Three Significant Ammonium Nitrate Accidents

TEXAS CITY, 16th APRIL 1947

Deadliest industrial accident in US history. Fire on board SS Grandcamp led to explosion of some 2000 tonnes of Ammonium Nitrate. Chain reaction explosions occurred on other ships and at oil storage facilities. At least 581 fatalities. Windows were shattered 60 kilometres in Houston.

BASF PLANT OPPAU, GERMANY, 21st SEPTEMBER 1921

Ex-WWI explosives factory now making fertiliser – a 50/50 mixture of ammonium sulphate and ammonium nitrate called “mischsalz”. This highly hygroscopic mixture had the disadvantage of clogging together under the pressure of its own weight during storage. It was common practice to loosen the “aggregated” product by firing explosives in holes drilled using a jumper bar in the hardened mass. Until the day of the accident over 20,000 firings were carried out in the “mischsalz” without any sign of accident being observed. The explosion was heard in Munich, 275 km from the plant and caused panic among the masses. Material damage was reported at several dozens of kilometres away from the accident site. A dark green cloud overcast the skies of Ludwigshafen and Mannheim. The entire region was then covered in thick smoke that along with the interruption of telegraph and telecom services made rescue operations even harder.

The official human casualty reported included 561 deaths, 1,952 injured and 7,500 people left homeless. Among the victims include passengers from three worker trains arriving on site for change of shift. Several children on their way to school were injured, boats on the Rhine river sustained damage with numerous sailors also injured. Eye injury was observed in several cases. Around 80% of the buildings in Oppau were destroyed.

AZF TOULOUSE DISASTER, 21st SEPTEMBER 2001

On 21st September 2001 a fertiliser factory containing ammonium nitrate storage facilities exploded. The factory, owned by Total, which employed 470 persons, was located 3 km from the centre of Toulouse on an island of the Garonne River surrounded by an (urban) environment. The explosion produced a crater measuring about forty meters in diameter and 7 m in depth related to the natural ground.

The most important consequences were:

1. Explosion equivalent to 3.4 on Richter scale. 22 people were killed on the factory site and 8 persons outside.
2. In total 2500 persons were injured. Various structures were distorted within a radius of 400 to 700 m. Buildings were damaged within a radius of 700 to 1500 m and many windows broken even at a larger distance.
3. In total about 30,000 buildings were touched of which 10,000 heavily damaged including schools, universities and a hospital. Transportation facilities and electrical power lines and telephone communication were also disrupted. The financial consequences were estimated to be 2.5 billion euros.

Outside France, publicity was limited by the recent 9/11 attack in New York.

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April 2013