



## Third Coast Industries Fire

Brazoria County, Texas May 1, 2002

On May 1, 2002, a huge fire destroyed the Third Coast Industries automotive fluids blending and packaging plant in rural Texas, southeast of Houston.

The blaze began late at night, when none of the plant's 100 workers were present. The fire burned for more than 24 hours, consuming 1.2 million gallons of combustible and flammable liquids, including anti-freeze, motor oil, cleaners, solvents, brake fluid, transmission fluid, windshield wiper fluid, and power-steering fluid.

First established in 1987, the plant had grown over the years to include 74 storage tanks and four warehouses that routinely held thousands of tons of petroleum products. Nonetheless, the multi-acre facility had no sprinklers or other fire protection systems.



Storage tanks at Third Coast collapsed from the intense fire which burned for over 24 hours.

The fire forced the evacuation of scores of nearby residents, destroyed an adjacent small business, caused the temporary closure of a local school, and left neighboring homes with heavy soot and smoke damage. Some 900,000 gallons of liquid waste and 2,500 cubic yards of contaminated soil and debris needed to be removed from the Third Coast site for disposal. The facility itself was completely destroyed and was not rebuilt.

### SMALL FIRE SPREAD TO CONSUME PLANT

At 1:20 a.m. on May 1, a lone security guard discovered a small fire on a worktable used for packaging liquid products. The table was located outdoors between two warehouses. The guard responded by placing a 911 emergency call.

First to arrive was the chief of the Pearland Volunteer Fire Department, who reached the plant about seven minutes after the call. He found that the small fire had already

grown into a flaming pool of liquid 65 to 80 feet wide and had engulfed two semi-trailers full of empty drums. In addition, flames had surrounded a 6,000-gallon tank wagon containing synthetic motor oil, heating the oil and igniting flammable vapors that vented from the tank. The fire chief reported hearing boiling and crackling sounds from burning heavy oil along with thumps and small explosions as the fire spread to additional containers of liquid.

The closest water source was located over one mile from the plant. In addition, the facility was not designed to contain the contaminated runoff that could result from fighting the fire with water. Fire officials therefore decided they had no choice but to let the plant burn, and they focused on protecting nearby homes from destruction.

The intense fire caused the 6,000-gallon tank wagon to fail and release its contents. The heat ultimately melted the tank into several puddles of aluminum. Meanwhile, flames surrounded several 2,000-gallon blending tanks. The tank supports buckled under the heat, toppling the vessels and spilling their contents into the fire as well. Pipelines from nearby storage tanks also ruptured, further fueling the blaze.

The burning fluids from the drums, tank wagon, and the blending tanks flowed unhindered toward the tank farm, a separate diked area where bulk storage tanks held additional combustible liquids. But the dike wall was cracked and

### COMBUSTIBLE LIQUIDS

At the suspected origin of the fire, workers typically handled flammable and combustible liquids, such as cleaning solvents and light oils. These liquids had flash points below 200°F, and in some cases below 100°F, and could have been ignited by contact with hot motor surfaces or lights. However, about 98 percent of the materials at the Third Coast plant were classified as "Combustible IIIB" — materials that must be heated above 200°F before they will support a flame. While those combustible liquids are often regarded as a less serious fire hazard, once heated up — as they were during the Third Coast blaze — they burn as fiercely as other more easily ignited substances. The Board concluded that fire codes and workplace safety regulations should apply more controls to combustible liquid storage and handling. In the aftermath of the Third Coast fire, the Board communicated its concerns in correspondence to the U.S. Occupational Safety and Health Administration (OSHA).

broken, and it failed to stop the flaming liquid from entering the tank farm and collecting around the storage tanks. The intense heat caused some tanks to burst and others to collapse and break open. Eventually, fire also spread to the plant's other warehouses, breaching their metal walls and consuming all the remaining fuel at the site. A day after it began, the fire finally subsided to a manageable size, allowing firefighters to extinguish remaining hot spots with foam and water.

Due to the extent of the damage, investigators could not determine what had ignited the initial small fire. They surmised that the fire could have been started by a flammable liquid contacting the hot surface of a motor or light, or by a solvent-soaked rag combusting spontaneously. Arson was not ruled out.

### PLANT NOT DESIGNED TO CONTAIN FIRES

Whatever started the blaze, CSB's investigation found that the Third Coast facility lacked fire detection and suppression equipment and was not designed to contain the spread of even a small fire. The plant had no smoke or heat detectors, sprinklers, or fire alarms, nor was the plant designed to contain or safely drain burning liquids. There was no supply of firefighting water at the plant. Blending tank supports were not fireproofed. The plant did have a dike around the tank farm, but the walls were broken in places and ineffective. Within the tank farm, storage tanks were positioned too close to each other and to dike walls. Finally, warehouse buildings lacked firewalls and were built too close together.

The Board said Third Coast should have systematically assessed how fire would affect the facility, its employees, the community, and the environment. Such an assessment likely would have led to the installation of fire protection systems that could have prevented the total loss of the plant.

### FACILITY NOT COVERED UNDER ANY FIRE CODE

Texas has no statewide fire code. In 1997, Brazoria County gained the authority to adopt its own fire code but had not acted by the time of the fire in May 2002. Although some Brazoria County cities already had fire codes in place, Third Coast Industries was not covered since it was located on unincorporated county land.

Consensus fire codes — like those of the National Fire Protection Association (NFPA) — are used in most other

states and localities to promote the safe design and operation of industrial facilities. The CSB found that if a fire code had been in place as the Third Coast facility was constructed, the company would have been required to take various measures that would have lessened the severity of the 2002 fire. A fire code would have required the company to analyze and reduce fire hazards through measures like installing suppression systems, ensuring the availability of water, limiting product inventories, using fire-resistant building materials, and isolating bulk storage areas.

While noting the utility of such consensus fire codes, the CSB did find that the fire codes lack some useful safety provisions. For example, the NFPA combustible liquid code does not have specific requirements for fire detection equipment and does not require combustible liquid storage tanks to have pressure-relief devices, which can prevent tanks from exploding when engulfed in fire.

### RECOMMENDATIONS

On March 6, 2003, the Board approved its final report on the Third Coast investigation and issued recommendations designed to reduce the likelihood of similar fires elsewhere.

#### To Brazoria County

The Board recommended that Brazoria County make unincorporated areas subject to a mandatory fire code, such as the National Fire Protection Association code or the International Fire Code. (Five days after the Board issued this recommendation, Brazoria County supervisors voted to adopt the International Fire Code for all unincorporated areas.)

#### To Third Coast Terminals

The CSB called on Third Coast Terminals, parent company of Third Coast Industries, to audit its remaining production facility in the nearby city of Pearland, Texas, to ensure that it has required fire suppression and control systems.

#### To NFPA and the International Code Council

The Board recommended that the organizations revise their fire codes to specify requirements for fire detection equipment at facilities that are not staffed around the clock. The CSB also recommended that the code councils narrow existing exemptions for combustible liquids and expand requirements for performing fire protection analyses.

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