

Tank and Petroleum Use Mishaps

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By learning about the misfortunes of others, it is STI's hope to educate the public by creating a greater awareness of the hazards with storage and use of petroleum and chemicals. Please refer to the many industry standards and to the fire and building codes for further guidance on the safe operating practices with hazardous liquids. Thanks and credit for content are given to Dangerous Goods-Hazmat Group Network.

<http://groups.yahoo.com/group/DangerousGoods/>

USA, CO, DENVER

APRIL 22 2014.

OIL AND GAS SPILL REPORT FOR APRIL 21

The following spills were reported to the Colorado Oil and Gas Conservation Commission in the past two weeks.

Information is based on Form 19, which operators must fill out detailing the leakage/spill events. Any spill release which may impact waters of the state must be reported as soon as practical. Any spill of five barrels or more must be reported within 24 hours, and any spill of one barrel or more which occurs outside secondary containment, such as metal or earthen berms, must also be reported within 24 hours, according to COGCC rules. Spills and leaks are typically found during routine maintenance on existing wells, though some actual "spills" do occur among the 19,000-plus wells in the county.

- Bayswater Exploration & Production, reported that on April 2, equipment failed at a tank battery in Windsor. A water leg was lost in a separator and about 23 barrels of oil were spilled. The spill was contained within the berm and about 13 barrels of oil were recovered with a vacuum truck. The company re-leveled the separator to remove slight slope towards the water box end.
- Noble Energy Inc., reported that on April 7, a water vault was found leaking at a well in LaSalle. The company shut in all equipment and began remediation. It is unknown how much oil and water were spilled and none were recovered. The company will continue to check water vaults to determine leaks and replace the vaults.
- Noble Energy Inc., reported that on April 9, it was determined that flow lines near LaSalle, Kersey and Keenesburg had developed leaks. The crews shut in all equipment and began remediation. It is unknown how much oil and water were spilled in the three areas and none were recovered. The company will continue to check flow lines to determine leaks.
- Bonanza Creek Energy Operating Company LLC, reported that on April 11, the crew was relocating two concrete water vaults when they noticed a historical produced water release at a tank battery in Kersey. The release occurred inside secondary containment. The amount of water spilled is to be determined and none has been recovered. The crew removed the water vaults and will excavate the impacted soil to take to a disposal facility. The company will continue to monitor and inspect water vaults.

<http://www.greeleytribune.com/news/11089812-113/reported-spill-company-oil>

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USA, WI, GREEN BAY

APRIL 22 2014.

MAN RESCUED FROM FUEL STORAGE TANK

Nathan Phelps

Firefighters rescued a man from inside a large fuel storage tank Monday.

A worker at U.S. Oil Co. tank farm at 1075 Hurlbut Court collapsed in a gasoline storage tank, according to the Green Bay Metro Fire Department. He was transported to a local hospital, but his condition was not known Monday afternoon.

Green Bay Metro Fire Department crews were called to the tank farm just after 11 a.m. Their rescue was successful, although a floating floor inside the tank that moves up and down with the gasoline to prevent the buildup of potentially explosive vapors created additional challenges.

"We had to send personnel down into the tank and packaged him up in a Stokes basket, which is a rescue device, and then brought him up from the floating roof on to the roof of the tank," Battalion Chief Rob Goplin said. "Then we brought him to one of our ladder trucks and brought him down to the ground and transported him."

The department has firefighters trained in technical rescues, and a number of those people were involved in Monday's rescue. "We train for any rescue like this ... where it's beyond your normal call where you have to use ropes, perhaps pulleys, and it includes a confined space with a hazardous material," Goplin said. "We train for all those scenarios and this one kind of put all of those hazards into one incident."

He described this type of rescue as extremely unusual. "This is a very rare type of incident," said Goplin, who has been with the department for nearly 17 years. "In my time on the department we have not had an incident like this involving one of those tanks before."

Firefighters had to wear respiratory protection because of conditions in the tank.

http://www.greenbaypressgazette.com/article/20140421/GPG0101/304210322/Man-rescued-from-fuel-storage-tank?nclick_check=1

AUSTRALIA, NEW SOUTH WALES, DUBBO

APRIL 22 2014.

FUEL LEAK BLOCKS CBD ACCESS AT DUBBO

Mark Rayner

Macquarie Street was blocked for more than an hour yesterday afternoon as emergency services dealt with a potential fuel leak.

Dubbo Fire and Rescue were called before 1.30pm yesterday afternoon after the liquid coming from a water tap at the rear of the premises smelt like fuel.

Fire officers investigated and found a pit in Macquarie Street that was leaking and triggered a low explosive limit. Police from Orana Local Area Command were called and a decision was made to close the street.

Macquarie Street was blocked to traffic between Church Street and Talbragar Street, while approximately 50 people were evacuating from buildings between Church Street and the intersection in front of Riverdale Shopping Centre, with the exception of the Amaroo Hotel, Mr Bean's Coffee Emporium and Riverdale.

Fire and Rescue and Dubbo City Council determined the leak at the front of the building had brought up fuel that had then led to the strong scent of fuel at the back of the property. The leak was fixed by replacing a washer and all traces of the fuel disappeared.

Dubbo Fire and Rescue station officer Nick Beattie said while it was a relatively easy fix, it took a long time to trace the problem back to the cause.

"The previous occupant of the premises was a car dealership which had fuel bowsers and it appears this water leak has brought up some residual fuel. The problem was first detected at a tap at the back of the premises which smelt like pure fuel but the cause was at the front of the property.

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“It took a fair bit of investigating to actually find the cause of the fuel leak.”

Shortly after 3.30pm, council staff and the fire brigade were satisfied the threat had been removed. The southbound lane of Macquarie Street was reopened and by 3.45pm both lanes were open to traffic.

Station Officer Beattie said council will continue to investigate the problem today, with Fire and Rescue also liaising.

“Dubbo City Council will look for the exact source of the fuel, with the knowledge that there were petrol tanks at the premises,” he said.

The Environmental Protection Authority were also alerted to the threat and were satisfied with how it was handled.

<http://www.dailyliberal.com.au/story/2231570/fuel-leak-blocks-cbd-access-at-dubbo-photos/?cs=111>

USA, W.VA, BELLE

APRIL 22 2014.

CHEMICAL LEAK REPORTED AT DUPONT PLANT IN BELLE

The DuPont Co. Chemical plant in Belle had a small chemical leak late Monday afternoon, a 911 dispatcher said.

Employees reported a small leak of N-dimethylacetamide, also known as DMAC, according to a Kanawha County Metro 911 dispatcher. A chemical spill alarm went off at the plant just before 5 p.m, the dispatcher said.

The dispatcher said that the leak does not pose any danger to the public.

Kelley Gillenwater, spokeswoman for the state Department of Environmental Protection, said officials believe more than a pound but not a “large amount” of the chemical spilled. Officials are not sure the exact amount of the chemical spilled.

The spill has been stopped.

The chemical was contained within Dupont’s secondary containment system, she said.

Gillenwater said the chemical is a liquid but could have been released as a vapor.

“It has to do with a tank that became pressurized and the material came out a vent or release valve,” she said.

Gillenwater said the DEP’s emergency response unit has been in constant contact with DuPont, but she did not believe DEP officials were on the scene. The DEP was first notified of the leak at about 4:20 Monday afternoon.

She said that DuPont is investigating the cause of the leak.

DMAC is colorless with a faint ammonia-like odor, according to product safety information provided by DuPont. The chemical is used to prepare other chemicals for industrial applications. The chemical is harmful if inhaled, harmful in contact with skin and may be harmful if swallowed according to its Material Safety Data Sheet, posted on DuPont’s website. It is biodegradable and not toxic to aquatic life, according to the MSDS.

<http://www.wvgazette.com/article/20140421/GZ01/140429879/1101#sthash.T36pcFjB.dpuf>

USA. TX, DALLAS

MAY 23 2014.

CSB ONGOING INVESTIGATION EMPHASIZES LACK OF PROTECTION FOR COMMUNITIES AT RISK FROM AMMONIUM NITRATE STORAGE FACILITIES; FINDS LACK OF REGULATION AT ALL LEVELS OF GOVERNMENT

Today the CSB released preliminary findings into the April 17, 2013, West Fertilizer explosion and fire in West, Texas, which resulted in at least 14 fatalities, 226 injuries, and widespread community damage. Large quantities of ammonium nitrate (AN) fertilizer exploded after being heated by a fire at the storage and distribution facility. The CSB’s investigation focuses on shortcomings in existing regulations, standards, and guidance at the federal, state and county level.

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The investigative team's presentation will occur this evening at a public meeting in West, Texas, at 5:30 pm CDT.

CSB Chairperson Rafael Moure-Eraso said, "The fire and explosion at West Fertilizer was preventable. It should never have occurred. It resulted from the failure of a company to take the necessary steps to avert a preventable fire and explosion and from the inability of federal, state and local regulatory agencies to identify a serious hazard and correct it."

The CSB's investigation found that at the state level, there is no fire code and in fact counties under a certain population are prohibited from having them. "Local authorities and specifically—local fire departments—need fire codes so they can hold industrial operators accountable for safe storage and handling of chemicals," said Dr. Moure-Eraso.

CSB Supervisory Investigator Johnnie Banks said "The CSB found at all levels of government a failure to adopt codes to keep populated areas away from hazardous facilities, not just in West, Texas. We found 1,351 facilities across the country that store ammonium nitrate. Farm communities are just starting to collect data on how close homes or schools are to AN storage, but there can be little doubt that West is not alone and that other communities should act to determine what hazards might exist in proximity."

The CSB's preliminary findings follow a yearlong investigation which has focused on learning how to prevent a similar accident from occurring in another community. "It is imperative that people learn from the tragedy at West," Dr. Moure-Eraso said.

The investigation notes other AN explosions have occurred, causing widespread devastation. A 2001 explosion in France caused 31 fatalities, 2500 injuries and widespread community damage. In the United States, a 1994 incident caused 4 fatalities and eighteen injuries. More recently a July 2009 AN fire in Bryan, Texas, led to an evacuation of tens of thousands of residents. Fortunately no explosion occurred in the Bryan, Texas, incident which highlights the unpredictable nature of AN.

The CSB's investigation determined that lessons learned during emergency responses to AN incidents – in which firefighters perished -- have not been effectively disseminated to firefighters and emergency responders in other communities where AN is stored and utilized.

The CSB has found that on April 17, 2013, West volunteer firefighters were not aware of the explosion hazard from the AN stored at West Fertilizer and were caught in harm's way when the blast occurred.

Investigators note that the National Fire Protection Association (NFPA) recommends that firefighters evacuate from AN fires of "massive and uncontrollable proportions." Federal DOT guidance contained in the Emergency Response Guidebook, which is widely used by firefighters, suggests fighting even large ammonium nitrate fertilizer fires by "flood[ing] the area with water from a distance." However, the investigation has found, the response guidance appears to be vague since terms such as "massive," "uncontrollable," "large," and "distance" are not clearly defined.

Investigator Banks said, "All of these provisions should be reviewed and harmonized in light of the West disaster to ensure that firefighters are adequately protected and are not put into danger protecting property alone."

The CSB has previously noted that while U.S. standards for ammonium nitrate have apparently remained static for decades, other countries have more rigorous standards covering both storage and siting of nearby buildings. For example, the U.K.'s Health and Safety Executive states in guidance dating to 1996 that "ammonium nitrate should normally be stored in single story, dedicated, well-ventilated buildings that are constructed from materials that will not burn, such as concrete, bricks or steel." The U.K. guidance calls for storage bays "constructed of a material that does not burn, preferably concrete."

At the county level, McLennan County's local emergency planning committee did not have an emergency response plan for West Fertilizer as it might have done under the federal Emergency Planning and Community Right to Know Act. The community clearly was not aware of the potential hazard at West Fertilizer.

Chairperson Moure-Eraso commended recent action by the Fertilizer Institute in establishing an

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auditing and outreach program for fertilizer retailers called ResponsibleAg, and for disseminating with the Agricultural Retailers Association a document called "Safety and Security Guidelines for the Storage and Transportation of Fertilizer Grade Ammonium Nitrate at Fertilizer Retail Facilities." It also contains recommendations for first responders in the event of a fire.

"We welcome this very positive step," Dr. Moure-Eraso said, "We hope that the whole industry embraces these voluntary guidelines rather than being accepted only by the companies that choose to volunteer."

The Chairperson called on states and counties across the country to take action in identifying hazards and requiring the safe storage and handling of ammonium nitrate. "Regulations need to be updated and new ones put in place. The state of Texas, McLennan County, OSHA and the EPA have work to do, because this hazard exists in hundreds of locations across the U.S. However, it is important to note that there is no substitute for an efficient regulatory system that ensures that all companies are operating to the same high standards. We cannot depend on voluntary compliance."

The CSB is an independent federal agency charged with investigating serious chemical accidents. The agency's board members are appointed by the president and confirmed by the Senate. CSB investigations look into all aspects of chemical accidents, including physical causes such as equipment failure as well as inadequacies in regulations, industry standards, and safety management systems.

The Board does not issue citations or fines but does make safety recommendations to plants, industry organizations, labor groups, and regulatory agencies such as OSHA and EPA. Visit our website, www.csb.gov.

USA, OK, WOODWARD

APRIL 24 2014.

NO ONE INJURED IN FIRE, EXPLOSION AT WOODWARD FACILITY SEVERAL TANKS EXPLODED

Several fire departments responded to an industrial fire at a facility in Woodward, early Wednesday morning.

Dispatchers tell News 9 the fire at Basic Sediments and Waste Solutions is contained and there's no immediate threat to the area.

Three workers were on site when several tanks exploded at the facility just after midnight. All employees made it out safely.

It appears a mechanical device malfunctioned and started the fire, according to Woodward County Emergency Management Director Matt Lehenbauer.

Right now, law enforcement is directing traffic off Highway 270 at Western Avenue due to heavy smoke.

<http://www.newson6.com/story/25316414/explosion-and-fire-reported-at-woodward-facility>

USA, NE, IMPERIAL

APRIL 24 2014.

BLOCK OF BROADWAY CLOSED OFF AFTER FUEL OVERFILL

Jan Schultz

A routine filling of an underground fuel tank at the Imperial Kwik Stop Store turned into a two-hour ordeal Monday after the tank overflowed.

The block of Broadway between 3rd and 4th Sts. was closed off for two hours mid-afternoon while cleanup operations took place.

Fuel from a Bosselman truck was being dispensed into the underground tank between the Kwik Stop's pumps and the Harchelroad building to the south when the overflow occurred. It spilled fuel out through the manhole cover over the top of the tank, onto the lot and east toward Broadway.

Fire Chief Nick Schultz said the safety mechanism that generally safeguards against overfills

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apparently failed.

Initially, the truck driver attempted to stop the flow before the firefighters arrived after a 911 call. When the Imperial Volunteer Fire Department (IVFD) was on the scene, floor dry material was used to soak up the spill and attempts were made to dam it up so as not to reach the storm sewer.

That seepage into the sewer system was stopped and contained, Schultz said.

Members of the IVFD then applied foam to minimize the fumes and to neutralize the fuel, Schultz said.

"Our concern with fuel exposed on the surface is the possibility of flames or sparks that could ignite a major fire," Schultz said.

Foaming the area is a precaution against that, he added.

The IVFD and Imperial Police Dept. remained on the scene for two hours until the driver finished paperwork and was able to leave.

The area remained roped off until a Fire Marshal's Office fuel division investigator and an EPA official could get to the scene. That was expected on Tuesday.

http://www.imperialrepublican.com/index.php?option=com_content&view=article&id=6737:block-of-broadway-closed-off-after-fuel-overfill&catid=36:news&Itemid=76

USA, WYO, OPAL

APRIL 24 2014.

SMALL WYOMING TOWN EVACUATED AFTER GAS EXPLOSION

A small town in southwest Wyoming was evacuated Wednesday after an explosion and fire at a natural gas processing facility and major national pipeline hub. There were no reports of injuries.

The gas has been shut off, but people who were in Opal, about 100 miles northeast of Salt Lake City, went to an area about 3 miles outside of town as a precaution, said Lincoln County spokesman Stephen Malik. The town has about 95 residents.

"They were downwind from the plant," said Lincoln County Sheriff Shane Johnson. "The fire was still very active, and because of the nature of the processing that goes on there, that was the call that was made for safety reasons." Johnson said he didn't know when people would be allowed back into Opal.

No structures in the town were affected, and the fire was confined to the facility operated by pipeline operator Williams Partners LP, county officials said.

The explosion occurred in the plant's cryogenic processing tower, a structure that chills unrefined natural gas to separate out impurities, but officials didn't yet know what caused the blast. All employees at the gas processing plant were accounted for, Williams spokesman Tom Droege said.

The explosion was reported at about 2 p.m., and the fire continued to burn into the evening. Williams spokeswoman Michele Swaner said it was being allowed to burn itself out. The gas processing plant in Opal removes carbon dioxide and other impurities from natural gas that comes from gas fields in the region. It can gather up to 1.5 billion cubic feet of gas per day, and it sends it into pipelines that go to urban centers to the east, west and south.

Williams Partners, based in Tulsa, Okla., said in a statement it has suspended collecting gas from surrounding areas and is looking for ways to resume production.

The Opal hub, where regional pipelines converge, is the principal spot where prices are set for natural gas produced from the large gas fields in western Wyoming and the San Juan Basin in Utah. The plant makes Opal perhaps best known as a regional gas-pricing hub.

Government officials and industry insiders closely watch Opal hub prices to monitor trends with regional gas supply and demand. Williams operates the Northwest Pipeline, which runs through Opal on its way to the Pacific Northwest.

An explosion in March at a liquefied natural gas facility operated by Williams on the Washington-Oregon border injured five employees.

Gas from the Williams plant at Opal serves a huge number of customers from the Pacific Northwest

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to Southern California, the Southwest and even as far east as Ohio, said Brian Jeffries, executive director of the Wyoming Pipeline Authority.

How long the plant would be out of commission was unknown, but Jeffries said the effect won't be as bad as if the explosion occurred during winter, when demand for natural gas increases for heating, or summer, when demand increases to generate electricity for air conditioners.

"It really is that time of year when it's sort of least likely to impact customers," he said. Williams was paying to lodge Opal residents at the Little America resort in Little America, about 25 miles east of Opal, and at a Best Western in Kemmerer, about 15 miles to the west.

"We want to make sure everybody's taken care of and they're put up for the night if they're not able to go back to their houses," Swaner said. "Since nobody's on site, it's going to take some time before we can begin our investigation," Swaner said.

Renny MacKay, spokesman for Gov. Matt Mead, said investigators would look into the cause of the explosion once the site was secured.

<http://www.sfgate.com/news/us/article/Small-Wyoming-town-evacuated-after-gas-explosion-5425417.php>

USA, TX, AMARILLIO, APRIL 25 2014. OIL TANK EXPLOSIONS EAST OF BORGER

Chelsea Goss

Four firefighters and four Traditions Oil & Gas employees received an unpleasant surprise this morning when a second explosion occurred at the scene of last night's oil tank battery explosion just east of Borger.

"I thought the headline of today's paper was going to be 'Eight dead after an explosion, after a tank battery explosion,'" said Evan Schmidt, pumper for Tradition's Oil & Gas.

After last night's explosion, everyone seemed to believe things were settling down. Evan, his father, Tony McPhearson, and a few firefighters were assessing the damage of the explosion the night before and thinking of ways to put out the last remnants of burning fire. It wasn't until they were only about 30ft away from a pool of oil left on the ground did they hear the sound that would alert them of what was to come.

"We kind of got a strong hissing sound right before the explosion, which gave us enough time to escape. We were pretty shaken up. We were lucky everybody came out alive," said Gabe Rivera, Borger Fire Dept. Captain.

"While we were assessing the damage, I guess there had been some oil leaks from the tanks overnight, there was a huge explosion," said Schmidt.

No one was injured in this morning's unexpected second explosion. A few reported singed hoodies or skin that felt as if it had been sunburned, but many just said they felt lucky to walk away from an incident like that.

The tank battery fire broke out east of Borger near Skellytown off Ranch Road 280 in the the Spring Creek area near Watkins Camp last night between 9-10 pm. Firefighters responded to reports from residents in the area of a possible explosion and possible grassfire. Once they arrived, they were able to find that the battery of one of the tanks had exploded and were able to contain the fire fairly quickly. By one a.m., officials said the fire was pretty much contained but that firefighters would remain on scene until the fire had died down. Around 8 a.m., the second explosion occurred.

The firefighters spent the morning cautiously trying to put foam over the remnants of crude oil on the ground and ensure that any signs of fire were put out. \$40,000 worth of damage was done in crude oil loss alone. However, McPhearson says he is just glad everyone was able to walk away unharmed from the incident.

"Yea it's a total loss. Everything's got to be replaced. But everyone walked away safe. A little shook up, but safe," he said.

<http://www.connectamarillo.com/news/story.aspx?id=1035745#.U1nEpcZmim4>

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INDIA, KARNATAKA, MYSORE

APRIL 25 2014.

EMPLOYEE OF FERTILIZER FIRM DIES OF SUFFOCATION

An employee of a fertilizer firm in north Mysore, who went to rescue his colleague who had fallen unconscious inside a container, died of suffocation on Thursday. According to Metagalli police, the deceased is Pratap, 28. Pratap and Srikanta, 25, colleagues at Chaitra Fertilizers and Chemicals Ltd, were to clean a container which had remained shut for a long time. Without taking precautions, the duo opened the lid, and Srikanta got inside, only to fall unconscious. Pratap, who went to his rescue, too collapsed inside. Pratap was declared brought dead at KR Hospital, while Srikanta is being treated there. Metagalli police have booked the firm's owner Chandrashekar for the alleged negligence, causing death, under IPC.

<http://timesofindia.indiatimes.com/city/mysore/Employee-of-fertilizer-firm-dies-of-suffocation/articleshow/34171574.cms>

UKRAINE, PEREIASLAV-KHMELNYTSKYI

APRIL 30 2014.

DASHCAM CAPTURES GAS STATION EXPLOSION IN KIEV THAT KILLS FIVE, INJURES MORE

John Halas

At least five people were killed and more than half a dozen others were hospitalized, some in critical condition, after an explosion that took place at a gas station in the Ukrainian town of Pereiaslav-Khmelnytskyi, located about 95 km (59 miles) south of the nation's capital Kiev on Tuesday morning. The terrifying moment of the blast was caught on film when a car fitted with a dashboard camera pulled over, just before the freeway exit. In the dramatic footage, we see people rushing in to help the injured. Media reports from Ukraine said that state investigators at the scene blamed the accident on "improper conception" of the gas station and the fact that it did not meet current safety codes.

<http://www.carscoops.com/2014/04/dashcam-captures-gas-station-explosion.html>

USA, WA, RICHLAND

APRIL 28, 2014

TANK VAPORS CAUSE EVACUATION OF HANFORD C TANK FARM

Two workers at Hanford's C Tank Farm reported smelling chemical vapors at about 1 p.m. Monday, leading to the evacuation of the seven workers in the tank farm.

The incident happened after work began Sunday night to retrieve waste from single-shell Tank C-102, said Rob Roxburgh, spokesman for Washington River Protection Solutions.

C Tank Farm is the only area at Hanford where waste is being retrieved from Hanford's 149 single-shell tanks. Waste retrieval disturbs the waste, increasing the chances that workers will smell vapors vented into the air.

The two workers were taken to the Hanford occupational medical provider for evaluation and cleared to return to work later in the day, according to Washington River Protection Solutions.

They bring the number of workers evaluated this spring for possible exposure to chemical vapors from Hanford tank waste to 28. Access to C Tank Farm has been restricted until more is known after an investigation planned for this morning and the implementation of any additional protections for workers.

Work was moving quickly on Tank C-102 as retrieval began, which is typical as work begins to empty tanks, Roxburgh said.

The tank contains 319,000 gallons of radioactive and hazardous chemical waste and is not one of the single-shell tanks suspected of having leaked.

Washington River Protection Solutions is using two enhanced-reach sluicing systems in the tank. They were inserted down risers into the underground tank to pump up waste to be sent to a double-shell tank, where it will be stored until it can be treated for disposal.

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The systems spray water or liquid waste on the sludge in the tank and move it to a pump for removal. Unlike earlier sluicing systems, the enhanced-reach systems telescope to get nozzles closer to the waste, helping remove more waste.

<http://www.tri-cityherald.com/2014/04/28/2947477/tank-vapors-cause-evacuation-of.html#storylink=cpy>

USA, HI, HONOLULU

APRIL 30 2014.

NAVY PRESSED TO ADDRESS SAFETY OF RED HILL TANKS

Three months after an underground storage tank leaked up to 27,000 gallons of jet fuel, Navy contractors last week began to inspect the tank at Red Hill.

Meanwhile, Honolulu City Council members joined the chorus of officials urging the Navy to make improvements quickly to prevent what Honolulu Board of Water Supply Manager Ernest Lau said could be a harrowing hazard to Oahu's water supply if a powerful earthquake were to disturb the ground in the area.

The leak at Tank 5 of the Navy's Red Hill bulk fuel storage facility was discovered Jan. 13. Navy, state Department of Health and Board of Water Supply officials have said to date there are no indications that fuel has contaminated the groundwater aquifer. Elevated levels of hydrocarbons were found in soil vapor samples at nearby monitoring points.

The cause of the leak has not been determined.

Tom Clements, environmental public affairs officer for Navy Region Hawaii, said the 245-foot-tall tank holds 12,500 gallons and could envelop a structure the size of Aloha Tower.

The inspection is "a large endeavor" that required the tank to be vented before lighting, scaffolding and other safety features could be put in place, he said.

The inspection, which began Thursday, is expected to take several weeks, Clements said.

Capt. Mike Williamson, commanding officer of Naval Facilities Engineering Command Hawaii, in a release Thursday said all drinking water samples have been in compliance with state and federal regulations.

"We are wholly committed to protecting the environment and our vital fresh water resources," Williamson said. "I believe we have taken prudent measures to ensure the water remains safe to drink and we look forward to continue working collaboratively with all stakeholders to ensure public safety while maintaining this critical national strategic asset."

The 20-tank storage facility, built during World War II, provides fuel for ships and aircraft at Joint Base Pearl Harbor-Hickam about 2.5 miles away.

An initial release response report that the Navy submitted to the Health Department Thursday sums up the history of the facility, outlines what happened and details actions the military has taken so far.

A risk summary states there is no way for the underground fuel to reach the surface because there are no connecting seeps.

But the fuel could conceivably reach the water table, which "may result in unacceptable concentrations of petroleum in the Red Hill sub-basin," the report says.

The sub-basin feeds a nearby Navy-run water system, so such a release could decrease the amount of potable water available to Pearl Harbor-Hickam consumers, the report says. The well provides 24 percent of the potable water to the Pearl Harbor system, which serves 52,200 military consumers.

The report concludes: "Additional release response actions, including site characterization, remediation of contamination, and installation of additional groundwater monitoring wells, are recommended to protect drinking water sources located down-gradient of the facility." Down gradient refers to the movement of liquid from areas of high concentration to areas of lower concentration.

The report's executive summary says a contractor is looking at modifying the existing groundwater protection plan and related work. Additionally, the Navy is seeking a contractor to "define the nature, extent and magnitude of soil and groundwater contamination beneath Tank 5" and related work.

The report notes that a four-year project to clean, inspect and repair Tank 5 was completed in

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December and that fuel was added to the tank on Dec. 9, just over a month before the leak was detected.

At Honolulu Hale Wednesday, the Council Public Works and Sustainability Committee heard BWS Manager Lau and Water Quality Division Chief Erwin Kawata voice their worries about the situation and the need for the city to press the Navy for more improvements promptly.

Five wells that provide up to 11.5 percent of the 140 million gallons used daily by Oahu consumers are within several miles of the storage facility, Lau said.

The board's Halawa Shaft is 5,000 feet northwest of Red Hill while the Moanalua wells are about 1.3 miles away. Collectively, the two water sources account for more than 25 percent of the water serving the area between Moana-lua and Hawaii Kai.

If a large earthquake occurs, "when you think about the large volume of fuel that's currently stored there ... even if you leaked a small percentage of that, you would still have a significant volume that would reach the groundwater aquifer," Lau said. "And keep in mind the bottom of the tank itself is only roughly about 100 feet above the drinking water aquifer table, so it doesn't have very far to travel. So we are very concerned."

He said records show that a 1948 earthquake on Oahu that measured 4.6 in magnitude occurred about the same time that a 1,100-gallon leak happened at one of the fuel tanks.

The Navy put up five groundwater monitoring wells from 2005 to 2009, but there needs to be more, Lau said.

A 2010 study paid for by the Navy indicates that groundwater in the Red Hill area flows in a northwesterly pattern, which puts its path in the direction of the Halawa Shaft, Kawata said. There are no water monitoring wells along the way, he said.

The water officials also said the Navy has reported there have been dozens of fuel releases in the past totaling 1.2 million gallons, and that the Health Department did not tell BWS officials about this until the recent leak was discussed.

"I'm just extremely concerned by what I perceive to be a slow response from the Navy," Councilman Breene Harimoto said during a briefing given by Lau at a Council Public Works and Sustainability Committee meeting.

Harimoto, who represents an area between Aiea and Waipahu, said he is also troubled that city officials were not informed of previous leaks until the January leak.

Noting the frequency of earthquakes around the Pacific Rim in recent weeks, Harimoto said he is authoring a resolution urging the Navy to take more and more immediate action. The state Legislature has passed a similar resolution.

"There's a lot of concerns and uncertainty, partly because there are so few hard answers that we've received on the remediation measures, next steps and best practices that should be taken next." Council Public Works Chairman Stanley Chang said.

Lau said the Navy seems to be "open to a few monitoring wells at this point," although he indicated there is disagreement over how many.

Clements said the Navy is working with the Health Department and BWS to make improvements, and is talking to the Environmental Protection Agency and Health Department about the possibility of stricter regulations involving the tanks.

A 2008 Navy report obtained by the Honolulu Star-Advertiser last month noted that steps have been taken to improve monitoring for leaks, but also raised concerns about the age of the facility and the potential for leaks from the tanks.

<http://www.military.com/daily-news/2014/04/28/navy-pressed-to-address-safety-of-red-hill-tanks.html?comp=7000023468025&rank=1>

Tank and Petroleum Use Mishaps

USA, TX, AUSTIN

MAY 2 2014.

TEXAS WELLHEAD BLAST KILLS TWO WORKERS, INJURES NINE OTHERS

Jon Herskovitz

A wellhead exploded in a hail of shrapnel at a west Texas oil field near the New Mexico border on Wednesday, killing two workers and injuring nine others, a spokesman for the Loving County Sheriff's Office said. A work crew was changing or installing equipment on the wellhead when a buildup of pressure set off the blast, which was heard several miles away at the Red Bluff Reservoir on the Pecos River, Sergeant Deputy Chris Busse told Reuters. "The piping and metal blew off that thing, and it was just like shrapnel," he said, adding that there was no drilling rig set up at the site. Two men, both in their 40s, were pronounced dead at the scene following the explosion, which occurred at about 8:30 a.m. local time near Orla, Texas, roughly 10 miles south of the New Mexico border. Nine other workers were injured, but all were treated at the scene after they declined to be transported to the hospital, he said.

<http://www.chicagotribune.com/news/sns-rt-us-usa-blast-texas-20140430,0,5921264.story>

USA, TX, RHOME

MAY 13 2014.

TANK BATTERY FIRE SPARKED BY LIGHTNING

The Rhome Fire Department is battling a tank battery fire believed to have been caused by lightning Monday afternoon. Rhome dispatchers told NBC 5 it's a natural gas tank battery along Long Branch Drive south of Farm-to-Market Road 2264. It happened just after 4 p.m. Monday. No injuries were reported. NBC 5 viewers and an NBC 5 Storm Tracker sent in photos that showed major damage. Wise County dispatchers say there are three fire departments on the scene as of 5 p.m.

<http://www.nbcdfw.com/weather/stories/Tank-Battery-Fire-Sparked-by-Lightning-258969631.html>

USA, GA, DALTON

MAY 14 2014.

ADHESIVE TANK BLOWS, BUT NO INJURIES IN GA. NEIGHBORHOOD 500-GALLON TANK OF CARPET ADHESIVE EXPLODED AFTER A WEAK AREA.

Rachel Brown

Leslie Kinsey was sitting in her car three doors down from Advanced Adhesive Technology on Spencer Street when she was startled by a loud boom.

"And you could hear what sounded like vapors escaping from something," the Dalton resident said.

That was around 8:45 a.m. on Monday. Dalton Fire Department Deputy Chief Gary Baggett said the explosion was from an outdoor tank that could hold roughly 500 gallons of carpet adhesive giving way and exploding. Officials believe there was a weak area in the bottom of the tank or that the relief valve failed. No one was hurt.

The tank went in the air at 424 S. Spencer St., Baggett said, but no one was nearby at the time.

"Had someone been there, they would have been hurt or killed, but luckily no employee was in that part of the building," he said.

Baggett said no harmful chemicals were released into the environment, and the tank was not full. No one had to be evacuated.

Kinsey said the outcome is a relief.

"I'm just really glad that nobody was hurt," she said.

<http://www.firehouse.com/news/11457688/carpet-adhesive-tank-explodes-in-dalton-ga>

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USA, OH, NEW PHILADELPHIA

MAY 14 2014.

WORKER KILLED WHEN TANK EXPLODES

Joe Mizer

A 29-year-old New Philadelphia-area man died about 4 p.m. Monday in Akron General Hospital after he was seriously injured when an oilfield bulk-storage tank exploded inside a metal building at Sutton Pump and Supply Co. at 2892 state Route 39 NE.

Michael C. Cottrell, of 2413 Tabor Ridge Road NE, was standing on top of the tank and welding a hook onto it when the explosion occurred, New Philadelphia Fire Chief Jim Parrish said.

Sgt. Eric Houze of the Tuscarawas County Sheriff's Department said the tank exploded due to the work being done on it. He noted that Cottrell and the tank went upward and hit the roof of the building, then fell about 20 feet to the concrete floor.

Parrish said the incident was reported at 2:35 p.m. to his department as a structure fire from an explosion.

When firefighters arrived, they found Cottrell's co-workers spraying the fire with extinguishers, and Cottrell wedged between the burning tank and an inside wall of the building.

When enough of the fire was extinguished to get to Cottrell, co-workers and firefighters took him out of the building and he was flown by helicopter to Akron from a nearby landing site.

Another man who was welding on the side of the tank at the time was blown against the wall, and went to Union Hospital in Dover to be checked out, Parrish said. His name was not available Monday night.

Houze said his department will assist the state fire marshal's office, which had an investigator on site Monday afternoon, and others in the investigation.

<http://www.cantonrep.com/article/20140512/News/140519822#ixzz33biFm3Di>

USA, N.M, ALBUQUERQUE

MAY 14 2014.

DOES DECADES-LONG FUEL LEAK THREATEN DRINKING WATER SAFETY IN ALBUQUERQUE?

GWEN IFILL: Next: the story of a massive spill of jet fuel at a military base. Officials have known about it for at least 15 years, but there's still a debate about its size, where it's going, and what to do about it.

Special correspondent Kathleen McCleery reports from New Mexico.

KATHLEEN MCCLEERY: The trouble started here at Kirtland Air Force Base more than six decades ago. The sprawling base, about the size of Washington, D.C., sits on the southeast border of Albuquerque, the state's largest city.

It's home to the Air Force's Nuclear Weapons Center, as well as a special operations wing.

Colonel Jeff Lanning is commander of the mission support group at the base.

COL. JEFF LANNING, Kirtland Air Force Base: It was in this area we found fuel actually coming to the surface, and we knew we had some kind of a problem at that point.

KATHLEEN MCCLEERY: That problem was a leak dating to the 1950s, when railcars and trucks delivered fuel to pipelines, powering planes at the growing base.

COL. JEFF LANNING: We found a hole in the pipe. And I have a piece of the pipe here, which is where the — the hole that we actually discovered. As fuel would sit in this pipe, it was able to escape the pipe and into the soil and drain into the — into the soil and migrate 500 feet down, eventually reaching the water table.

KATHLEEN MCCLEERY: Some fuel is mixed with soil near the surface, and much more is headed down where it rests on top of the groundwater. Tom Blaine at New Mexico's Environment Department uses an ant farm to explain.

TOM BLAINE, New Mexico Environment Department: And so I'm going to inject some dye that will represent the fuel, so you can see the migration of that fuel, how it spreads out and really the uncertainty of where it's going and how it's going to get to the groundwater table.

KATHLEEN MCCLEERY: The oozing fuel wasn't detected for more than four decades. At first, the size of the

Tank and Petroleum Use Mishaps

spill was put at about 157,000 gallons. Over the years though, that number ticked up as high as 24 million, the latest estimate, about six million gallons.

Dave McCoy is an attorney and director of Citizen Action, an advocacy group. He worries about where the fuel is headed, northeast, toward municipal drinking wells.

DAVE MCCOY, Citizen Action New Mexico: The boundary of the base is down here. But you can see that 80 percent of the plume has gone off the base now.

KATHLEEN MCCLEERY: Even more worrisome: The fuel contained a cocktail of toxic chemicals. Among the compounds found was ethylene dibromide, or EDB, a no-knock agent once added to aviation gas.

The Environmental Protection Agency calls the chemical extremely toxic, because it can cause liver and kidney problems, damage sperm cells, and increase the risk of cancer.

DAVE MCCOY: It's toxic if it touches your skin. It's toxic if you breathe it. You're going to breathe it, you're going to get it on your skin if you're taking a shower with this stuff. If you're drinking it, it's toxic that way.

TOM BLAINE: It's in a developed residential neighborhood.

KATHLEEN MCCLEERY: The EPA has given regulatory authority to New Mexico's Environment Department, which has set a limit of 50 parts per trillion for EDB in drinking water. But the city water authority is adamant about keeping any EDB out of the water.

Chief operating officer John Stomp:

JOHN STOMP, Albuquerque Bernalillo County Water Utility Authority: We want to prevent this from further contaminating the aquifer. For contamination for us is, it's no EDB or EDB. It's not EDB at drinking water standards. It's not EDB, because that's what our customers are accustomed to.

COL. JEFF LANNING: In this area, a large concentration of contaminants were identified.

KATHLEEN MCCLEERY: Concern in the city is on the rise. More than 100 residents crowded into a community center recently and gave Colonel Lanning a grilling.

MAN: They can't characterize how far, how wide, how deep, how fast this plume is moving.

KATHLEEN MCCLEERY: Lanning said the city water isn't in immediate danger, and cited recent studies showing there's time to for a fix, as long as 30 years before EDB reaches city wells. But McCoy and others dispute that estimate, and charge the Air Force with not being truthful and dragging its boots on the cleanup, charges Colonel Lanning denies.

COL. JEFF LANNING: I represent the government. A lot of people are holding up signs even. Before I even start saying anything, they're telling me I'm lying. But I'm not. I am dedicated to keeping the water for the people of Albuquerque clean, and the Air Force is dedicated to that.

KATHLEEN MCCLEERY: At the meeting was retired sociology Professor Beverly Burriss. She and her husband live a mile-and-a-half from the base. They drink mostly bottled water these days and are considering moving after 25 years in the city.

BEVERLY BURRIS: This is the largest ever to threaten a municipal water supply in the whole history of the country, so, by anyone's standards, this is an enormous spill. It is an exceptionally large spill.

KATHLEEN MCCLEERY: More than 100 monitoring wells dot the landscape on and off the base, at a cost of about a quarter-million dollars each, paid for by the Air Force. They sample soil and groundwater for contaminants. Activists want more of them, and want them placed closer to city wells.

Less than a mile from the spill site are two municipal wells. The Water Authority's contingency plan is to shut them down if they show contamination. But John Stomp would hate to have to do that, because the wells are among the most productive and the lowest in naturally occurring arsenic.

JOHN STOMP: Those two wells provide 10 million gallons a day. So, if our average daily use is about 100 million, that's about 10 percent of our supply. This is what we call the sweet spot of the aquifer, because the water quality is so good and we get good yield on the wells.

KATHLEEN MCCLEERY: Stomp and others say a prolonged drought in this arid state makes cleaning up the toxic leak even more urgent. Meanwhile, the Air Force has put interim measures into place, first, attacking the problem closest to the surface.

This machine, much like the catalytic converter in cars, extracts fuel vapors from the soil. Colonel

Tank and Petroleum Use Mishaps

Lanning says the method has removed about a half-million gallons so far.

COL. JEFF LANNING: As we pull the soil vapor out of the soil, anywhere where the fuel is sitting on top of the water table, it's able to off gas, if you will, into the soil above it. It would be sort of like hooking up a large Shop-Vac to where you put the gas in your car. You're not actually going to pull any liquid fuel out, but you could pull enough fuel vapor out that at some point the gas tank would be empty.

KATHLEEN MCCLEERY: Getting EDB out of the groundwater is harder, because EDB dissolves in water. One option, pump the toxic water out and treat it.

That's worked for smaller leaks like this one dating back to the '80s at the site of an electrical generating plant in Santa Fe.

TOM BLAINE: You drop the water down through a column in a tube, and you blow air past it. And then you pass that water through that charcoal bed, which removes the rest of the EDB from the groundwater, from the drinking water.

KATHLEEN MCCLEERY: This is not so different from what I might do to filter my water at home?

TOM BLAINE: Oh, absolutely. You have a Brita filter on your tap, same thing. It's an activated, granulated charcoal.

KATHLEEN MCCLEERY: But the Kirtland spill is far larger than the one in Santa Fe, which makes treatment much more difficult.

COL. JEFF LANNING: Pump and treat is generally not very efficient. You have to pump millions of gallons of water in order to scrub out very small amounts of a contaminant.

And the issue that we have is that you then have to do something with those millions of gallons of water. And, in the West, what you do with water is very, very important.

KATHLEEN MCCLEERY: The leaks have long stopped, and trucks now deliver to a spanking new facility built last year with above-ground pipes and high-tech monitoring of the fuel. But Tom Blaine recently criticized the Air Force's progress cleaning up the groundwater.

And in a letter to the base commander, he threatened to impose fines of up to \$10,000 per day if a June 30 deadline for implementation of a new work plan isn't met.

Beverly Burris believes it will take decades before the spill is cleaned up. And officials at the base, the Environment Department and the Water Authority all concur. As for the cost, the Air Force has already spent \$50 million and believes that figure will double, at least.

<http://www.pbs.org/newshour/bb/decades-long-fuel-leak-threaten-drinking-water-safety-albuquerque/>

USA, N.D, WILLISTON

MAY 14 2014.

SPILL CONTINUES AT OIL WELL NEAR TIOGA

Josh Wood

An oil well near the town of Tioga continued to leak oil, gas and fracking fluid on Monday, days after authorities learned about the problem, a local official said. Williams County emergency coordinator Mike Hallesy said he was notified Friday evening of the spill in the western North Dakota's oil patch and that the leak hadn't stopped.

The Department of Mineral Resources said the incident occurred at the Ron Burgundy 3-23-14H well, around eight miles northwest of Tioga. The well is owned by Denver-based Emerald Oil. Hallesy said that the site's wellhead failed during hydraulic fracturing, the process of a pressurized mix of water, sand and chemicals into a well to fracture rocks and promote the flow of oil and gas.

Alison Ritter, a spokeswoman for the Department of Mineral Resources, said the well is protected by a confidentiality agreement. As a result, she said, her office could disclose only the name of the well, its general location, its owner and that a spill had occurred.

Information about confidential wells is withheld from the public for up to six months. Hallesy said that a reading taken 10 feet from the wellhead showed hydrogen sulfide levels of 20 parts per million. Hydrogen sulfide at levels of 100 parts per million can be life-threatening, he said.

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Two farms located more than a quarter-mile from the site of the incident have been notified of the spill and about the hydrogen sulfide, Hallesy said. He added that a perimeter has been set up and the roads near the site have been closed down.

Hallesy said the spill had so far been contained with berms and that excess liquid was being trucked out of the area to disposal sites. He said he didn't have any immediate information about the size of the spill.

Halliburton subsidiary Boots and Coots, a well control company, has been called to the well to try to stop the flow.

http://bismarcktribune.com/bakken/spill-continues-at-oil-well-near-tioga/article_8297f2e0-da02-11e3-8f0e-001a4bcf887a.html

USA, OH, CARROLL CO, BROWN TWP

MAY 15 2014.

LIGHTNING CAUSES OIL TANK EXPLOSION AND FIRE

Malcolm Hall

A two-tank oil-storage complex exploded and caught fire Monday after it was hit by a lightning bolt in Carroll County's Brown Township.

The two oil-storage tanks are on the property of James Hawkins at 4148 Lacey Road, about a mile south of Malvern.

Lightning struck one tank, which was empty. That tank exploded, but the one next to it caught fire.

"The vapors were burning on it off the crude oil," said Chief Ralph Castellucci of the Great Trail Fire Department. "We created a safe zone just in case that one did explode. There was oil burning inside the diked-in area."

Firefighters responded Monday afternoon. The oil well and storage complex is owned EnerVest Operating of Houston, Texas.

"The well did not catch fire," Castellucci said. "There was a large amount of black smoke in the area at the time we were responding. I think one guy said he saw it from Carrollton."

Carrollton is about five miles southeast of the fire.

The steel tanks each have a storage capacity of 8,820 gallons. EnerVest Operating has temporarily shut down its oil extracting at the site. The storage tanks will be replaced.

"Before we can remove the tanks we will have to remove the oil," said Ron Whitmire, public relations officer for EnerVest. "We are probably looking at a couple weeks before it is done."

<http://www.cantonrep.com/article/20140514/News/140519642#ixzz33bjZGn3L>

USA, CA, LOS ANGELES

MAY 16 2014.

'GEYSER' OF CRUDE OIL ERUPTS FROM BURST PIPE IN ATWATER VILLAGE

Brenda Gazzar

Extensive cleanup efforts were underway after a 20-inch pipeline ruptured early Thursday morning in Atwater Village near Glendale, spewing more than 10,000 gallons of crude oil onto streets over a half-mile area.

Los Angeles Fire Department officials transported two women to the hospital who said they felt nauseous, while two other people went to a medical facility on their own seeking treatment for the same issue. The two women were in fair condition.

The Los Angeles County Department of Public Health reported there was little risk to the general public, but advised area residents to take precautions against extreme crude oil odors that could be made worse by the extreme heat.

"It was immediately shut down remotely by the pipeline owner, but because of the residual pressure and gravity, it took another 45 minutes for oil to stop flowing," LAFD spokeswoman Katherine

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Main said, noting the owner is the West Coast branch of Plains All American Pipeline.

The incident, which was caused by a valve malfunction, was reported at about 12:15 a.m. Thursday in the 5100 block of West San Fernando Road, an industrial area.

Firefighters went to a nearby construction company, retrieved sand and built a 30-inch wide berm "all the way around the spill" to contain it and prevent it from entering nearby storm drains, Main said. That created a 2 1/2 foot deep lagoon of oil that was sucked up by vacuum trucks.

The LAFD's tractor company and its Hazmat team, along with West Coast Environmental, responded to the scene to assist with containment and cleanup. The majority of the oil — which officials said was "knee high in some areas" — had been vacuumed up by late Thursday morning and an absorbent product was being used to get the remainder out of the concrete and asphalt, she said. She noted no oil has been found in the storm drains or in the water table.

<http://www.dailynews.com/general-news/20140515/geyser-of-crude-oil-erupts-from-burst-pipe-in-atwater-village-over-10000-gallons-spilled>

USA, KY, STANTON

MAY 17 2014.

OIL SPILLS INTO EASTERN KENTUCKY STREAM

Kentucky environmental officials say several hundred gallons of crude oil have spilled into a stream in eastern Kentucky. Dick Brown, a spokesman for Kentucky's Energy and Environment Cabinet, said Friday the oil spilled from an abandoned tank into the South Fork of the Red River in Powell County. He says the spill has been contained and he's unaware of any water supplies being threatened. Authorities were notified of the spill Thursday. Brown says the cause of the spill has not been determined. Brown says the state has hired a contractor to handle the cleanup.

<http://www.seattlepi.com/news/science/article/Oil-spills-into-eastern-Kentucky-stream-5483690.php>

USA, N.D, BISMARCK

MAY 22 2014.

OIL, BRINE SPILL IN CROSBY; FARM FIELD AFFECTED

A spill of 100 barrels of brine and 140 barrels of oil has been reported in Crosby.

The North Dakota Department of Health on Wednesday said 90 barrels of brine and 65 barrels of oil have been recovered, but some reached a nearby farm field and shelter belt.

Operator Samson Resources Company reported the release to authorities on Monday. The company says the failure of a valve on a saltwater disposal well led to the spill.

A state inspector is at the site located in northwest North Dakota less than 20 miles from the Canadian border.

A state official says the company is in the process of cleaning the site and is monitoring for evidence of "stressed vegetation."

<http://www.seattlepi.com/news/science/article/Oil-brine-spill-in-Crosby-farm-field-affected-5495828.php>

USA, WV, BERKELEY SPRINGS

MAY 27, 2014

SULFURIC ACID LEAK SHUTS DOWN WEST VIRGINIA SILICA PLANT

A sulfuric acid leak at a West Virginia silica plant caused a shutdown of the facility on May 13, according to information provided by the state Department of Environmental Protection (DEP). Officials with the DEP's Hazardous Waste group were sent on site to evaluate the situation and commence cleanup operations, media reports said.

The incident occurred at the U.S. Silica plant in Berkeley Springs, when an employee at the facility tried to pour sulfuric acid from a 6,000-gallon tank into a smaller container. While transferring the acid, the worker failed to disconnect a hose and walked away from the vessel, damaging the connections, company

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spokesperson Michael Lawson told the Morgan Messenger.

By damaging the connection, the employee also affected pipes linking to other tanks, which led to further leaks. DEP environmental inspector specialist John Killian said that about 3,000 pounds of caustic soda leaked, as well as some amount of petroleum sulfonate. The amount of sulfuric acid spilled was not confirmed, but it was estimated at about 635 gallons, or 5,000 pounds.

Environmental Products & Services, a private remediation company, was hired to manage cleanup works under the supervision of DEP officials. Emergency response teams used sand to capture the spilled chemicals, along with lime and soda ash that neutralized the hazardous materials. These will have to be cleaned up and disposed of properly, Killian said.

<http://www.processingmagazine.com/articles/127332-sulfuric-acid-leak-shuts-down-west-virginia-silica-plant>