

PEPCON disaster

*Wikipedia is sustained by people like you. Please **donate** today.*

From Wikipedia, the free encyclopedia

The **PEPCON disaster** was an industrial disaster that occurred in Henderson, Nevada on May 4, 1988 at the Pacific Engineering Production Company of Nevada (PEPCON) plant. The chemical fire and subsequent explosions claimed two lives, injured about 372 people and caused an estimated US\$ 100 million of damage. A large portion of the Las Vegas metropolitan area (10 miles (16 km) away) was affected and several agencies activated disaster plans.



Contents

- 1 Background
- 2 The fire
- 3 The explosions
- 4 Fire department response
- 5 Damage assessment
- 6 References
- 7 Notes
- 8 External links

Background

The PEPCON plant was one of only two American producers of ammonium perchlorate, an oxidizer used in solid fuel rocket boosters, including the Space Shuttle Solid Rocket Boosters and military weapons. The other producer, Kerr-McGee, was located less than 2.4 kilometers (1.5 mi) away from the PEPCON facility, within the area that suffered some blast damage. In addition to ammonium perchlorate, the PEPCON facility also manufactured a line of pollution abatement equipment. After the Challenger Disaster on January 28, 1986, the United States government continued to contract PEPCON to produce ammonium perchlorate at pre-Challenger production levels. With the space shuttle program frozen, no government instruction dictating where to ship the product, and no mandated storage procedure or proper storage facilities for such large quantities of product, PEPCON stored almost all manufactured ammonium perchlorate on-site, in plastic drums on campus parking lots. An estimated 4000 tons of the finished product were stored at the facility at the time of the disaster.

The fire

One year after the disaster it was determined that the fire was started by a cigarette that had been discarded into a barrel of scrap ammonium perchlorate. The ammonium perchlorate rapidly burned. The fire is reported to have originated in or around a drying process structure in the PEPCON plant between 11:30 and 11:40. The steel frame with fiberglass walls and roof structure had been damaged in a windstorm and employees were conducting repairs using a welding torch at the time. The fire spread rapidly in the fiberglass material, accelerated by ammonium perchlorate residue in the area. As employees attempted to fight the fire with hose lines, the flames spread to 200-liter (55 gallon) polyethylene drums, containing the product, that were stored next to the building.

Employees' attempts to extinguish the fire were unsuccessful, and they abandoned their effort when the first of a series of explosions occurred in the 200-liter drums. The time between ignition and the first explosion has not been determined exactly; it was estimated at 10–20 minutes. When the control efforts were abandoned, most of the plant employees evacuated the area by running or driving away. About 75 managed to evacuate, leaving only the two who were killed in subsequent larger explosions. One of these victims, company comptroller Roy Westerfield, stayed behind to call the Clark County Fire Department. The other, plant manager Bruce Halker, was last seen unable to leave the area.

The explosions

The first of two major explosions occurred in the drum storage area. The fire continued to spread and reached the storage area for the filled aluminum shipping containers. This resulted in an even larger, second major explosion, about four minutes later. Very little fuel remained after the second explosion and the fire diminished rapidly, except for the flame plume created when the high pressure natural gas line beneath the plant was ruptured in one of the explosions. The gas line was shut off at 12:59 hours by the

gas company at a valve about a mile away, eliminating the fuel for this fire.

A total of seven explosions occurred involving various containers of ammonium perchlorate, with the two largest occurring in the drums, followed by the aluminum containers. These two explosions were measured at 3.0 and 3.5 on the Richter scale by the National Earthquake Information Center in Colorado, some 600 miles away. Over eight million pounds of perchlorate were consumed in the fire and explosions. A crater estimated at 15 feet (4.5 m) deep and over 200 feet (60 m) wide was left in the storage area.

Fire department response

The Fire Chief of the City of Henderson, who was leaving the main fire station, about 2.4 kilometers (1.5 mi) north of the PEPCON facility, spotted the huge smoke column. The Chief immediately ordered his units to be dispatched and headed toward the scene. As he approached within a mile of the plant, he could see a massive white and orange fireball, approximately 30m (100 feet) in diameter, and dozens of people running across the desert toward him.

As he approached the scene at 11:54, the first of the two major explosions occurred. The shock wave shattered the windows of his car and showered the Chief and his passenger with glass. The driver of a heavily damaged vehicle coming away from the plant advised the Chief of the danger of further, even larger explosions. With this information, the Chief turned around and headed back toward his station. About four minutes after the first major explosion, the second large explosion occurred. Witnesses reported that this explosion created a visible shock wave coming toward them across the ground. Several videos were made by people in the area, showing the movement of the shock wave.

The second major explosion virtually destroyed the Chief's car. The Chief and his passenger were cut by flying glass, but he was able to drive the damaged vehicle to a hospital to seek treatment. The windshields of the responding Henderson Fire Department fire engine were blown in, and the drivers and officers were injured by the shattered glass. The Henderson Fire Department was essentially totally incapacitated by the second major explosion. The injuries consisted of numerous cuts from flying glass, but did not require hospitalization. Recognizing the danger and futility of operations, no attempt was made to approach or to fight the fire.

Accounts by some witnesses living in the area 100 miles around the PEPCON described broken windows, collapsed power lines, and even some garage doors being blown off their hinges.

Damage assessment

Both the PEPCON plant and the nearby Kidd's Marshmallow manufacturing facilities were destroyed. Damage within a 1.5 mile (2.4 km) radius was heavy, including destroyed cars, structural damage to buildings and downed power lines. Within three miles there was extensive window breakage and moderate structural damage. Many structures had damage to suspended ceilings and overhangs, windows and doors, exterior details and cracked walls.

Damage extended for a radius of up to 10 miles (16 km). Buildings were damaged throughout Henderson including more than \$100,000 in damage to the main fire station and heavy structural damage to an adjacent warehouse. Hundreds of windows were shattered, doors were blown off their hinges, walls were cracked, and scores of people were injured by flying glass and debris. At Las Vegas's McCarran International Airport seven miles (11 km) away, windows were cracked and doors were pushed open. A Boeing 737 on final approach was buffeted by the shock wave.

Later analysis of the blast damage led to an estimated equivalent of 250 tons of TNT.^[1]

References

- J. Gordon Routley (1988). *Fire and Explosions at Rocket Fuel Plant Henderson, Nevada*
- Tom Dye, "Firm Makes Shuttle Fuel Ingredient", *Las Vegas Review Journal*, May 5, 1988
- Jack W. Reed, Sandia Labs, *Analysis of the Accidental Explosion at PEPCON*

Notes

1. ^ PEPCON Explosion DOD report summary by Jack W. Reed, William H. Zehrt

External links

- Western Electrochemical formerly known as PEPCON.
- Las Vegas Review-Journal special section on the 10th anniversary of PEPCON. Includes videos.
- Forensic animations used in court.
- Location of the PEPCON plant disaster via Google Maps.
- Video of Explosion on Google

Retrieved from "http://en.wikipedia.org/wiki/PEPCON_disaster"

Categories: [Disasters in Nevada](#) | [Industrial disasters](#) | [1988 disasters](#) | [Accidental explosion disasters in the United States](#) | [1988 in the United States](#)

Hidden categories: [All articles with unsourced statements](#) | [Articles with unsourced statements since June 2008](#)

- This page was last modified on 5 June 2008, at 11:10.
- All text is available under the terms of the GNU Free Documentation License. (See **Copyrights** for details.)
Wikipedia® is a registered trademark of the Wikimedia Foundation, Inc., a U.S. registered 501(c)(3) tax-deductible nonprofit charity.