

1: Washburn A Mill Explosion, | MNopedia

"The Great Mill Explosion" is set in Minneapolis, MN in The historical event covered is the explosion and subsequent fire destroying several flour mills in downtown Minneapolis.

Died 2nd April He had 8 siblings. Father of Ernest Jarman who worked with his father at Faversham and survived the blast. Listed on the Chilham War Memorial. Born and enlisted Dartford, resident Crayford, Kent. Born Crayford, Kent. In , he was a house painter living in Crayford with his wife Maud Annie nee Kitchener [m. In he was gardener living in Challock with his wife Agnes Mary Scott [m. She had previously been married to Walter Bloomfield in in Wye and widowed. Three more children followed: Ernest, Molly and Bertha Kerrison, and his widow had a daughter Emma born in early Employed by the explosives loading company. Buried in the Mass Grave, Faversham. Husband of Nellie Legg who died 31st July , aged Deacon of Eythorne Baptist Church. John the Baptist churchyard, Eythorne, Kent. In the census he was a plasterer living at 66 Rhodes Street, Barnsbury, Lower Holloway, London N, with his second wife Alice Linger nee Clements ; the had 5 children and there were a further 5 children from his first marriage to Jane Linger nee Ley. In the census he was aged 3, born Peckham, Surrey, resident with his parents at 24, Fairfield East, Kingston on Thames. Born Boughton, Kent. In he and his brother Reginald were in service as domestic gardeners in The Square, Chilham, living with the Myers family.

2: Mill City Museum and site of "The Great Mill Disaster" – Minneapolis, Minnesota - Gastro Obscura

The "Note to Readers" comments that the mill explosion happened in May of 1917. A trial was held to determine if the fire or the explosion was first & if the insurance companies would have to pay out for this incident!

The tiny Kentish settlement of Uplees lies a dead-flat mile northwest of the village of Oare, which in turn clings to the muddy edge of Faversham, the local market town. Here on the north coast of the county, all is wind-hobbled wetland and sucking acres of tidal silt. The landscape of Great Expectations – think of Pip shivering on the marshes at the Magwitching hour – leaches into Joseph Conrad country, an ancient estuarine expanse recalling Roman invasion, medieval industry, prison hulks and malaria. If you strike out west from Faversham, you can see for miles in all directions: From the mid-th century till the early decades of the 20th, Faversham and environs were part of the industrial archipelago that produced most of the explosives used by the British military. The remains of the earliest powder works may still be seen, in alarming proximity to the town centre. And in woods adjacent to Oare you will find the stabilised ruins of a later factory, most likely dating from the 18th century. A decade ago this site was furnished with wooden walkways and a small heritage centre, and most days now there are visitors to be glimpsed among the trees, exploring low brick sheds and staring up aghast at blast walls and precipitous revetments. I have been walking this ruin-strewn landscape for close on a couple of decades. When I first moved to Kent from Dublin in my 20s, I was stuck fast in depression and solipsism, quite unable to see that the mundane rural and coastal scenery of the southeast was still fraught with reminders of garish and violent history. Slowly I came to my senses, among defunct entertainments at Margate and Herne Bay, monumental military remains at Dungeness and Grain, and the industrial phantoms west of Faversham. Their grey persistence was oddly curative. I woke up to the stories sunk in the land, and in time ventured further west along the Swale, the body of water that separates the Kent coast from Sheppey. Here the marsh always looks scattered with fragments of mirror, small lakes and drainage ditches that make it hard to reach the few military-industrial relics left. Now and then a heron will panic at my approach and labour up the air to lodge amid the rare verticals in this super-flat scene: The land north of Uplees is a nature reserve now, but a century ago it was the site of a vast and teeming explosives factory, soon to be the locus of one of the worst industrial accidents in British history. It rained hard and long on the marshes of north-east Kent in the spring of 1917. Towards the end of March the downpour stopped and on the 29th a snowstorm covered much of the country, badly affecting telegraph and telephone communications. By Friday the 31st, as the snow began to melt, the land south of the Swale was comprehensively sodden. Of special concern were the quantities of TNT and ammonium nitrate – these were combined at the plant to produce amatol, for use in shells and bombs – packed into magazines or, when the buildings were full, left out in the open and protected with tarpaulins of green canvas. Still, such congestion was to be expected, and at least the Explosives Loading Company, which ran the plant, was not shirking out here on the marshes. Cooper-Key declared himself satisfied with the general condition of the factory, and left to file his report. It seems the major had not noticed, in the course of his inspection, the pile of empty TNT bags tucked against the north wall of building no. 1. In the early hours of Sunday 2 April, soldiers and civilian guards made their usual rounds of darkened sheds and silent machinery, and came across an incipient fire between the TNT store and a nearby boiler house. It had been caused by sparks from a chimney fitted with an inadequate arrester. We must assume the unseen arc and fall of another spark occurred late in the morning, in bright sunshine, and this time it reached the pile of bags, impregnated with TNT dust. It was shortly after noon when the foreman of a local contractor, having spotted the first flames, put his head in at the door of the canteen and said:

3: Looking back at the Washburn A Mill explosion | MinnPost

Mill City Museum is a Minnesota Historical Society museum in Minneapolis. It opened in built in the ruins of the Washburn "A" Mill next to Mill Ruins Park on the banks of the Mississippi River.

Terminology[edit] If rapid combustion occurs in a confined space , enormous overpressures can build up, causing major structural damage and flying debris. The sudden release of energy from a " detonation " can produce a shockwave , either in open air or in a confined space. If the spread of flame is at subsonic speed, the phenomenon is sometimes called a " deflagration ", although looser usage calls both phenomena " explosions ". Dust explosions may be classified as being either "primary" or "secondary" in nature. Primary dust explosions may occur inside process equipment or similar enclosures, and are generally controlled by pressure relief through purpose-built ducting to the external atmosphere. Secondary dust explosions are the result of dust accumulation inside a building being disturbed and ignited by the primary explosion, resulting in a much more dangerous uncontrolled explosion inside the workplace. Historically, fatalities from dust explosions have largely been the result of secondary dust explosions. Aftermath of explosion at Imperial Sugar in Port Wentworth, Georgia , US Many common materials which are known to burn can generate a dust explosion, such as coal and sawdust. In addition, many otherwise mundane organic materials can also be dispersed into a dangerous dust cloud, such as grain , flour , starch , sugar , powdered milk , cocoa , coffee , and pollen. Powdered metals such as aluminum , magnesium , and titanium can form explosive suspensions in air, if finely divided. Explosive dust can arise from activities such as transporting grain, and grain silos have often been demolished violently. Mining of coal leads to coal dust , and flour mills likewise have large amounts of flour dust as a result of milling. A gigantic explosion of flour dust destroyed a mill in Minnesota on May 2, , killing 14 workers at the Washburn A Mill and another four in adjacent buildings. Since the advent of industrial productionâ€™scale metal powder â€™based additive manufacturing AM in the s, there is growing need for more information and experience with preventing dust explosions and fires from the traces of excess metal powder sometimes left over after laser sintering or other fusion methods. Enclosed paper mill areas subject to such dangers commonly maintain very high air humidities to reduce the chance of airborne paper dust explosions. In special effects pyrotechnics , lycopodium powder [citation needed] and non-dairy creamer [4] are two common means of producing safe, controlled fire effects. To support rapid combustion, the dust must consist of very small particles with a high surface area to volume ratio , thereby making the collective or combined surface area of all the particles very large in comparison to a dust of larger particles. Dust is defined as powders with particles less than about micrometres in diameter, but finer dust will present a much greater hazard than coarse particles by virtue of the larger total surface area of all the particles. Concentration[edit] Below a certain value, the lower explosive limit LEL , there is insufficient dust to support the combustion at the rate required for an explosion. Determining the minimum explosive concentration or maximum explosive concentration of dusts in air is difficult and consulting different sources can lead to quite different results. It depends on many factors including the type of material used. Oxidant[edit] Typically, normal atmospheric oxygen can be sufficient to support a dust explosion if the other necessary conditions are also present. High-oxygen or pure oxygen environments are considered to be especially hazardous, as are strong oxidizing gases such as chlorine and fluorine. Also, particulate suspensions of compounds with a high oxidative potential, such as peroxides , chlorates , nitrates , perchlorates , and dichromates , can increase risk of an explosion if combustible materials are also present. Sources of ignition[edit] There are many sources of ignition, and a naked flame need not be the only one:

4: Washburn 'A' Mill Explosion Memorial - Find A Grave Memorial

Mill City Museum and site of "The Great Mill Disaster" Huge chunks of granite landed as far as eight blocks away, windows broke for miles, and the explosion was felt across the city. People.

Today, it is the ongoing industrial disaster at the Fukushima Daiichi nuclear power plant complex in Japan. Though the nuclear disaster in Japan is still unfolding, it has a good chance of surpassing Chernobyl as the single greatest industrial disaster nuclear of all time, and quite possibly will go down as the single greatest industrial disaster of any kind, when it is all said and done. Each era of US manufacturing creates new industrial hazards. Prior to the advent of nuclear power and large chemical manufacturing, the largest industrial disasters in the US tended to be caused by the technology of the times. Unfortunately, there is no shortage of them. The boiler in the press room and machine shop had exploded. Witnesses claimed the explosion lifted the building off its foundation and it collapsed into a pile of rubble, trapping those inside. Firemen responding to the scene had to dig to try to find survivors, including many young boys. One boy was buried in the rubble for 33 hours before finally being rescued, but he died a short time later. In total, sixty-three people were killed, while about seventy were injured. The cause of the explosion was attributed to the boilers "which were still relatively new pieces of equipment in , and prone to disastrous explosions. The owners claimed it was a new boiler but others stated the boiler was an old one, taken from a ship and patched together. An estimated workers were killed, and injured. The Pemberton Mill, built in , was a five story building, feet long and 84 feet wide. The original owners sold the mill, and the new owners jammed more machinery into their factory, attempting to boost its profits. Owner George Howe escaped as the structure was falling. Dozens were killed instantly, and more than six hundred workers, many of them women and children, were trapped in the twisted ruins. Flames raced across the cotton waste and splintered wood "some of it soaked with oil. One trapped man cut his own throat rather than be consumed by the approaching flames; he was rescued, but died from his other injuries. As the flames spread, and now the terror of fire threatened those waiting to be saved. One trapped worker, Mary Bannon, handed her pay envelope to a friend and asked that it get to her father. Rescuers, physicians, families of the trapped victims and spectators were all driven back by the fire. The collapse of the Pemberton Mill was determined to have been caused by a number of preventable factors, including the deliberate ignoring of safe load limits, adding extra heavy machinery into the already crowded upper floors of the factory, and substandard construction. The mill was rebuilt and still stands today. Before the invention of dynamite by Albert Nobel, it was one of the primary explosives used for excavation and mining activities. Nitroglycerine is also highly unstable and reactive, and can explode with minor changes in heat or pressure, and even the slightest shock. Prior to , nitroglycerine was shipped in liquid not solid form. This led to one of the greatest industrial accidents of early California. In April 16, , three crates of nitroglycerin were shipped to California for the Central Pacific Railroad. They wished to experiment with its blasting capability, to speed the construction of the 1,foot Summit Tunnel through the Sierra Nevada, for the building of the Transcontinental Railroad. The crates exploded, destroying a Wells Fargo office in San Francisco, and killing 15 people. The force of the explosion destroyed an area of 40 to 50 feet, including most of the Wells Fargo office and surrounding businesses. Windows were blown out as far as half a mile from the blast. For up to a quarter of a mile away, people thought they were experiencing an earthquake. The crates containing the liquid nitroglycerine had somehow made it across the Pacific Ocean to arrive at the docks of San Francisco. Someone noticed the crates were leaking. The crates were sent to the Wells Fargo Office, and put into the back storage room with other unclaimed freight. Soon, two unfortunate freight clerks went to examine the leaking and unclaimed package. When last seen, they were standing near the crates holding tools, ready to open it. No doubt the vibration of opening one of the crates with hammers or crowbars detonated the nitroglycerine. Fragments of human remains were found scattered in many places. A piece of human vertebrae was blown over the buildings on the east side of Montgomery Street, where it was picked up on Leidsdorff street. A human arm struck the third story window of the building across the street. This tragedy led to a complete ban on the transport of liquid nitroglycerin in California. A newspaper description of the tragic event

stated: On May 2, The mill was rebuilt with updated technology and the explosion led to new safety standards in the milling industry. The first Washburn A Mill, built by C. Washburn, in , was declared the largest flour mill in the world upon its completion. On May 2, , a spark ignited airborne flour dust within the mill, creating an explosion that demolished the Washburn A, and killed 14 workers instantly. Known as the Great Mill Disaster, the explosion made national news and served as a focal point that led to reforms in the milling industry. In order to prevent the buildup of combustible flour dust, ventilation systems and other precautionary devices were installed in mills throughout the country. By , a new Washburn A Mill opened as the largest flour mill in the world. New England was an especially productive area of the country for shoe manufacturing. One of the largest shoe manufacturers was the R. Grover shoe factory, located in Brockton Massachusetts, a town that employed about 35, shoe workers, at the time. The Grover Shoe Factory was a wooden building, shaped like a letter E, that occupied half a city block. Business had been good enough of late that Grover decided to add a fourth floor to the building to increase production. At the time, most industrial facilities had large coal-fired steel boilers installed in brick boiler houses, which were usually attached to the factory. These huge boilers fed steam to radiators which heated the plant. At the Grover plant, when the fourth floor was added, the original boiler was replaced by a larger one, and the old boiler, 17 feet long and six feet in diameter, was left in place as a backup. Reluctantly because the Grover plant engineer did not trust it. The new boiler had to be flushed out as part of its regular maintenance, so the old boiler was put back into service, temporarily. On that cold damp Monday, before day shift workers arrived, the engineer and his boiler plant workers fed coal into the old boiler and fired it up. He called the plant engineer who assured him everything was fine. A few minutes later, on March 20, , the old boiler exploded, rocketing up through three floors and the roof. The flying boiler knocked over an elevated water tower at one end of the building, and its full tank smashed through the roof, causing one end of the building to immediately collapse. The floors pancaked down and the walls fell in on the workers inside the building. Many workers who survived the initial explosion and collapse were trapped by broken beams and heavy machinery. The wooden floors, treated nightly with linseed oil to keep the dust down, burned quickly. Firefighters and local citizens were able to lift some of the wreckage and rescue some workers before the flames reached them. But, when it seemed the disaster could get no worse, barrels of highly volatile naphtha, stored in a wooden shed directly behind the boiler house, exploded, throwing sheets of flame onto the wreckage and driving rescuers away. Between and workers were in the factory at the time of the explosion. Workers in the sections still standing escaped down stairways or climbed to the roof; others had to jump from windows because the explosion had knocked some fire escapes off the building. About workers escaped unharmed, and were injured. But 58 workers were killed. Due to the extreme heat of the fire, only a few bodies could be positively identified. Police later related the story of a worker so dazed that he left the scene, applied for a job at another shoe factory, worked all day, then went home to find his family mourning him. The plant engineer was among the dead. What caused the old boiler to explode was never proven. It appears it simply failed under the repeated stress of years of operation. Engineers estimated the force of the boiler explosion as equal to pounds of dynamite. By , some , boilers were in service throughout the USA, with over boiler explosions since Boiler inspections were rare, and operating guidelines almost nonexistent. The Grover disaster brought new cries for improved industrial safety. A Board of Boiler Rules was formed, drafting a simple three-page set of rules. Massachusetts passed one of the first boiler inspection laws, in The Massachusetts laws eventually led to passage of a national boiler safety code. Water cribs are offshore structures that collect water from close to the bottom of a lake to supply a pumping station onshore. The temporary water crib was located a mile and a half off shore in Lake Michigan, and was being used to construct a new submarine water tunnel to Chicago. There were about 95 men working on the crib when the fire began, in a dynamite magazine stored in a small out building. This then set fire to the wooden dormitory that housed the tunnel workers. With literally nowhere to run to safety, 46 workers survived the fire by jumping into the lake and climbing onto ice floes on the frozen lake. However, about 60 men died, with 29 men burned beyond recognition. Most of the remaining men drowned or froze to death in the lake, and were not recovered. One of the workmen made his way through the smoke to a telephone that communicated with the shore station. His frantic call awakened the drowsy attendant on shore who heard the following call for

THE GREAT MILL EXPLOSION pdf

help: On shore, through the fog, the flames of the blaze could be seen rising from the water crib. The crew of the tugboat Morford made a heroic effort to save the men and fought through the ice, getting as close to the site of the fire and explosion as they could get.

5: Mill City Museum - Wikipedia

Note: Citations are based on reference standards. However, formatting rules can vary widely between applications and fields of interest or study. The specific requirements or preferences of your reviewing publisher, classroom teacher, institution or organization should be applied.

6: "The ghost of an awful energy" " the great Kent explosion of | Books | The Guardian

The Paperback of the The Great Mill Explosion by Joann A. Grote at Barnes & Noble. FREE Shipping on \$ or more!

7: - The Great Mill Explosion (American Adventure (Barbour)) by JoAnn A Grote

The mill exploded when flour dust in the air inside it ignited. The explosion claimed 18 lives, decimated the surrounding area, and brought instant notoriety to Minneapolis. The tragic explosion led to reforms in the milling industry.

8: Dust explosion - Wikipedia

Photograph altered by artist to recreate the Washburn A Mill explosion, In a matter of seconds, a series of thunderous explosions "heard ten miles away in St. Paul" destroyed what had been Minneapolis' largest industrial building, and the largest mill in the world, along with several adjacent flour mills.

9: Overview - Washburn 'A' Mill Explosion - LibGuides at Minnesota Historical Society Library

A dust explosion is the rapid combustion of fine particles suspended in the air, often in an enclosed location. stereograph rendering of the Great Mill Disaster.

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