of air. After the boiler was depressured, a fuel oil deposit was found in the boilers. Analysers showed this to be the heavy ends of diesel fuel oil. After dismantling the fuel oil shut-off valves, it was found that the rubber "O" ring seals and associated diaphragms had been attacked by the fuel oil, causing swelling which had prevented the spring return from shutting the valve properly. The seal material was found to be "Nitrile" which was originally specified by, the valve manufacturer, to be suitable; but, due to later inclusion of certain additives within the fuel oil, was now the preferred material.

Investigation of the boiler showed that the economiser and flue gas ducting took the brunt of the damage rather than the boiler itself and indicated that the explosion occurred in the flue gas outlet.

The following corrective actions were taken:

1. Replace all fuel oil "Nitrile" valve seals and diaphragms with fuel oil on boilers 1 and 3.
2. Update maintenance schedules to inspect fuel oil shut-off valves every two years for signs of seal distortion.
3. Ensure that all plant and equipment in fuel oil service has been installed to the correct material specification.
4. When firing fuel oil, should a burner lock-out occur, the fuel oil supply line should be manually isolated and the boiler left idle for at least 20 minutes before the air purge is commissioned.
5. Produce an operations manual for all plant in, and associated with, the boilerhouse.
6. Ensure that any future modifications carried out to the boilers are covered by the "management of change" procedures at the site.
7. Produce up to date and accurate drawings of all boilers and the associated instrument and control systems. Field checking will be an integral part of this exercise.
8. Review the boiler level control system, identifying improvements which will lead to greater operational stability and therefore fewer trips during normal operation.

[low pressure, process causes, explosion, seal failure]

Lessons

A robust management of change procedure is essential to address subtle changes to equipment or changes to process materials, in this case additives to the fuel oil.

The integrity of the fuel isolation systems for boilers and heaters should be regularly inspected and reviewed.

1133508 January 1997

Source : LOSS CONTROL NEWSLETTER, 1997.
Location : , PAKISTAN

Injured : 200 **Dead :** 20

Abstract

A road transportation incident. Chlorine gas leaked from drums loaded inside two containers on a lorry which slid into a ditch. It is believed that the safety valves on the drums had not been tightened properly and loosened as the truck slid into the ditch.
[gas / vapour release, design or procedure error, fatality]

Lessons

[None Reported]

1106903 January 1997

Source : ICHEME
Location : , FRANCE
Injured : 2 **Dead :** 0

Abstract

A fire broke out at gas oil hydrodesulfurization unit. The fire was caused by a leak of gas oil and gaseous products from the flange of a temperature control valve. The fire, restricted to the reactor section, was put out within 35 minutes by the refinery fire brigade. Two operators were injured while manoeuvring an extinguisher, but did not incur a lost time accident. The incident occurred following gasoil feed upset in the late morning, heavy rain in the afternoon and a hailstorm at about 22:30 hrs. The fire resulted in damage to control valves, piping, cables and associated heat exchangers.
[flange, valve, refining, rain, design inadequate, inspection inadequate, fire - consequence, flange failure, injury]

Lessons

Wafer type valves which, by design, are installed by "insertion" are unreliable and liable to leak.
All wafer valves to be identified and a risk assessment carried out to review their continued suitability in service.
Critical flanges need to be identified and regularly inspected, following an established procedure.
The investigation team concluded that the incident was caused by the following factors:
1. Inherent design weakness of the wafer type valves.
2. The poor condition of the flanges on the valves and piping.
3. Thermal shock imposed on the valves due to severe weather conditions (rain and hailstorm) and process upset earlier on in the day.

1132802 January 1997

Source : LOSS CONTROL NEWSLETTER, 1997.
Location : , JAPAN

Injured : 0 **Dead :** 1

Abstract

A marine transportation incident. Much of the cargo of 19,000 tonnes of fuel oil leaked from marine tanker when it broke in two in stormy weather. The 10 km wide spill has affected up to 450 km of coastline. The ship is believed to have sunk after colliding with semi-submerged object.
[collision, sinking, fatality, pollution, heavy seas]

Lessons

[None Reported]

114751997

Source : THE SAFETY & HEALTH PRACTITIONER, MAY, 1999.
Location : , UK

Injured : 1 **Dead :** 0

Abstract

A boiler room explosion occurred injuring a barman. The manager of the bar asked the barman to check the boiler room as he could smell gas. After reporting back the pilot light did not appear to be lit. The barman lit the pilot light using a cigarette lighter.
The boiler room's fluorescent light was broken and had been replaced by a temporary light bulb and extension lead, making the boiler instructions illegible.
The barman attempted to light the boiler a second time, there was an almighty woosh and the top half of his body was engulfed in flames. He managed to get out of the room and into the bar where he fell to the floor. His colleagues took him to hospital suffering from severe burns.
The company was fined £18,000 (1999).
[leak, injury]

Lessons

[None Reported]

114961997

Source : CHEMICAL HAZARDS IN INDUSTRY, JUNE 1999.
Location : , USA

Injured : 46 **Dead :** 1

Abstract

A leak of flammable mixture of hydrocarbons and hydrogen from a ruptured pipeline occurred resulting in an explosion and fire. One person was killed and forty six injured.
An investigation into the incident found that management and supervisory staff did not make sure that emergency procedures were followed.
[fire - consequence, fatality, management system inadequate, injury]

Lessons

[None Reported]

110661997

Source : ICHEME
Location : , TURKEY
Injured : 1 **Dead :** 0

Abstract

A shift supervisor suffered a broken rib as a result of the fall sustained when he became unconscious following exposure to hydrogen sulphide (H2S) during the draining of a level controller. Process operators noticed an abnormally low hydrocarbon level in the overhead accumulator drum on a kerosene stripper tower. Since it was not possible from the control room to increase the level, the shift supervisor on duty decided to check the level controller on site. With a field operator to assist him, the shift supervisor closed the two 2-inch block valves on the level control system isolating it from the drum. The field operator then unscrewed the drain plug of the level controller to clean the level buoy. Gas was released containing approximately 3.6-5.0% H 2 S; and the shift supervisor who was kneeling down, checking the level transmitter nearby, immediately felt unwell. It was suspected that one or the other of the isolation valves was passing. The supervisor then directed the field operator to close the drain and in the process of moving away to obtain fresh air, collapsed on the platform. Within a minute he recovered sufficiently to return to the control room. The immediate cause of the accident was the failure to wear respiratory protection where there was a potential exposure to H2S. The basic cause was due to failure to follow safety rules - all H2S zones are clearly marked with warning signs and yellow paint.
[level meter/control, asphyxiation, safety procedures inadequate]

Lessons

The following recommendations were made:
1. A permit-to-work must be issued when dealing with leaks or breaking containment of plant/equipment that has contained H2S.
2. The permit-to-work must stipulate all the necessary precautionary measures including the wearing of positive pressure self-contained apparatus or air-line masks.

107291997

Source : THE SACRAMENTO BEE, P. HECHT, 22 SEP, 1997.
Location : , USA

Injured : 0 **Dead :** 0

Abstract

1,500 gallons of chemicals spilled into a creek from a leaking pipe at a water treatment pumping station.
Hazardous materials crews constructed earthen dams to contain the spill of the ferric chloride solution, an acid used to control odour in the waste treatment process, which leaked from a pipe and entered a storm drain feeding the creek.
Fish within the area of the spill were killed, however, the spill was contained and there was no danger to fish downstream.
[pollution, waste water treatment, separation, ecological damage]

Lessons

[None Reported]

111541997

Source : ICHEME

Location : ,

Injured : 0 **Dead :** 0

Abstract

A flash fire occurred as a driver was preparing to load his truck. Evidence suggests that a static spark ignited residual gasoline vapours in the truck's vapour return pipe and vapour recovery hose as the latter was in the process of being connected up to the truck. The fire was extinguished by closing the cover of the truck's vapour recovery pipe and by a second driver using a hand-held fire extinguisher. There were no injuries to employees and no damage to the loading rack equipment.

The driver had pulled under the loading rack, set the truck's brake and connected the earthing/grounding wire. The weather was clear and dry (temp 80 degrees F) (27 degrees C) (humidity 27-32%). The driver was wearing the correct personal protective equipment.

The system had shown a green light indicating it was safe to start to attach the vapour return hose. The system was subsequently tested and found to be in good working order on both the loading rack and on the truck. The system is "self-checking" and the green light denotes satisfactory earthing and grounding which permits the truck to load product. However, the system does not indicate that the product loading hose and the vapour recovery hose are electrically continuous and grounded/earthed. The loading rack electrical structure ground/earth was tested and found to have less than 1.0 ohm resistance to true ground/earth. The overhead vapour recovery system piping was electrically bonded to the loading rack structure and no stray currents were found. The vapour recovery collection pipe on the truck's tank was properly attached and electrically bonded to the trailer. However the vapour return/recovery hose did not have an embedded static wire and was not electrically bonded to the loading rack structure. Continuity testing of the loading rack's product loading and vapour return/recovery hoses was not included in the facility's preventative maintenance plan. It could not be determined how the static charge accumulated in the vapour recovery hose.

The second driver also found that the operating handle on the truck mounted fire extinguisher used to extinguish the flares was difficult to depress due to an accumulation of road grime.

[fire - consequence, loading, road transport, lack of earthing, electrical]

Lessons

All parts of the road truck loading system must form a continuous electrically conductive path including the vapour return/recovery piping/hose arrangement.

111961997

Source : ICHEME
Location : ,

Injured : 1 **Dead :** 0

Abstract

An incident involving entry into a glycol contactor vessel. The vessel had been purged of fumes with an inert gas and then ventilated before entry. A worker, on entering, removed a mist screen in the lower part of the vessel and lowered himself down into the space below the mist screen level. He immediately felt disorientated but was able to climb up, and out of, the vessel. Subsequent investigation showed that there was only a 3.6% level of oxygen in the atmosphere of this compartment, some 4.4% less than the minimum oxygen level that a person can survive within.
[entry into confined space, reaction vessel, atmosphere not tested, asphyxiation, glycol]

Lessons

This incident highlights the need to be aware of the hazards associated with confined space entry.

8814 1997

Source : CHEMICAL HAZARDS IN INDUSTRY, 1997, NOV.

Location : ,

Injured : 0 **Dead :** 0

Abstract

A spillage of a herbicide (fluroxypyr) occurred contaminating a water course. A leaking container of fluroxypyr had been stored in an area which had been thought to be isolated from surface water drains. This was not the case and the drains fed to a nearby stream. Levels of 21,5 mg/l of fluroxypyr were detected in the water.
[storage, drainage system, ecological damage, leak]

Lessons

[None Reported]

8992 1997

Source : CHEMICAL HAZARDS IN INDUSTRY, 1997, OCT.
Location : ,

Injured : 0 **Dead :** 0

Abstract

Approximately 120,000 litres of hydrochloric acid leaked from two linked tanks into a bund compound and storm drains. Polluted water containing acid from the drains was pumped to the foul sewer drains and treated at a local sewage work. The majority of the spillage has been diluted and contained in a storm overflow tank, a neutralising chemical will be added to this liquid, once neutralised it will be pumped through the surface system. There is no threat to local drinking supplies.
[drains & sewers]

Lessons

[None Reported]

988 1997

Source : CHEMICAL HAZARDS IN INDUSTRY, 1997, SEP.

Location : ,

Injured : 0 **Dead :** 0

Abstract

A hot oil heat transfer fluid was released under pressure through an orifice in the piping circuit causing a fire. The leak created an atmosphere of various fluid which was ignited by a hot light filament.

[material transfer, fire - consequence, hot surface, heat transfer oil]

Lessons

[None Reported]

8948 1997

Source : CHEMICAL HAZARDS IN INDUSTRY, 1997, JUL.
Location : ,

Injured : 0 **Dead :** 2

Abstract

An accident occurred when repeated operation of a starter failed to start the engine. The driver lifted the drivers seat, activated the choke knob on the carburettor pressure regulator and when he again operated the started button, the gas air mixture in the engine compartment ignited and caused an explosion. The flash flame ignited his clothing, causing his death. The heat also melted the hosepipe at the gas bottle, causing a stream of butane-propane mixture, which also ignited and killed another person.
[mechanical equipment failure, fatality]

Lessons

[None Reported]

8805 1997

Source : CHEMICAL HAZARDS IN INDUSTRY, 1997, NOV.

Location : ,

Injured : 0 **Dead :** 0

Abstract

A tank of epichlorohydrin was discharged into the wrong holding tank causing an explosion.
[material transfer]

Lessons

[None Reported]

8802 1997

Source : CHEMICAL HAZARDS IN INDUSTRY, 1997, NOV.

Location : ,

Injured : 0 **Dead :** 0

Abstract

A process needed to be altered to make different isomer of a material, necessitating recalibration of two measuring vessels. The first vessel was calibrated successfully, but there was an explosion in the second vessel with three workers inhaling resulting fumes and two operators experiencing chemical splashing. The explosion resulted from the operators wrongly discharging the first vessel during calibration of the second one.
[operator error]

Lessons

Consideration of the process kinetics and thermodynamics, labelling of equipment etc., operator communication and training, and general procedures require careful consideration.

8995 1997

Source : CHEMICAL HAZARDS IN INDUSTRY, 1997, OCT.
Location : , UK

Injured : 0 **Dead :** 1

Abstract

An explosion occurred in a boiler killing a safety conscious electrician.
The electrician had been trying to fire-up a boiler when a gas build up ignited and blew off the boiler's steel door causing fatal head and chest injuries to the victim. Exhaustive tests were carried out on all equipment involved but no cause could be determined for the explosion.
[fatality]

Lessons

[None Reported]

124321997

Source : ICHEME

Location : ,

Injured : 0 **Dead :** 0

Abstract

A gas release occurred through the body of a non-return valve on a process unit. The non-return valve shaft blew out causing the release and subsequent fire.

[gas / vapour release, fire - consequence, mechanical equipment failure]

Lessons

[None Reported]

1107130 December 1996

Source : ICHEME
Location : , UK

Injured : 0 **Dead :** 0

Abstract

During a monthly reconciliation inspection of a gasoline tank, it was discovered that the water bottom had virtually disappeared. When the inspector and tank farm operator returned on the following morning to check the dip, an oil leak from beneath the tank floor was visually evident. Investigations later revealed there had apparently been a low level leak from the tank since it was last filled in October 1996, and the leak increased significantly on December 31. Approximately 125 tonnes of product had leaked out. A major incident was declared at the site at 10.30 hrs., and gasoline was transferred out of the tank and water injected to re-establish the water bottom. Recovery of gasoline from the spill in the bund (dike) commenced that evening.

The tank farm consisted of six motor spirit storage tanks. The tank levels are monitored by a monitoring system at the central control room. Tank level information is then transferred to the refinery operating system and at every midnight into the information system. Within the monitoring system, a "deadband" of 12 mm was set within which the tank is defined as "inactive" - i.e., not moving. This means that an alarm is initiated if the tank level indication falls or rises by 12 mm. If the deadband is reset after an alarm, the original set-point is lost. There was no record of alarms and therefore no "trending" of a possible longer term leak.

All the motor spirit tanks had been inspected within the relevant code inspection period and had their repair recommendations carried out. There had been two previous floor failures, one of which involved the same tank in December 1985. No under floor corrosion was evident and following repair, the tank floor was vacuum box tested and fluorescent tested before returning to service.

A change in temperature of less than one degree is sufficient to change volume to activate the deadband alarm. The deadband alarm associated with these tanks has been seen as a "nuisance alarm" by the various shifts, and past inspections in reactions to alarms showed no evidence of leakage.

Loss reconciliation shows a loss of 573 tonnes with the possibility that part of a further 400 tonnes in pipe work probably contains some water.

[tank failure, rupture, storage]

Lessons

The folowing recommendations were made:

1. Open up the tank for cleaning for inspection as quickly as practicable to determine the nature and cause of failure.
2. Review dead band alarming and the potential for nuisance alarms and discuss problem with operating teams.
3. Make immediate efforts to empty two of the remaining "in service" tanks, one for inspection and one to be available for receipt in the unlikely event a problem arises with another tank.
4. Repeat a loss reconciliation following the next tank movement to ensure all pipe work contains motor spirit, so that a full and final reconciliation can be made.
5. Complete recovery operation and quantify the amount of gasoline recovered.
6. It is important that the long term level trend of infrequently moved tanks be monitored to detect any low level leak.

Frequent "nuisance" alarms must be thoroughly investigated; otherwise, they will be ignored in a real alert.

1153212 December 1996

Source : ICHEME
Location : , UK

Injured : 0 **Dead :** 0

Abstract

A benzene production plant had been restarted after a three day shutdown, and had been on line for approximately 5 hours, when there was a loss of containment at the inlet flange on the top of the reflux drum as plant production rates were being increased. The released material comprised about 500 Kg of a mixture of 75% benzene and 25% other hydrocarbons.
Increases in production immediately before the release had initiated 2-phase flow in line, leading to severe hammer as alternate slugs of vapour and liquid impacted a pipe bend near the reflux inlet. This hammer caused the nuts on the reflux inlet flange to loosen by vibration, with subsequent leakage. The risk of such hammer from the specific combination of pressure, temperature and flow had not been anticipated, and was not covered in the plant operating instructions.
[gas / vapour release, excessive vibration]

Lessons

1. Engineering changes were made to the design and operating envelope of the plant to prevent the combination of pressure, temperature and flow giving rise to the hammer phenomenon.
2. Additional temperaturealarms and flow indicators were provided.
3. Operating instructions were reviewed and revised.

8655 05 December 1996

Source : LLOYDS LIST, 1996, DEC, 14.
Location : Florida, USA

Injured : 2 **Dead :** 0

Abstract

A rail transportation incident. 1,200 gallons of fuel spillage when youths operated a switching device which caused the derailment of a rail tanker. $1 million (1996) damage done.
[derailment - consequence, damage to equipment]

Lessons

[None Reported]

1197104 December 1996

Source : ICHEME
Location : , UK

Injured : 0 **Dead :** 0

Abstract

930 kgs of flammable liquid, a mixture of acetic acid, ethyl acetate, benzene and water was released when a pipeline flange joint failed, during a plant start-up. This mixture was released to dirt drains.
[joint failure, spill]

Lessons

[None Reported]

8849 December 1996

Source : HAZARDOUS CARGO BULLETIN, 1997, NOV.
Location : Kondinin, WESTERN AUSTRALIA

Injured : 0 **Dead :** 1

Abstract

A road transportation incident. Correct packing procedures helped reduce the impact of the rollover of a semi-trailer. The trailer was carrying four 205 litter drums of nitric acid and four cases containing six 500ml bottles of hydrofluoric acid. The severity of the incident was minimised due to the fact that the load had been secured as required and all the dangerous goods were found to be in approved packaging.
There was some spillage of nitric acid but the cases containing hydrofluoric acid were not damaged during the incident. However, the death of the driver contributed to delays in identifying the type of products involved and the extent of the spill. In addition, a number of other factors delayed the response of emergency services.
1. The incident occurred at night in an isolated and remote location.
2. The truck was not required to display placards because of the small quantity of dangerous goods on board.
3. Shipping documents could not be recovered due to damage sustained to the driver's cab.
[fatality]

Lessons

[None Reported]

8651 27 November 1996

Source : LLOYDS LIST, 1996, DEC, 3.
Location : Lima, PERU

Injured : 0 **Dead :** 12

Abstract

Fire in fireworks factory when keg of gunpowder exploded. Fatality.
[explosion, fire - consequence, processing, black powder (gunpowder)]

Lessons

[None Reported]

1196819 November 1996

Source : ICHEME
Location : , UK

Injured : 0 **Dead :** 0

Abstract

A release of hydrogen chloride occurred when a scrubber was not able to cope with the release of fumes during tanker unloading operations. Two contractors were affected by the release.
[gas / vapour release, mechanical equipment failure]

Lessons

[None Reported]

8469 11 November 1996

Source : OIL AND GAS JOURNAL, 1996, NOV, 25.
Location : , MEXICO

Injured : 4 **Dead :** 19

Abstract

An explosion occurred in a gasoline storage tank attributed to faulty valve. About 100,000 bbl of leaded and unleaded gasoline burnt out of control for more than 36 hours, destroying 2 of 6 storage tanks. More than 5,000 people were evacuated from adjacent residential area. Fatality.
[fire - consequence, evacuation, valve failure]

Lessons

[None Reported]

1233705 November 1996

Source : NATIONAL TRANSPORTATION SAFETY BOARD, 1999, (http://www.ntsb.gov),; LOSS PREVENTION BULLETIN 155, 16-17.
Location : Murfreesboro, Tennessee, USA

Injured : 0 **Dead :** 0

Abstract

An incident occurred whilst preparing for maintenance on an 8-inch pipeline containing diesel fuel. The incident occurred during isolation and purging when approximately 84,700 gallons of diesel fuel was released due to overpressure rupture. The line section containing the leak was isolated.
Fortunately the incident did not cause a fire or explosion and no one was injured.
[overpressurisation, operator error, spill, near miss, preparation for maintenance, operation inadequate]

Lessons

[None Reported]

8648 November 1996

Source : LLOYDS LIST, 1996, NOV, 13,; THE GUARDIAN, 1996, NOV, 11.
Location : , MEXICO

Injured : 0 **Dead :** 0

Abstract

A fire occurred at a fuel storage facility after explosion in tank containing gasoline. A second tank was also involved. 1000 people evacuated.
[fire - consequence, evacuation]

Lessons

[None Reported]

6057 26 October 1996

Source : EUROPEAN CHEMICAL NEWS, 1996, NOV, 4.
Location : Ludwigshafen, GERMANY

Injured : 0 **Dead :** 0

Abstract

Two tonnes of formaldehyde flowed into a river after a pipe leaked. Leakage occurred when a rubber seal linking two pieces of pipework failed when pumping the material.
[seal failure, spill, material transfer]

Lessons

[None Reported]

8644 20 October 1996

Source : LLOYDS LIST, 1996, OCT, 31.
Location : Linquan, CHINA

Injured : 19 **Dead :** 13

Abstract

An explosion occurred in a fireworks factory which killed 13 children employed to make the fireworks. Fatality.
[processing]

Lessons

[None Reported]

8659 15 October 1996

Source : SEDGWICK LOSS CONTROL NEWSLETTER, ISSUE 1, 1996.
Location : , UK

Injured : 0 **Dead :** 0

Abstract

A leak of 2000 litres of fuel oil spillage from storage tank into river, causing pollution over an 8 km stretch.
[storage tanks]

Lessons

[None Reported]

8472 03 October 1996

Source : PROCESS ENGINEERING, 1996, NOV,; EUROPEAN CHEMICAL NEWS, 1996, OCT, 7,; PRESS ASSOCIATION.
Location : Avonmouth, UK

Injured : 18 **Dead :** 0

Abstract

A series of explosions ripped through an epichlorohydrin storage tank when a road tanker was unloading sodium chlorite. Smoke drifted across the M4 and M5 motorways which were closed. Rail services were closed. The documentation for the tanker appeared to be incorrect.
[storage tanks, document errors]

Lessons

[None Reported]

8470 06 September 1996

Source : OIL AND GAS JOURNAL, 1996, SEP, 16.
Location : California, USA

Injured : 0 **Dead :** 0

Abstract

A fire occurred in a platinum reformer resulting from a leak of gasoline at a pump. Plant back on line within a week.
[fire - consequence, processing]

Lessons

[None Reported]

11641September 1996

Source : ICHEME
Location : , UK
Injured : 0 **Dead :** 0

Abstract

An explosion combined combined a number of operating problems with a badly designed plant. Purified starch was treated in a humidifier with water and hydrogen peroxide bleach. The humidifier was supposed to have been inerted, but the vessels also had explosion relief fitted. The dust explosion tore open one humidifier vessel, and caused extensive damage to the building cladding, but comparatively little other damage. Investigation showed that:
1. The vent panels were inadequately designed and required a pressure stronger than the vessel could stand to open.
2. The vent ducts were smaller than the vents and had serious obstruction to the flow.
3. The gas analyser system fitted as part of the inerting system had been out of action for at least a week and probably much longer.
4. The nitrogen generator was incapable of delivering the required volume of nitrogen at the required purity.
5. The peroxide dosing system was filled with over-strength material and did not spray it as fine droplets as intended.
6. The mechanical conveying system in the humidifier was prone to parts falling off causing powder flow problems and possibly contributing to frictional heating in the system.
[solids processing, dust explosion, starch, solids processing equipment, design inadequate]

Lessons

[None Reported]

8637 29 August 1996

Source : LLOYDS LIST, 1996, SEP,4.
Location : Quebec, CANADA

Injured : 0 **Dead :** 0

Abstract

A rail transportation incident. 36 wagons of a freight train were derailed causing hydrogen peroxide to leak and forcing the evacuation of 30 families. [derailment]

Lessons

[None Reported]

8624 27 July 1996

Source : LLOYDS LIST, 1996, AUG, 1.
Location : Texas, USA

Injured : 0 **Dead :** 0

Abstract

A fire occurred in an ethylene pipeline which damaged the pipeline and electrical installations on ethylene plant.
[fire - consequence, damage to equipment, processing]

Lessons

[None Reported]

8618 22 July 1996

Source : LLOYDS LIST, 1996, JUL, 22. LOSS CONTROL NEWSLETTER, ISSUE 3, 1996.
Location : Ontario, CANADA

Injured : 0 **Dead :** 0

Abstract

Lightning struck a gasoline additive (raffinate) storage tank and blew off the roof. The tank contained 8.2 million litres.
The fire took 7 hours to extinguish. 300 evacuated.
[evacuation, raffinate]

Lessons

[None Reported]

1153414 July 1996

Source : ICHEME

Location : , UK

Injured : 1 **Dead :** 0

Abstract

A pipeline connecting 3rd and 4th stage suction drums on a cracked gas compressor on an ethylene plant was being modified as part of a series of wider plant modifications, using contractors. After new pipework had been prepared and positioned a welder struck an arc to complete welding, when there was a detonation. The source of the fuel for the explosion was gasoline from residual pockets of hydrocarbons which had evaporated fron the cracked gas system and migrated into the line under modification. The total mass of fuel estimated to have been in the line was 48 grams. the welder was only slightly injured, and others working in the vicinity were unharmed.

Investigation showed that there had been failure to observe fully the permit to work and hot work systems in the factory; and that there had also been a failure to ensure that the part of the plant on which welding was to take place had been effectively isolated and purged.

[permit to work system inadequate, injury]

Lessons

The following lessons were learnt:

1. This incident classically illustrates the risks associated with hot work on plant and vessels in which flammable substances might be found,and emphasises the need for rigourous observance of adequate operational precautions.
2. Although there were clear operational failures in this case,investigation of the incident led to analysis and modification of the company peremit to work systems, with the objective of increasing the protection afforded by them.

8614 12 July 1996

Source : LLOYDS LIST, 1996, JUL, 15. LOSS CONTROL NEWSLETTER, ISSUE 3, 1996.
Location : Sormenovo, RUSSIA

Injured : 0 **Dead :** 2

Abstract

An explosion occurred at a gas pipeline formed a crater more than 2 metres deep and 8 metres across.
The explosion occurred after a bulldozer hit the pipeline
[drilling/digging/ploughing vehicles, excavation, fatality]

Lessons

[None Reported]

8612 09 July 1996

Source : LLOYDS LIST, 1996, JUL, 10.
Location : Yorkshire, UK

Injured : 0 **Dead :** 0

Abstract

An explosion occurred in a hydrogen storage tank followed by fire.
[fire - consequence]

Lessons

[None Reported]

1243109 July 1996

Source : ICHEME

Location : ,

Injured : 0 **Dead :** 0

Abstract

A sudden emission of some 33 tonness of hydrocarbon vapour from a floating roof crude tank occurred at a refinery. The release was caused by an uncontrolled heat input to the steam coils in the tank, which contained a mixture of crude oils and a considerable amount of wet process unit slops. This event was potentially catastrophic. When the cause of the emission was discovered, a full emergency response situation was declared, the tank was isolated from the steam supply and cooled to bring it back into a safe condition.

[gas / vapour release, floating roof tank, process causes, refining, design or procedure error]

Lessons

[None Reported]

8613 08 July 1996

Source : LLOYDS LIST, 1996, JUL, 10.
Location : Gebze, TURKEY

Injured : 0 **Dead :** 0

Abstract

An fire occurred on an ethyl alcohol storage tank.
[fire - consequence]

Lessons

[None Reported]

8952 07 July 1996

Source : ENVIRONMENTAL INFORMATION BULLETIN, 1997, JUL,; THE CHEMICAL ENGINEER, 10 APR, 1997
Location : , UK

Injured : 0 **Dead :** 0

Abstract

320 kg of 1,2-dichloroethane spill from vinyl chloride plant during recommissioning operations. The DCE was used during the decommissioning stage to flush ouut to remove water and iron, then flushing with nitrogen to remove the DCE. Operators failed to close a valve which allowed DCE into the nitrogen system. Pressure built up and a flexible hose blew off, releasing a jet of DCE. Operators stopped the flow within 2 minutes and covered drains but 29 kg reached the canal.
The company was fined £15,000 (1996).
[spill, design or procedure error]

Lessons

[None Reported]

8622 05 July 1996

Source : BBC NEWS, (http://www.bbc.co.uk).
Location : , UK

Injured : 0 **Dead :** 0

Abstract

A road transportation incident. Road tanker overturned causing a spillage of 1000 gallons of concentrated hydrochloric acid occurred.

Lessons

[None Reported]

8611 05 July 1996

Source : LLOYDS LIST, 1996, JUL, 6.
Location : Kutubu, PAPUA NEW GUINEA

Injured : 9 **Dead :** 0

Abstract

A gas explosion occurred at on an oil project.

Lessons

[None Reported]

8608 03 July 1996

Source : LLOYDS LIST, 1996, JUL, 5.
Location : Ohio, USA

Injured : 5 **Dead :** 8

Abstract

A fire engulfed a firework store caused by arson. Fatality.
[fire - consequence, fireworks, storage]

Lessons

[None Reported]

8606 27 June 1996

Source : LLOYDS LIST, 1996, JUL, 3, JUL, 9.
Location : South Carolina, USA

Injured : 0 **Dead :** 0

Abstract

Transportation. Pipeline spillage of 420,000 gallons of diesel fuel, some into a river. Pipeline was operating at reduced rate after inspection by an smart pig leak detection system. Later it was estimated that at least 1 million of No. 2 diesel spilled from the pipeline. 900,000 gallons were recovered by skimmers and vacuum trucks.

Lessons

[None Reported]

8607 26 June 1996

Source : LLOYDS LIST, 1996, JUL, 3.
Location : Sichuan, CHINA

Injured : 52 **Dead :** 36

Abstract

A large explosion destroyed a fireworks factory and levelled 10 buildings. Officials had shut down the plant in April for safety reasons. Fatality.
[processing]

Lessons

[None Reported]

8599 14 June 1996

Source : LLOYDS LIST, 1995, JUN, 17.
Location : Gothenberg, SWEDEN

Injured : 0 **Dead :** 0

Abstract

During the preparation for loading a tank container with ethylene diamine, the tank container overturned and landed on its side. Small leak found on the tank.

Lessons

[None Reported]

1036411 June 1996

Source : LOSS CONTROL NEWSLETTER, ISSUE 2, 1996.
Location : New Jersey, USA

Injured : 0 **Dead :** 0

Abstract

A fire occurred which was limited to one tank at a depot containing 3-4 m gals of gasoline.
[fire - consequence, near miss, storage tanks]

Lessons

[None Reported]

1273507 June 1996

Source : CHEMICAL HAZARDS IN INDUSTRY NO: 1, JANUARY 1998.
Location : , GERMANY

Injured : 0 **Dead :** 0

Abstract

A release of contents of a pressure vessel occurred when a longitudinal weld tore open. The vessel had been shut down and had just been put into use again when the incident occurred.
The gas mixture contained hydrocarbons with 30% hydrogen. It has reached its working pressure of 31 bar, but was only at -26 degrees C, instead of the working temperature of -73 degrees C, no liquid was present.
An investigation found a crack, 1.6 metres long, had formed near the upper end of the weld.
[incorrect temperature, gas / vapour release, weld failure, tank]

Lessons

The following recommendations were made:
All vessels of similar construction to be tested for incipient cracks on the inner surface by using a dye penetration test.
If the interior is inaccessible, welds and impact zones are to be tested by ultrasonic methods.

1036104 June 1996

Source : LOSS CONTROL NEWSLETTER, ISSUE 2, 1996.
Location : Texas, USA

Injured : 0 **Dead :** 0

Abstract

A fire occurred on a storage tank which contained the gasoline additive, methyl tertiary-butyl ether. The blaze was apparently started by lightning during a severe thunderstorm. The fire was extinguished after 7 hours.
[fire - consequence, storage tanks]

Lessons

[None Reported]

1107903 June 1996

Source : ICHEME

Location : ,

Injured : **Dead :**

Abstract

Light ends from the FCC main fractionator were being recovered using a wet gas compressor. Two casing drains from this compressor had thinned through internal corrosion. Engineered box enclosures injected with special sealant had been installed to avoid an untimely shutdown of the compressor. Within 3 weeks of the temporary repair being installed, one of the box enclosures failed releasing high pressure hydrocarbon vapours to the atmosphere. Fortunately, there was no ignition but production losses amounted to $56,000 (£33,433 (1996)).

Inspection of the temporary enclosure device revealed that the strongback tongue had failed. The tongue (see Figure 6) is designed to hold the leak repair device in position during the sealant injection process and during operation. The tongue is a necessary part of the leak repair device since there exists an unequal axial thrust generated during the sealant injection operation. The tongue is also vital during normal operation because the unequal axial thrust remains after the sealant injection operation is completed. This is due to the physical characteristics of the sealant material that was used. The selected sealant for this application was a thermosetting type which exhibits the characteristic of very little or no shrinkage after hardening. Therefore, whatever forces are introduced into the box enclosure by the sealant injection including the enclosed piping and fittings themselves remains as long as the device is installed. These forces can be significant due to the high injection pressures typically applied during the sealant injection process. Typically, injection pressures are in the order of 1000 to 2000 psig. This pressure is exclusive of the static pressure necessary to create sealant flow rough the injection gun.

Representatives of the leak repair contractor responsible for the job were brought in to assist with the investigation into the incident. Both the leak repair contractor representative and a refinery engineer performed independent reviews of the leak repair device configuration, design calculations, material selection and design conditions used. The conclusion from both parties was that the box enclosure was properly designed. The box enclosure with the enclosed flange and piping still intact were sent back to the leak repair contractor's manufacturing facility for further inspection and testing. In addition, a full review of the installation procedure used for this specific application was carried out. According to the leak repair contractor#s design calculations for the tongue, an injection pressure of 1300 psig was used to calculate the generated hydraulic thrust. The allowable working load of the tongue was calculated and shown to be 1 1/2 times the hydraulic thrust thus indicating an acceptable design. However, the leak repair contractor#s review of the installation procedure used for this job revealed than an injection pressure of 2500 psig was inadvertently used for this application. Given this injection pressure, the generated hydraulic thrust due to sealant injection exceeded the allowable working load of the tongue by a factor of 1.3. The leak repair contractor representative also indicated that there was a sharp transition from the box enclosure to tongue. The excessive hydraulic thrust introduced during the sealant process, the minimal shrinkage characteristic of the type of sealant selected, in combination with a stress riser due to the sharp transition between the tongue and the box enclosure most likely resulted in a fatigue failure in the transition area. This was consistent with visual observations of the failure.

[mechanical equipment failure, gas / vapour release, competency lacking, cracking, pipe, drain]

Lessons

The justification for undertaking this type of temporary repair must be weighed against the potential consequences of failure. Such justifications should be endorsed by senior management on advice from a professional mechanical engineer. When there is justification for such a repair, all aspects of the job must be carefully examined, controlled and implemented by competent personnel.

The following corrective actions were taken:

1. The Leak Repair Contractor has reviewed the injection procedures and trained their technicians to ensure their understanding of the differences in injection mechanics associated with the various types of sealant. This will ensure that the correct sealant injection pressure is applied in future.
2. The Leak Repair Contractor's Engineering Department has reviewed high stress concentrations at the enclosure to tongue transition specifying a minimum radius.
3. Other similarly designed clamps installed have been inspected to ensure that a similar failure will not occur.
4. Inspection will continue to monitor the first and second stage drain piping at 6-month intervals or until a corrosion rate is established for each stage.

8605 02 June 1996

Source : LLOYDS LIST, 1996, JUN, 5, JUN, 6.
Location : , INDIA

Injured : 0 **Dead :** 0

Abstract

A river transportation incident. Spillage of several tonnes of petroleum products into water at jetty when oil barge overflowed her pipeline during loading operations. 358,000 litres of diesel spilt.

Lessons

[None Reported]

1036602 June 1996

Source : LOSS CONTROL NEWSLETTER, ISSUE 2, 1996.
Location : West Bengal, INDIA

Injured : 0 **Dead :** 0

Abstract

364,000 litres of diesel spilt when a marine tanker's pipeline overflowed during loading operations on a jetty.
[spill, marine transport]

Lessons

[None Reported]

8596 01 June 1996

Source : LLOYDS LIST, 1996, JAN, 3.
Location : Sant Celoni, SPAIN

Injured : 0 **Dead :** 0

Abstract

A storage tank holding 6,000 litres of bleach broke. A toxic cloud formed when the bleach leaked into connecting pipes carrying hydrochloric acid.
[storage tanks, gas / vapour release]

Lessons

[None Reported]

8462 31 May 1996

Source : EUROPEAN CHEMICAL NEWS, 1996, JUN, 17, NOV, 4,; WASTE ENVIRONMENT TODAY, VOL. 19, PAGE 506, 1996, JUN, 12.
Location : Magdeburg, GERMANY

Injured : 0 **Dead :** 0

Abstract

A rail transportation incident. Derailment and explosion of four of 18 rail tankers, each carrying 50 tonnes of vinyl chloride which were consumed in the fire. Schools nearby were closed for a week. Pollution of ground water over 46,000 km2 area with dioxins and other contaminants was reported.
[fire - consequence, contamination]

Lessons

[None Reported]

1036025 May 1996

Source : LOSS CONTROL NEWSLETTER, ISSUE 2, 1996.
Location : Louisiana, USA

Injured : 0 **Dead :** 0

Abstract

Transportation. 310,000 gallons of gasoline were lost in marshland following the rupture in a pipeline from the refinery. The rupture occurred under a small tributary of a nearby river and led to the isolation of sections of local highway to avert the potential for ignition.
[material of construction failure, pollution]

Lessons

[None Reported]

8600 20 May 1996

Source : LLOYDS LIST, 1996, JUN, 22.
Location : Shenzen, CHINA

Injured : 19 **Dead :** 1

Abstract

A gas pipeline explosion shook 20 floor building. Fatality.

Lessons

[None Reported]

8412 18 May 1996

Source : ICHEME
Location : ,
Injured : 0 **Dead :** 0

Abstract

Fuel gas release causes refinery plant shut-down. A contractor erroneously opened the body of a valve which was located in the live main fuel gas line beyond the battery limit. Hydrogen-rich gas escaped, and the refinery lost its fuel gas main pressure and all units had to be shut down. This resulted in product loss. It was found that the instruction that consultation should be carried out if any valve was to be opened was ignored.
The cause of this incident was that the work order did not specify the number and location of the valves to be checked and repaired. The valves were, apparently, not tagged. In addition, the work order had not been cleared.
[labelling incorrect, operator error, refining, plant shutdown]

Lessons

Work orders must be specific in job and location description.

1035015 May 1996

Source : LOSS CONTROL NEWSLETTER, ISSUE 2, 1996.
Location : Honolulu, USA

Injured : 0 **Dead :** 0

Abstract

Transportation. Up to 400 bbl of heavy fuel oil leaked into the bay from a pipeline leading from a refinery to a Power Plant. Preventative measures included closing the Arizona Memorial, stopping vessel traffic and using three local response vessels and seven US Navy skimmers in the spill area.
[pollution]

Lessons

[None Reported]

8593 14 May 1996

Source : LLOYDS LIST, 1996, MAY, 23.
Location : Hawaii, USA

Injured : 0 **Dead :** 0

Abstract

Transportation. A pipeline spillage of 8,400 gallons of heavy fuel oil near power plant leaked into the harbour.

Lessons

[None Reported]

8285 09 May 1996

Source : SEDGWICK LOSS CONTROL NEWSLETTER, ISSUE 2, 1996.
Location : Texarkana, Texas, USA

Injured : 0 **Dead :** 0

Abstract

A fire started when a vapour cloud exploded at a hydrocarbon gas processing plant.
[vapour cloud explosion]

Lessons

[None Reported]

8283 29 April 1996

Source : SEDGWICK LOSS CONTROL NEWSLETTER, ISSUE 2, 1996.
Location : Grannagh, Kilkenny, IRELAND

Injured : 4 **Dead :** 0

Abstract

An explosion blew off part of the roof and a wall during maintenance. The explosion was linked to a flame arrestor in the line leading to a newly commissioned incinerator. Substance involved: paraformaldehyde.

Lessons

[None Reported]

1035426 April 1996

Source : LOSS CONTROL NEWSLETTER, ISSUE 2, 1996.
Location : Okinawa, JAPAN

Injured : 0 **Dead :** 0

Abstract

A fire occurred on a fuel oil desulphurisation plant of refinery
[fire - consequence, refining]

Lessons

[None Reported]

1035219 April 1996

Source : LOSS CONTROL NEWSLETTER, ISSUE 2, 1996.
Location : Moscow, RUSSIA

Injured : 1 **Dead :** 2

Abstract

An explosion involving underground storage of gasoline. Vessel was reported as 10,000 tonnes.
[storage equipment, fatality]

Lessons

[None Reported]

9998 09 April 1996

Source : LOSS CONTROL NEWS LETTER, 2/96.
Location : Beno-Vedeno, RUSSIA

Injured : 0 **Dead :** 0

Abstract

A large quantity of gas condensate was released in the centre of a village which was subsequently evacuated. Incident due to terrorism.
[gas / vapour release, evacuation]

Lessons

[None Reported]

8398 06 April 1996

Source : ICHEME

Location : ,

Injured : 0 **Dead :** 0

Abstract

Hydrotreater recycle hydrogen line failure at a refinery.

Localised corrosion of a FCCU (Fluid Catalytic Cracking Unit) feed hydrotreater recycle hydrogen line by-pass around a hydrogen pre-heat exchanger led to an explosion and fire. The failed part of the line had been identified by inspection as a dead leg. After investigation it was found that the mechanism of corrosion was ammonium chloride under deposit corrosion. The source of chloride has not been traced, but hydrogen from the catalytic reformer was strongly suspected. Inspection inadequate of the dead leg was identified as the cause of this incident. There was damage to equipment, material loss and product loss. [refining, fluid cracker]

Lessons

Localised corrosion mechanisms are difficult to detect with fixed point UT, and dead leg corrosion can have several different corrosion mechanisms.

516 01 April 1996

Source : ICHEME

Location : ,

Injured : 0 **Dead :** 0

Abstract

An explosion and fire occurred at a refinery. This was caused by pipe failure at the gasoline hydrometer unit. The pipe failure caused hydrocarbons to be released, which led to the explosion and fire which burned for more than three hours. No injuries were reported.
[fire - consequence, refining, vapour cloud explosion, mechanical equipment failure]

Lessons

[None Reported]

8589 23 March 1996

Source : LLOYDS LIST, 1996, MAR, 30.
Location : North Orillia, CANADA

Injured : 0 **Dead :** 0

Abstract

A rail transportation incident. 60 people were evacuated following a derailment of 13 rail tankers, some containing ethylene oxide.
[evacuation]

Lessons

[None Reported]

8577 07 March 1996

Source : LLOYDS LIST, 1996, MAR, 9.
Location : Veracruz, MEXICO

Injured : 0 **Dead :** 0

Abstract

Several million litres of fuel oil spillage into waters and then into the sea.
[pollution]

Lessons

[None Reported]

8663 28 February 1996

Source : LLOYDS LIST, 1996, FEB, 26.
Location : Rotterdam, NETHERLANDS

Injured : 17 **Dead :** 0

Abstract

A warehouse containing 80 - 100 tonnes hydrochloric acid and chlorine based chemicals destroyed. Dense orange smoke caused problems to residents and industries. Release of chlorine gases caused by the fire but as within toxic level limits. Residents of the city were told to stay indoors. Some shipping operations at the port were suspended.
[fire - consequence, gas / vapour release, warehousing, storage]

Lessons

[None Reported]

8701 28 February 1996

Source : SEDGWICK LOSS CONTROL NEWSLETTER, ISSUE 1, 1996.
Location : Samara, RUSSIA

Injured : 0 **Dead :** 2

Abstract

A mixture of fuel and air caused an explosion when a furnace was being lit to start-up a catalytic reforming facility. Fatality.
[catalytic reformer, residue]

Lessons

[None Reported]

8693 25 February 1996

Source : SEDGWICK LOSS CONTROL NEWSLETTER, ISSUE 1, 1996.
Location : , NIGERIA

Injured : 0 **Dead :** 0

Abstract

Transportation. A gasoline pipeline blew up at km 64 caused by sabotage.

Lessons

[None Reported]

8686 21 February 1996

Source : SEDGWICK LOSS CONTROL NEWSLETTER, ISSUE 1, 1996.
Location : Perm, RUSSIA

Injured : 0 **Dead :** 0

Abstract

An explosion and fire on a pipeline occurred after a leak of gas.
[fire - consequence]

Lessons

[None Reported]

8711 19 February 1996

Source : THE CHEMICAL ENGINEER, 1996, MAR, 7.
Location : , UK

Injured : 11 **Dead :** 0

Abstract

A road transportation incident. Approximately 1 tonne of nitrobenzene was spilled following a road tanker crash which occurred when a tanker crossed the central reservation and collided with a tanker carrying diesel. Both tanker cabs caught fire. Some pollution of a river occurred.
[collision, fire - consequence]

Lessons

[None Reported]

8461 19 February 1996

Source : ENDS REPORT, 1996, MAR,; THE CHEMICAL ENGINEER, 7 MARCH, 1996.
Location : Billingham; Cleveland, UK

Injured : 11 **Dead :** 0

Abstract

A road transportation incident. A road tanker collided with a diesel tanker, caused by loss of control. Substances involved: nitrobenzene, diesel. Both vehicles caught fire.
Clean up costs estimated at £200,000 (1996).
[fire - consequence, collision, loss of control, spill]

Lessons

Although harmful to aquatic life, nitrobenzene is biodegradable.

8687 06 February 1996

Source : SEDGWICK LOSS CONTROL NEWSLETTER, ISSUE 1, 1996.
Location : Lugansk, UKRAINE

Injured : 0 **Dead :** 0

Abstract

Transportation. Explosion in a section of the north gas pipeline, led to the combustion of the gas. An 8 km section of the pipeline was isolated and the 100 metres high flame engulfed several houses, destroying four and seriously damaging seven. The fire was put out within hours.
[fire - consequence, damage to equipment]

Lessons

[None Reported]

8388 06 February 1996

Source : ICHEME

Location : ,

Injured : 0 **Dead :** 0

Abstract

Fire at compressor suction drum at a terminal during maintenance. The drain valve of the interstage liquid drum was inadvertently opened, releasing hydrocarbons into the open drain system below the suction drum. Within seconds, the hydrocarbons were ignited. There was damage to equipment and material loss. The most likely source of hydrocarbon release was from the inadvertent operation of a level gauge drain cock by insulation technicians working in the relatively confined work area. In addition the drain cock could easily be partially opened by body contact. Also the control of the work was insufficient to prevent the incident occurring.

[fire - consequence, product loss]

Lessons

The control of maintenance/installation work adjacent to running plant needs very careful consideration as to the degree of control needed to prevent incidents. The atmospheric drainage of "light ends" on process units can be hazardous if not carefully controlled. Wherever practicable, drain valves should be double valved, locked off or otherwise protected when not in use.

8698 01 February 1996

Source : SEDGWICK LOSS CONTROL NEWSLETTER, ISSUE 1, 1996.
Location : California, USA

Injured : 0 **Dead :** 0

Abstract

Explosion and fire occurred after a hydrogen gas pipe broke.
[fire - consequence]

Lessons

[None Reported]

2272 30 January 1996

Source : LLOYDS LIST, 1996, FEB, 19.
Location : Nikolayev Region, UKRAINE

Injured : 0 **Dead :** 0

Abstract

Rail transportation. Nine rail tank wagons carrying fuel oil derailed, seven overturned and leaked.
[derailment, spill]

Lessons

[None Reported]

1160028 January 1996

Source : ICHEME
Location : , UK

Injured : 0 **Dead :** 0

Abstract

A high pressure vent line from an ethanol unit was vented to flare, in an attempt to clear a suspected blockage in the line (hydrate formation) which contained a mainly ethylene stream, saturated with water vapour. An explosion occurred and a yellow column of flame was seen at the flare tip. The vent valves were immediately closed.
Minor damage was sustained and after an inspection of equipment and lines it was determined that the system should remain in operation with some additional nitrogen purging. The high pressure vent line was left isolated. It was determined that a more detailed inspection of the system should be carried out.
An enquiry team investigated the incident. It was concluded that an explosion had occurred in the flare knock out drum, but it was not possible to confirm the cause of the incident.
[damage to equipment, flow restriction, venting]

Lessons

1. A full inspection should be undertaken.
2. The design conditions of the high pressure vent line should be reviewed and the tracing requirements for the line should be confirmed.
3. The measuring and alarming of temperatures on the vent line should be undertaken.
4. Nitrogen purge flow requirements should be checked and a method of measuring the nitrogen flow to the flare should be identified.
5. A procedure should be prepared for depressurising the vent line, allowing for the low temperatures that could be seen.

8682 21 January 1996

Source : SEDGWICK LOSS CONTROL NEWSLETTER, ISSUE 1, 1996.
Location : Tyumen, RUSSIA

Injured : 0 **Dead :** 0

Abstract

Transportation. Fire damaged 60 metres of the 1,200 mm pipeline causing a stoppage at a gas pumping facility.
[fire - consequence, damage to equipment]

Lessons

[None Reported]

9072 19 January 1996

Source : ICHEME
Location : , RHODE ISLAND

Injured : 0 **Dead :** 0

Abstract

A marine transportation incident. A barge ran aground after the tug boat pushing it caught fire during a sever winter storm. 828,000 gallons of the barge's cargo of heating oil spilled. The spill affected the southern shore and salt waster ponds and far beyond.
The main concern at this point is damage to the fragile tidal ponds and marshes which are important breeding ground for shell fish and winter flounder. They are also important habitats for endangered birds. Reports indicated that despite efforts to protect the ponds, oil seeped in and contaminated them.
The successful re-floating of the barge happened a week later. The barge was then towed out to sea where divers could examine the full extent of the damage to the barge.
[ship ran aground, weather effects, fire - consequence, ecological damage]

Lessons

[None Reported]

8586 19 January 1996

Source : LLOYDS LIST, 1996, MAR, 24.
Location : Nebraska Sound, USA

Injured : 0 **Dead :** 0

Abstract

A marine transportation incident. An explosion occurred in a tug engine room which caused the barge under tow to be cast adrift in 15 ft waves. The barge went aground and spillage of its cargo of diesel oil occurred. About 25% of its cargo, 800,000 gallons, was lost.

Lessons

[None Reported]

8706 19 January 1996

Source : SEDGWICK LOSS CONTROL NEWSLETTER, ISSUE 1, 1996.
Location : , USA

Injured : 0 **Dead :** 0

Abstract

A marine transportation incident. A tug towing a barge suffered an engine room explosion causing the crew to abandon ship. The barge subsequently ran aground and was holed in two places causing spillage of over 700,000 gallons of heating oil (diesel). A 10 mile stretch of coastline was threatened and extensive damage occurred to wildlife.
[ship ran aground, pollution]

Lessons

[None Reported]

8574 14 January 1996

Source : EUROPEAN CHEMICAL NEWS, 1996, FEB, 26.
Location : Ludwigshafen, GERMANY

Injured : 25 **Dead :** 0

Abstract

An explosion occurred in a diaphragm chlorine plant causing $1.4 m (1996) damage. A cloud of hydrochloric acid, sulphuric acid and chlorine was released. The cause was a blockage in the outlet for condensed water vapour from the hydrogen system of the plant. Plastic anti-corrosion material from inside the pipes is believed to have caused the blockage. Hydrogen was then forced back into the electrolytic cell and through its diaphragm into the chlorine system. The excess hydrogen reacted violently with the chlorine causing an explosion in the drier section of the plant where chlorine is washed with sulphuric acid to remove water vapour.
[unwanted chemical reaction, damage to equipment, gas / vapour release, unwanted chemical reaction, processing]

Lessons

[None Reported]

8339 14 January 1996

Source : LLOYDS LIST, 1996, JAN, 15.
Location : Perth, AUSTRALIA

Injured : 1 **Dead :** 2

Abstract

A rail transportation incident. Two freight trains in collision caused fire ball when diesel ignited. Fatality.
[fire - consequence]

Lessons

[None Reported]

8679 08 January 1996

Source : SEDGWICK LOSS CONTROL NEWSLETTER, ISSUE 1, 1996.
Location : California, USA

Injured : 0 **Dead :** 0

Abstract

A workman severed a gas pipe causing the transmission pipeline to crack resulting in gas release.
[gas / vapour release, operator error]

Lessons

[None Reported]

8396 1996

Source : ICHEME

Location : ,

Injured : 0 **Dead :** 0

Abstract

Catalytic poly sample cooler failure and fire. A piping coil at the water to air interface of a sample cooler, off a depropanizer reboiler in the Cat Poly Unit, failed. Hydrocarbons were released which ignited resulting in a substantial fire. The sample cooler was used only occasionally to draw samples. There was damage to equipment and material loss. It was found that aqueous corrosion of the carbon steel pipe had occurred. During normal operation, the block valves were to be in the closed position for all sample coolers; on the day of the failure, all the block valves were in the open position. This incident was caused by inadequate inspection frequency.
[inspection inadequate, fire - consequence, cooling equipment, mechanical equipment failure, processing]

Lessons

[None Reported]

8406 1996

Source : ICHEME

Location : ,

Injured : 0 **Dead :** 0

Abstract

An explosion occurred when hot work was being carried out on the regenerator off-gas pressure reduction chamber. The chamber had recently undergone refractory repair.

It was found that the material used to repair the chamber produced hydrogen when water was added, which caused it to expand during application. The basic cause of this incident was that the Material Safety Data Sheet (MSDS) did not indicate that flammable gases would be given off during mixing.

[near miss, faulty instructions]

Lessons

When working with refractory materials, challenge suppliers if in doubt as to the composition of the materials being used.

8626 1996

Source : LLOYDS LIST, 1996, AUG, 5.
Location : , KAZAKHSTAN

Injured : 0 **Dead :** 2

Abstract

A gas pipeline explosion. Fatality.

Lessons

[None Reported]

8394 27 December 1995

Source : ICHEME

Location : ,

Injured : 0 **Dead :** 0

Abstract

Fire on crude unit stack. A carry-over of hydrocarbon from a naphtha stabiliser to the acid gas knock out pot then went to a incinerator, where it ignited. As a result, there was thick black smoke, followed by a fire, at the common stack. The unit was immediately shut down. The disposal line from the acid gas knock out pot was engineered in 1984 to enable the transfer of condensate, but due consideration was not given to accidental carry-over of entrained hydrocarbon. There was a common assumption that this was the normal route for disposal problems, i.e., to the incinerator. Production loss $1.8 million (1995).
[fire - consequence, product loss, processing]

Lessons

Guidelines and detailed procedures need to address the handling of abnormal conditions.

8248 20 December 1995

Source : OIL AND GAS JOURNAL.
Location : Denver, USA

Injured : 0 **Dead :** 0

Abstract

Transportation. Pipeline rupture caused release of gas that caught fire and forced the evacuation of 150 persons.
[fire - consequence]

Lessons

[None Reported]

8239 13 December 1995

Source : LLOYDS LIST, 1995, DEC, 14.
Location : North Sea, UK

Injured : 0 **Dead :** 0

Abstract

A fire occurred in glycol regeneration unit but was soon put out.
[fire - consequence, offshore]

Lessons

[None Reported]

8246 10 December 1995

Source : THE CHEMICAL ENGINEER, 1995, DEC, 14.
Location : Runcon, UK

Injured : 0 **Dead :** 0

Abstract

A toxic cloud hung over the site following an acid release from one of its storage tanks. Chlorosulphonic acid escaped from the base of a stock tank fuming into a cloud of hydrochloric acid and sulphur trioxide.
[gas / vapour release]

Lessons

[None Reported]

8378 07 December 1995

Source : ICHEME

Location : ,

Injured : 0 **Dead :** 0

Abstract

Incident at a refinery. A vent system on a sat gas debutanizer tower overhead line completely failed, releasing gas which formed a large vapour cloud. This incident was caused by mechanical fatigue from piping vibration with a large valve supported on the failed connection.
[gas / vapour release, mechanical equipment failure, refining]

Lessons

Pipe work, as installed, must comply with the design drawings, any changes being clearly indicated as having undergone established authorisation/review systems.

8247 05 December 1995

Source : NEWSGRID
Location : Middletown, Ohio, USA
Injured : 14 **Dead :** 0

Abstract

Three explosions occurred in a gas pipe associated with a stove which preheats air to support blast furnace operations. The blast furnace had been shut-down for maintenance at the time of the explosion.

Lessons

[None Reported]

8233 01 December 1995

Source : LLOYDS LIST, 1995, DEC, 4.
Location : Venice, ITALY

Injured : 0 **Dead :** 0

Abstract

Transportation. An 11 km long underwater pipeline ruptured and caused a spillage of about 1 tonne of gasoline into lagoon causing moderate amount of pollution.

Lessons

[None Reported]

8257 29 November 1995

Source : SEDGWICK LOSS CONTROL NEWSLETTER, ISSUE 4, 1995.
Location : , SINGAPORE

Injured : 2 **Dead :** 0

Abstract

A gas release occurred when 2 contractors were inserting metal plates, blanks, into a pipe to isolate a tower.
[maintenance, gas / vapour release]

Lessons

[None Reported]

8380 28 November 1995

Source : ICHEME

Location : ,

Injured : 0 **Dead :** 0

Abstract

Near miss during work on live foul gas system. Contractors were in the process of removing a valve from a live, foul gas system in the high pressure lube oil hydrogenation unit when they were stopped by a senior foreman who happened to be passing by. Foul gas containing more than 1000 ppm of hydrogen sulphide would have been released had the valve been fully removed.
It was found that the contractors' supervisor had mistaken the foul gas for the plant steam system.
[maintenance, contractor error]

Lessons

Work on plants which are only partially shut down and isolated can present potentially hazardous situations for maintenance crews; therefore, equipment/pipe work releases need to be done with great care. Work lists and permits, with precise permit conditions and equipment locations, must be adhered to.

8211 28 November 1995

Source : LLOYDS LIST, 1995, NOV, 28.
Location : Cilacap, INDONESIA

Injured : 0 **Dead :** 0

Abstract

Lightning strike caused fire on 7 storage tanks of which at least 3 were completely destroyed. Tanks contained a variety of fuels. Production at refinery seriously affected. 2000 people evacuated.
[fire - consequence, evacuation, refining]

Lessons

[None Reported]

8235 22 November 1995

Source : LLOYDS LIST, 1995, DEC, 7.
Location : Tyumen Region, RUSSIA

Injured : 0 **Dead :** 0

Abstract

Transportation. A gas explosion and subsequent fire occurred at a pipeline causing damage of Roubles 4.3 billion. Accident caused by the erosion of a 500 mm pipe. A total of 240 metres of pipeline and an engine room were wrecked.
[fire - consequence, damage to equipment]

Lessons

[None Reported]

8480 22 November 1995

Source : ENDS REPORT 263, 1996, DEC.
Location : North Yorkshire, UK

Injured : 0 **Dead :** 0

Abstract

A road transportation incident. A road tanker delivered 7 tonnes of 96% sulphuric acid which was unloaded into a tank of dioctyl phthalate. No violent reaction occurred but clean up operations were difficult.
[unloading, near miss, design or procedure error]

Lessons

[None Reported]

8231 15 November 1995

Source : SEDGWICK LOSS CONTROL NEWSLETTER, ISSUE 4, 1995.
Location : Batley, UK

Injured : 29 **Dead :** 0

Abstract

A spillage of ethylene dichloride resulted in fumes spreading into a business park.
[gas / vapour release]

Lessons

[None Reported]

8234 13 November 1995

Source : LLOYDS LIST, 1995, DEC, 4.
Location : Vladimir region, RUSSIA

Injured : 0 **Dead :** 0

Abstract

A gas fire occurred as a section of pipeline was ruptured. Fire put out in 3 hours. Accident caused by soil shifting in the area.
[fire - consequence, earth movement]

Lessons

[None Reported]

8213 12 November 1995

Source : LLOYDS LIST, 1995, NOV, 13, NOV, 15.
Location : Vladikavkaz, RUSSIA

Injured : 0 **Dead :** 0

Abstract

Transportation. An explosion damaged a gas pipeline, halting gas supplies. Supplies were rerouted. Sabotage suspected.
[damage to equipment]

Lessons

[None Reported]

8270 01 November 1995

Source : SEDGWICK LOSS CONTROL NEWSLETTER, ISSUE 4, 1995.
Location : Yekaterinburg, RUSSIA

Injured : 0 **Dead :** 0

Abstract

Transportation. An explosion occurred when gas pressure built up to 30 atmospheres when valves at the station were shut off. The cause of the explosion was originally attributed to sabotage but later suggested that it was caused by corrosion of the pipeline.

Lessons

[None Reported]

8269 01 November 1995

Source : SEDGWICK LOSS CONTROL NEWSLETTER, ISSUE 4, 1995.
Location : Baytown,Texas, USA

Injured : 0 **Dead :** 0

Abstract

The fire started following a lightning strike on a 50,000 bbl gasoline tank which was almost full. The fire was extinguished after 2 hours.
[fire - consequence, storage tanks]

Lessons

[None Reported]

8225 29 October 1995

Source : ENDS REPORT, 1995, DEC.
Location : Ruabon, UK

Injured : 0 **Dead :** 0

Abstract

A leak of hydrogen sulphide occurred when 3 - 10 kg leaked from an unseated valve and bursting disc.

Lessons

[None Reported]

8224 29 October 1995

Source : BBC NEWS, 1995, OCT, 30,; CHEMISTRY IN BRITAIN, 1995, DEC.

Location : Dagenham, Essex, UK

Injured : 0 **Dead :** 0

Abstract

Release of 12 tonnes of hydrogen chloride from 30 ton tank resulted from a faulty valve. The gas passed over during the evening. Leak.
[valve failure, gas / vapour release]

Lessons

[None Reported]

8210 15 October 1995

Source : HAZARDOUS CARGO BULLETIN, 1995, DEC.
Location : Warrington, Cheshire, UK

Injured : 0 **Dead :** 0

Abstract

Leakage at storage tank caused spillage of 2,000 litres of heavy fuel oil to a river. Pollution occurred over an 8 km stretch of river.
[storage tanks]

Lessons

[None Reported]

1041614 October 1995

Source : LOSS PREVENTION BULLETIN, 140, 24.; HEALTH AND SAFETY EXECUTIVE, NEWS RELEASE, 9 MARCH 1998.
Location : , UK

Injured : 3 **Dead :** 0

Abstract

An explosion occurred during the extrusion of solid rocket fuel on a large press and involved about 55kg of the explosive repellent. The explosion and fireball devastated the press compartment and three workers in the nearby control room were badly injured.
The building collapsed, rubble from the roof and walls fell in and a fireball engulfed the workers. The force of the blast threw very large and heavy pieces of debris, including a 1.5 tonne metal securing ring up to a quarter of a mile from the building.
Investigation into the explosion found that the cause of the incident was due to the heavy securing ring not being fully engaged at the front of the extrusion press. The press was also being operated at too high a pressure. It was also found that adequate steps had not been taken to avoid contamination of the explosives by rogue metal.
[high pressure, design or procedure error, injury]

Lessons

[None Reported]

8221 13 October 1995

Source : EUROPEAN CHEMICAL NEWS, 1995, DEC.
Location : Wilton, Cleveland, UK

Injured : 0 **Dead :** 0

Abstract

Small amount of ethyl mercaptan was released while maintenance work was being carried out. A methanol flushing system installed following two previous leaks was not used. Public complaints. Enforcement notice issued for company to review design of the ethyl mercaptan storage and dosing system and to retrain staff.
[human causes]

Lessons

[None Reported]

8186 03 October 1995

Source : LLOYDS LIST, 1995, OCT, 14.
Location : Aqaba, JORDAN

Injured : 0 **Dead :** 0

Abstract

30 tonnes of diesel oil spillage into harbour.

Lessons

[None Reported]

8476 October 1995

Source : ENDS REPORT 261, OCT, 1996.
Location : Ruabon, UK

Injured : 0 **Dead :** 0

Abstract

Release of 3 x 10 kg over 30 seconds of hydrogen sulphide occurred from a safety relief valve when a pressure built up in a sodium mercaptobenzothiazole unit. 17 complaints occurred. The release was caused by a blocked pressure line. Company fined £15,000 (1996) and ordered to pay costs of £22,000 (1996).
[high pressure, gas / vapour release, processing, flow restriction]

Lessons

[None Reported]

8230 29 September 1995

Source : SEDGWICK LOSS CONTROL NEWSLETTER, ISSUE 4, 1995.
Location : Rafnes, NORWAY

Injured : 0 **Dead :** 0

Abstract

An explosion occurred due to ignition of gases during testing of a furnace operating system. The flame detection system interlocked to the gas supply was defeated. Substance involved: ethylene.
[instrumentation failure gas oil]

Lessons

[None Reported]

8183 28 September 1995

Source : LLOYDS LIST, 1995, SEP, 29.
Location : Esposende, PORTUGAL

Injured : 1 **Dead :** 2

Abstract

An explosion occurred at a fireworks factory. Fatality.

Lessons

[None Reported]

8180 11 September 1995

Source : LLOYDS LIST, 1995, SEP, 12,; HAZARDOUS CARGO BULLETIN, 1995, NOV.

Location : Near Calcutta, INDIA

Injured : 0 **Dead :** 0

Abstract

Powerful explosion in fireworks factory.

Lessons

[None Reported]

8255 09 September 1995

Source : SEDGWICK LOSS CONTROL NEWSLETTER, ISSUE 4, 1995.
Location : ,

Injured : 6 **Dead :** 0

Abstract

Incident started as a small local fire in the fluid catalytic cracker unit. Fire was attacked using a local monitor. Firewater was contaminated with gasoline which led to fire escallation.
[fire - consequence, contamination, cracking]

Lessons

[None Reported]

8179 01 September 1995

Source : LLOYDS LIST, 1995, SEP, 4.
Location : North Sea, UK

Injured : 0 **Dead :** 0

Abstract

22 of 35 personnel on board oil and gas production platform evacuated due to gas release from leak. Offshore. [evacuation]

Lessons

[None Reported]

7665 01 September 1995

Source : SEDGWICK LOSS CONTROL NEWSLETTER, ISSUE 3, 1995.
Location : Nizhniy Tagil, RUSSIA

Injured : 2 **Dead :** 0

Abstract

Four storage depots completely destroyed when 28 tonnes of salts of 2-ethylhexoic acid exploded. Windows 3 km away broken.
[damage to equipment]

Lessons

[None Reported]

8218 01 September 1995

Source : CHEMICAL HAZARDS IN INDUSTRY, 1995, DEC.
Location : Texas City, Texas, USA

Injured : 2 **Dead :** 0

Abstract

A hydrogen cyanide leak occurred at an acrylonitrile plant.

Lessons

[None Reported]

8217 September 1995

Source : CHEMICAL HAZARDS IN INDUSTRY, 1995, DEC.
Location : East Rutherford, New Jersey, USA

Injured : 0 **Dead :** 0

Abstract

Gas from an old compressed cylinder leaked and ignited. After the initial blast, several other cylinders containing unidentified gases also exploded. [explosion]

Lessons

[None Reported]

8177 29 August 1995

Source : HAZARDOUS CONTROL BULLETIN, 1995, OCT.
Location : Lowestoft, Suffolk, UK

Injured : 0 **Dead :** 0

Abstract

Suspect weld on 9,900 litre tank container caused half of contents of hydrochloric acid to leak. Spillage washed down.
[weld failure]

Lessons

[None Reported]

1941 28 August 1995

Source : LLOYDS LIST, 1995, AUG.
Location : Zamboanga, PHILIPPINES

Injured : 21 **Dead :** 2

Abstract

An explosion occurred which was caused by cigarette embers. The explosion rocked the fireworks factory. Fatality.

Lessons

[None Reported]

8175 25 August 1995

Source : HAZARDOUS CARGO BULLETIN, 1995, OCT.
Location : Off Vostorchnyy, RUSSIA

Injured : 1 **Dead :** 1

Abstract

A marine transportation incident. An explosion occurred in a marine product tanker at anchor. 400 tonnes of gasoline and diesel onboard burned for 13 hours. Vessel broke in two and sank. Fatality.
[sinking, fire - consequence]

Lessons

[None Reported]

1926 25 August 1995

Source : LLOYDS LIST, 1995, 28 AUG.
Location : , SINGAPORE

Injured : 0 **Dead :** 0

Abstract

55 tonnes of heavy fuel oil spillage into the sea from a refinery pipeline leak.
[pollution, refining]

Lessons

[None Reported]

8176 21 August 1995

Source : HAZARDOUS CARGO BULLETIN, 1995, OCT.
Location : Preston, Lancashire, UK

Injured : 60 **Dead :** 0

Abstract

An explosion occurred in drums containing diethyl carbonate. Cloud drifted over homes and out to sea. 60 people treated in hospital with breathing and skin problems.
[gas / vapour release]

Lessons

[None Reported]

3783 20 August 1995

Source : SEDGWICK LOSS CONTROL NEWSLETTER, 3RD QUARTER, 1995.
Location : Wurtland, Kentucky, USA

Injured : 20 **Dead :** 0

Abstract

A gas leak occurred when a pipe break released sulphuric acid. The leak resulted in a dense white cloud. Residents from four local towns were evacuated. Following the incident the company made modifications to pipes and storage tanks throughout the plant.
[gas / vapour release, evacuation, processing]

Lessons

[None Reported]

1894 20 August 1995

Source : THE CHEMICAL ENGINEER, 1995, SEP, 14; LLOYDS LIST, 1995, AUG, 22.
Location : Preston, UK

Injured : 0 **Dead :** 0

Abstract

Explosion in a drum that contained waste from a distillation process and was a mixture of bromodiethyl carbonate, diethyl carbonate and ethyl bromoacetate. This caused a cloud to drift over the town from the chemical works.
[drums, gas / vapour release, evacuation]

Lessons

[None Reported]

8197 18 August 1995

Source : SEDGWICK LOSS CONTROL NEWSLETTER, ISSUE 4, 1995.
Location : Bayport, Texas, USA

Injured : 6 **Dead :** 0

Abstract

The explosion and fire in the hydroquinone unit caused the plant to be out of action for at least 6 weeks. There were no hazardous chemical releases.
[fire - consequence]

Lessons

[None Reported]

1109308 August 1995

Source : ICHEME
Location : , USA

Injured : 0 **Dead :** 0

Abstract

A tube suddenly ruptured in a reactor feed preheat furnace of a Resid Hydrotreater and resulted in a major fire. The mechanism of failure was creep in a relatively localised area. The incident occurred during the start-up of the unit.
The 96 Mbpd Resid Hydrotreater started operation in late 1983. It consists of three parallel modules feeding a common distillation section. Each of the modules is identical, and contains two parallel reactors, feed/effluent heat exchanger, one preheat furnace, hydrogen recycle and quench, and product separation and cooling. Each furnace has two separate radiant sections which preheat the feed to the two parallel reactors. Each radiant cell of the furnace preheats a mixture of resid feed and hydrogen to its feed temperature. Twenty-two furnace tube skin temperature indicators (TIs) are provided throughout each radiant cell. Peepholes are provided at each end of the 60 foot long firebox and at three locations along each side of the firebox. The tubes are seven inches in diameter, 0.6 inch in nominal thickness and of type 347 stainless steel.
On the day of the incident, the fuel gas valve on the furnace#s north cell was fully open at a rate of 43,000 scfh from about 00:30-02:35 hrs., and the south cell was also fully open at the same rate from approximately 01:25-02:35 hrs. An operator inspected the furnace during this period and noted no obvious hot spots on the tubes or other abnormalities. Fuel gas was reduced to both cells prior to shift change to lower the skin TIs (one skin TI in the north cell reached alarm point of 1050 degrees F at 05:30 hrs.). The skin TIs cooled to 850 degrees F (454 degrees C) or less but the one TI which had alarmed remained at 950 degrees F to 1000 degrees F (510 degrees C to 538 degrees C). At no time during the startup did any TI reach the maximum design limit of 1100 degrees F (593 degrees C). surveys have revealed temperatures high enough to cause a creep failure.
Key findings from the investigation are summarized below.
1. Coke deposition occurs predominantly at or near tube welds in the furnaces.
2. The weld acts like a stiff ring - such that when creep conditions exist in the weld area the tube bulges where the resistance to stretch is less (4 inches from weld).
3. Weld thermal stabilization did not remove residual stresses from the weld to the edge of the heating blanket, test shows that after post-weld heat treatment negligible residual stresses remain.
4. The grooves found in the north cell tube 4 failure point were statistically equivalent to the grooves found in the south cell tube 12 bulge and most likely occurred from the same mechanism.
5. The grooves were not a manufacturing defect because the grooves in the south cell crossed a weld.
6. The internal grooves were a consequence of carburization and creep (very similar to boiler tube ruptures due to creep and Environmental factors such as scale).
7. There was no evidence of tube material degradation near the welds.
8. Short term stress rupture tests on tube material indicated properties at or slightly below the API 530 minimum rupture curve.
9. Due to several locations of creep characteristics being found, the overheating is most likely due to chronic conditions rather than any single event.
10. Full tube inspection, visual or IR, was not possible with the existing number of sight ports.
11. Localized overheating of the tube was not indicated by skin TIs, periodic infrared scans, or visual inspections.
12. Furnace operating policy, at the time of the incident, was to fire the furnace subject to tube skin TI, draft, CO, excess O2 and flame pattern constraints. Heat flux or fuel gas limits had not been imposed.
[reactors and reaction equipment, fire - consequence, separation equipment, cooling equipment]

Lessons

The following recommendations were made:
1. Decoking of furnace tubes to prevent coke build up and consequent localised heating should be undertaken at specified intervals.
2. Tube skin temperature alarm points should be set sufficiently lower than the maximum design temperature to allow for hot spots or localised heating.
3. IR imaging needs to be conducted frequently to supplement tube skin temperature measurements.

1615 04 August 1995

Source : SEDGWICK LOSS CONTROL NEWSLETTER, 3 RD QUARTER, 1995.
Location : Penza, RUSSIA

Injured : 0 **Dead :** 0

Abstract

Transportation. An 18 year old pipeline ruptured along its seam and spilled diesel which contaminated at least 3,000 sq.m of land. [contamination]

Lessons

[None Reported]

8166 04 August 1995

Source : SEDGWICK LOSS CONTROL NEWSLETTER, ISSUE 3, 1995.
Location : Baroda, Gujarat, INDIA

Injured : 0 **Dead :** 0

Abstract

Two storage tanks containing 5 million litres of gasoline were destroyed in a major fire. The fire was confined to the loading area and the refining operations were not affected.
[fire - consequence, damage to equipment, refining]

Lessons

[None Reported]

8553 August 1995

Source : LOSS PREVENTION BULLETIN, 128, 7-10.
Location : , FINLAND

Injured : 0 **Dead :** 0

Abstract

This incident occurred between August and September 1995.
15,000 litres of detergent leaked into sewers, passed through a water treatment plant and seriously polluted a 60 km stretch of river. Damage to the river was extensive and very large numbers of fish and surface life were killed, partly by asphyxiation but many of the fish showed signs of severe bleeding in the gills, probably caused by the high levels of ammonia and surfactants in the water.
[pollution, ecological damage]

Lessons

1. All plant modifications, however apparently trivial, must be subject to a change control procedure involving a safety review by qualified personnel.
2. Because a substance is a common household item, it does not mean that it is not capable of causing widspread damage if released in sufficient quantity and at a sufficient concentration.
3. Frequent small releases are often a sign of a big one waiting to happen.
4. All organisations should have a disaster plan with lines of communication clearly defined.

1159931 July 1995

Source : ICHEME
Location : , UK

Injured : 0 **Dead :** 0

Abstract

A leak was discovered in the discharge pipework of an ethylene refrigeration compressor. The ethylene plant was shut down, the leak isolated and the associated pipework purged, prior to full inspection and repair.
The location of the leak was discovered at a point where a 2 inch safety valve bypass joined a 10 inch safety valve header on the compressor discharge. It was identified that the failure of the 2 inch pipe had been due to vibration induced fatigue.
The plant had been recommissioned two days previously, following a shutdown brought about by a process upset. It was estimated that 400-50 tonnes of ethylene had been lost in the 48 hours following recommissioning.
[refrigeration unit, plant shutdown, excessive vibration, normal operations]

Lessons

The enquiry team identified that monitoring of the vibration levels on pipework around the failure location should continue after the installation of new pipe supports. Monitoring and analysis results should be communicated site-wide and to others.

3508 17 July 1995

Source : THE CHEMICAL ENGINEER, 1995, JUL, 27.
Location : Hailsham, East Sussex, UK

Injured : 0 **Dead :** 0

Abstract

Spillage of 20 tonnes of hydrochloric acid leaked into river and caused fish kill.
[ecological damage]

Lessons

[None Reported]

8196 17 July 1995

Source : SEDGWICK LOSS CONTROL NEWSLETTER, ISSUE 4, 1995.
Location : Hailsham, East Sussex, UK

Injured : 0 **Dead :** 0

Abstract

Leakage of 250 tonnes of hydrochloric acid from cone roof tank. Half of spill was contained by protective wall, bund wall, the rest escaped to a river and required neutralisation.
[storage tanks, environmental]

Lessons

[None Reported]

1714 12 July 1995

Source : SEDGWICK LOSS CONTROL NEWSLETTER, 3RD QUARTER, 1995.
Location : Ukhta, RUSSIA

Injured : 0 **Dead :** 0

Abstract

Transportation. Gas pipeline explosion sent flames to a height of 10,000 to 20,000 ft scorching an estimated 12 acres of forest and leaving a crater of 16 ft by 50 ft wide. Pipeline is 56 inches in diameter.
[fire - consequence]

Lessons

[None Reported]

1519 11 July 1995

Source : SEDGWICK LOSS CONTROL NEWSLETTER, ISSUE 3, 1995.
Location : Fedorovskoye Field, Tyumen, Siberia, RUSSIA

Injured : 0 **Dead :** 0

Abstract

A gas fire erupted at an oil well . A diagonal well was drilled so that water could be pumped in to control the blaze. The height of the fire was 20 metres and needed 2 to 3 weeks to put out.
[fire - consequence]

Lessons

[None Reported]

3185 11 July 1995

Source : LLOYDS LIST, 1995, JUL, 12.
Location : Statjford A, North Sea, NORWAY

Injured : 0 **Dead :** 0

Abstract

Gas leak reported. Offshore.

Lessons

[None Reported]

3178 07 July 1995

Source : LLOYDS LIST, 1995, JUL, 10.
Location : Baytown, Texas, USA

Injured : 0 **Dead :** 0

Abstract

A fire that occurred in a furnace was left to burn itself out at chemical plant. Unofficial reports say there was some fuel leakage at the furnace box and that the fire started in the tubing.
[fire - consequence, processing]

Lessons

[None Reported]

8382 03 July 1995

Source : ICHEME

Location : ,

Injured : 0 **Dead :** 0

Abstract

Sulphur pit explosion at a refinery. A flashback from the incinerator ignited an accumulation of acid gas in the sulphur pit. The cause of this accident was a previous modification to the sulphur pit design when the unit amine sump vent was connected into the sulphur pit vapour space. This allowed hydrogen sulphide to accumulate in the sulphur pit vapour space. The amine sump had originally been fitted with an atmospheric vent.
[near miss, design inadequate, refining, contamination, modification procedures inadequate]

Lessons

Allowing for understandable technical reasons, the contamination of the sulphur pit with drainings from the amine sump was undesirable, especially with the limited control over quantities being drained.

1173703 July 1995

Source : ICHEME
Location : , UK

Injured : 0 **Dead :** 0

Abstract

An 8 inch line on a carbon disulphide plant fractured and a 9 metre diameter fireball resulted. The line was carrying a mixture of carbon disulphide, hydrogen sulphide and methane at 600 degrees C between the furnace and the reactor. The fire was brought under control by shutting down production and allowing it to burn out in a controlled manner. The incident caused release of sulphur dioxide to the environment and loss of production. Damage to plant was minimal and there were no injuries.
The cause was unknown at the time of the report. The pipe failed at the heat affected section close to a weld. It had been in service for at least 12 years and was due its next two-yearly inspection in September 1995. Ultrasonic thickness tests on the failed pipe revealed inconsistencies with the results from September 1993. The appearance of the failed section of pipe differed substantially from the remaining sections.
[fire/explosion, fire - consequence, mechanical equipment failure, reactors and reaction equipment, material transfer, gas / vapour release, material of construction failure]

Lessons

1. A major incident had occurred and only good fortune prevented serious casualties and potential escalation of the incident.
2. The shift team dealt with the incident effectively.
3. Their task could have been eased if emergency procedures had been clarified and rehearsed. In particular the workload of dealing with incoming telephone calls at a time of intense activity was a problem.
4. The frequency of examination on some pipelines on hazardous duty was inadequate and failed to reveal a section of pipe which was below specification.

2622 26 June 1995

Source : LLOYDS LIST, 1995, JUN, 30, HAZARDOUS CARGO BULLETIN, 1995, AUG.
Location : Bucharest, ROMANIA

Injured : 0 **Dead :** 3

Abstract

Explosion at a gas bottle distribution centre. Fatality.

Lessons

[None Reported]

2740 26 June 1995

Source : HAZARDOUS CARGO BULLETIN, 1995, AUG.
Location : Pardubice, CZECH REPUBLIC

Injured : 0 **Dead :** 1

Abstract

Explosion in semtex explosives factory. Building destroyed.
[fatality]

Lessons

[None Reported]

2579 12 June 1995

Source : LLOYDS LIST, 1995, JUN,; HAZARDOUS CARGO BULLETIN, 1995, AUG.
Location : Losari, Java, INDONESIA

Injured : 45 **Dead :** 21

Abstract

Explosion in fireworks factory started in 2 drums of chemicals.
[fatality]

Lessons

[None Reported]

1502 01 June 1995

Source : SEDGWICK LOSS CONTROL NEWSLETTER, 3 RD QUARTER, 1995.
Location : Java Sea, INDONESIA

Injured : 1 **Dead :** 2

Abstract

Fire balls spread from gas pipes on platform Uniform F/S. Offshore.
[fire - consequence, fatality]

Lessons

[None Reported]

7760 June 1995

Source : LOSS PREVENTION BULLETIN, 133, 22.
Location : ,

Injured : 0 **Dead :** 1

Abstract

A mechanic who was carrying out maintenance work on a vacuum tanker using an oxyacetylene torch to remove a faulty valve, was unaware of the fact that the road tanker had not been cleaned since its use two days earlier for the transportation of petrol, waste oil and sludge. Consequently, flammable vapours remaining in the valve were ignited by the torch, leading to the explosion which killed the operator. Fatality.
[hot work, gasoline]

Lessons

[None Reported]

8160 21 May 1995

Source : SEDGWICK LOSS CONTROL NEWSLETTER, ISSUE 2, 1995.
Location : , GEORGIA

Injured : 0 **Dead :** 0

Abstract

Transportation. A gas pipeline damaged by an explosion was repaired and recommissioned within a week. Fire brought under control in 2 hours.
[fire - consequence, damage to equipment]

Lessons

[None Reported]

1135514 May 1995

Source : LOSS CONTROL NEWSLETTER, 1997.
Location : , USA

Injured : 0 **Dead :** 0

Abstract

An explosion blew the top off a 1000 gallon tank, is believed to have been caused by a volatile mix of hydroxylamine nitrates and nitric acid. The solution had been diluted with water in 1993 and put into storage. Over a period of time, the water evaporated, leading to a greater concentration of the chemicals which heated up causing them to react.
[storage tanks, unwanted chemical reaction]

Lessons

[None Reported]

8124 04 May 1995

Source : HAZARDOUS CARGO BULLETIN, 1995, JUN.
Location : Ahmedabad, INDIA

Injured : 0 **Dead :** 0

Abstract

An explosion occurred in a fireworks factory spreading fire through building and causing further explosions.
[processing]

Lessons

[None Reported]

8123 28 April 1995

Source : HAZARDOUS CARGO BULLETIN, 1995, JUN.
Location : Tagu, SOUTH KOREA

Injured : 0 **Dead :** 0

Abstract

An explosion occurred involving gas at subway construction site during morning rush hour.

Lessons

[None Reported]

8155 27 April 1995

Source : SEDGWICK LOSS CONTROL NEWSLETTER, ISSUE 2, 1995.
Location : Grangemouth, UK

Injured : 0 **Dead :** 0

Abstract

Explosion at the ethylene cracker which did not affect production.
[cracking]

Lessons

[None Reported]

1159727 April 1995

Source : ICHEME
Location : , UK
Injured : 2 **Dead :** 0

Abstract

One operator suffered a burned hand and two others were treated for shock, following a hydrocarbon fire at a chemical facility. A cracking furnace was being isolated, in preparation for de-coking and subsequent maintenance work, when the incident occurred.
The furnace was being isolated from the downstream process and the atmospheric vent valve opened. When the valve was fully opened, steam, as expected, was seen coming from the vent. Discoloured steam was then observed and a 'green distillate like material' was emitted from the atmospheric vent silencer. A 'bang' was heard and a fire was observed. The site emergency services were called.
The hydrocarbon fire burned itself out quickly, leaving small scaffolding fires on the furnace structure, which were dealt with by the emergency services.
Following the incident, it was identified that the block valve, which isolated the de-coking vent line from the cracked gas header, was passing. This allowed cracked gas and steam to enter the downstream pipework and de-coke drum, where steam and some hydrocarbon condensed. During normal operation, with the valve passing, a build up of liquids could have occurred.
The furnace was turned to atmosphere through this piping and steam flow lifted the liquids up and out of the atmospheric vent silencer. Liquids were ignited on the hot furnace surfaces.
Up to five tonnes of material was released in the incident.
[fire - consequence, burns, decommissioning, hot surface]

Lessons

1. The de-coking line should be positively isolated from the cracked gas header during normal operation.
2. Operating instructions for normal operation and for decommissioning should be updated in light of the incident. Operator training should also be reviewed.
3. Single line isolations, integrity of valves, locations of vents and valve operation should all be reviewed.
4. Review of the HSE's findings should be undertaken.

1173626 April 1995

Source : ICHEME
Location : , UK

Injured : 3 **Dead :** 0

Abstract

Three staff were affected by fumes in two separate episodes on a site where NaHS tanker loading took place. In the first episode two gatehouse staff complained of lachrymatory fumes during the afternoon. On checking it was found that during NaHS tanker loading, the tanker vent scrubber pump was not running. It was restarted but the lachrymatory fumes persisted well beyond the 30 minutes required to load a tanker.
A second, related, episode occurred at 18:30 that evening. The night-duty man was affected by fumes. At 20:00 the fumes were gone but the man reported sick the following day with symptoms typical of H2S exposure.
It was later discovered that a catchpot on the NaHS plant was being drained at 18:30. The procedure was to use breathing apparatus and drain the pot until gas came out as the only indication that the pot was clear of liquid. The drain line was 2 inches in diameter and the system pressure was 5 psi. At one time the drain discharged below the surface of liquid containing bleach in a sump but following plant modifications this was no longer the case. The night-duty man's exposure was attributed to the puff of H2S released in this operation.
[hydrogen sulphide, gas / vapour release, pump failure, road tanker, draining, people]

Lessons

Actions proposed were:
1. Modify the catchpot sight glass to allow it to be drained while still leaving a few inches of liquid as a seal;
2. Modify the drain line to allow it to dip into the sump;
3. Carry out the HAZOP study of the NaHS plant due in June 1995.

8409 25 April 1995

Source : ICHEME

Location : ,

Injured : 0 **Dead :** 0

Abstract

A gasoline spill. A threaded fitting on a storage tank of premium grade gasoline failed, resulting in the release of approximately 432 bbls. into the diked containment area.

It was found that the product receipt line between the tank valve and the tank sidewall had failed due to stress on the line from tank and/or pipeline settlement. The type of line in use had a history of failure; newer engineering standards call for use of a different pipe. Also the tank receipt line was not designed to allow for settlement.

[mechanical equipment failure, storage tanks]

Lessons

It is important for front-line staff to visually inspect facilities, particularly at facilities with low staff levels.

Practice and simulated drills help to ensure that company personnel, local fire/emergency personnel and support contractors work closely together in emergencies.

8096 21 April 1995

Source : THE GUARDIAN, 1995, APR 28,; THE TIMES, 1995, APR 28,; NEWSGRID 4-27
Location : Ukhta, RUSSIA

Injured : 0 **Dead :** 0

Abstract

Transportation. Rupture in a gas pipeline caused a huge fire ball. Cause attributed to the worn out state of the pipeline.
[fire - consequence]

Lessons

[None Reported]

8111 12 April 1995

Source : LLOYDS LIST, 1995, APR, 14,; HAZARDOUS CARGO BULLETIN, 1995, JUN.
Location : Dragos Voda, ROMANIA

Injured : 0 **Dead :** 0

Abstract

A rail transportation incident. A passenger train in collision with derailed freight train with rail tankers of gasoline. Fire burnt out two carriages.
[derailment, fire - consequence]

Lessons

[None Reported]

2482 11 April 1995

Source : SEDGWICK LOSS CONTROL NEWSLETTER, 2ND QUARTER, 1995.
Location : Edgeworthstown, County Longford, IRELAND

Injured : 0 **Dead :** 0

Abstract

A road transportation incident. A road tanker containing 20,000 litres of LPG came off the road at a bend into the village and ended in the front garden of a house. Gas leaked from the tanker and about an hour later ignited and destroyed the house.
[explosion, fire - consequence, damage to equipment]

Lessons

[None Reported]

2205 10 April 1995

Source : SEDGWICK LOSS CONTROL NEWSLETTER, 2ND QUARTER, 1995.
Location : Scarborough, Toronto, CANADA

Injured : 2 **Dead :** 0

Abstract

An explosion at a plastics producer plant injured 2 firemen and caused the evacuation of neighbouring schools and residents because of emissions of chemicals (phenol, formaldehyde, xylene).
[fire - consequence, injury]

Lessons

[None Reported]

8108 06 April 1995

Source : LLOYDS LIST, 1995, APR, 7,; EUROPEAN CHEMICAL NEWS, 17-23 APRIL 1995.
Location : Lillebonne, Rouen, FRANCE

Injured : 0 **Dead :** 0

Abstract

An explosion and fire badly damaged a vinyl acetate plant. Initial reports indicated high pressure in ethylene pipe iniated blast.
[fire - consequence, damage to equipment, processing]

Lessons

[None Reported]

2420 04 April 1995

Source : SEDGWICK LOSS CONTROL NEWSLETTER, ISSUE 2, 1995.
Location : Bourgas, Black Sea, BULGARIA

Injured : 1 **Dead :** 2

Abstract

Gas release from a pump on the catalytic cracking unit of this refinery. Fatality.
[catalytic cracker, gas / vapour release, refining]

Lessons

[None Reported]

8106 01 April 1995

Source : LLOYDS LIST, 1995, APR, 6.
Location : San Vicente Harbour, CHILE

Injured : 0 **Dead :** 0

Abstract

Spillage of 12,000 gallons of fuel oil into harbour.

Lessons

[None Reported]

8092 April 1995

Source : BEDFORDSHIRE TIMES AND CITIZEN, 1995, NOV 9.
Location : Great Barford, Bedfordshire, UK

Injured : 0 **Dead :** 0

Abstract

Pollution of river by 40 gallons of ammonium nitrate fertiliser killing 300 fish over a 750 metre stretch. The cause was attributed to a leak from a fibreglass tank which had to be emptied before a repair could be made. The company was fined £1000 (1995) with £631(1995) costs.
[ecological damage]

Lessons

[None Reported]

8384 31 March 1995

Source : ICHEME

Location : ,

Injured : 0 **Dead :** 0

Abstract

Flare knock-out drum overflow. During the start-up of the CDU/Hydrotreater units, light gasoline entered the flare system via a pressure control valve. The flooded flare knock-out drum spilled over into the seal of the flare and, from there, via the overflow of the water seal. Light gasoline spilled over into the oily-water system of the flare area and further downstream into the flare area trap. The oily-water drain system in the flare area filled up until product overflowed at various locations of the paving. It was found that the level controller on the gasoline fractionator reflux drum had failed. The basic cause was due to the high level alarm on the flare knock-out drum being overlooked because of many other alarms appearing during the start-up of the plant.
[environmental]

Lessons

Flare stack drums must receive regular operating personnel attention if potentially dangerous situations are to be avoided.
Indications from critical alarm functions are ideally separated from others of less importance, to assist operators at periods of high activity such as start-ups. Careful selection is necessary.