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Mapping DuPont's Deadly Chemical Leak

by Amanda Frank

On Saturday, Nov. 15, a toxic chemical leak at a DuPont manufacturing plant outside of Houston killed four workers and hospitalized another, serving as another troubling example of the need for stronger chemical safety standards. The chemical involved in the leak, [methyl mercaptan](#), can cause eye and lung irritation and can be fatal at high levels. Numerous other U.S. facilities use and store this chemical, including those featured in a new [interactive map](#) by the Center for Effective Government.

The DuPont Accident

Saturday's incident occurred at a [DuPont plant in La Porte, Texas](#) (outside Houston), which uses methyl mercaptan to manufacture pesticides. The La Porte plant stores as much as [122,000 pounds of methyl mercaptan](#).

The chemical is also used at other facilities in a number of other processes, from refining jet fuel to plastic production. Methyl mercaptan is stored as a liquid but turns to gas when exposed to oxygen. The gas is colorless but can be readily identified by its rotten eggs smell. You've likely smelled it before, as it's added to natural gas so that people can detect gas leaks in their homes.

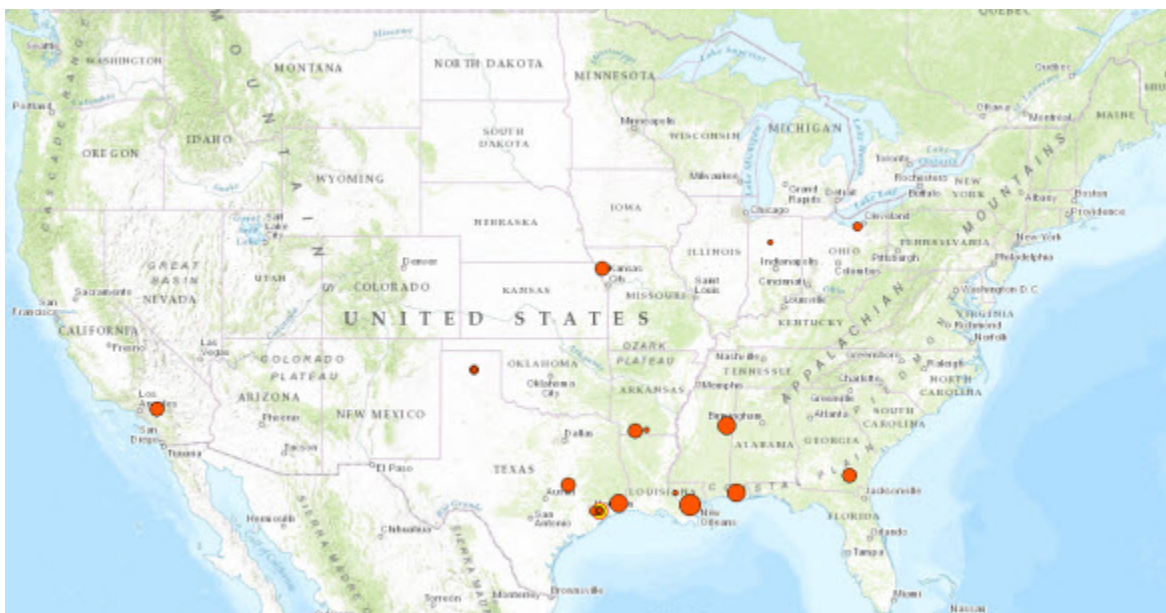
In large amounts, however, [methyl mercaptan](#) can be deadly. The gas is heavier than air and spreads close to the ground, displacing oxygen. [High levels of exposure](#) can affect the central nervous system

and cause unconsciousness or even death by asphyxiation. The gas is also extremely flammable and produces toxic fumes when burned.

The exact nature of the incident remains unclear, but reports have indicated that employees were responding to a leaking valve. The [Chemical Safety Board](#), an independent federal agency, is currently investigating. The agency does not issue fines but instead reviews chemical accidents and makes suggestions for risk prevention and management. The agency noted that this is the first deadly methyl mercaptan incident they have investigated, and it raises many questions about how plants can prevent future fatalities.

Mapping Chemical Risks

Following the DuPont accident, we mapped eighteen additional chemical facilities across ten states that use methyl mercaptan. Dots of incremental sizes identify the amount of methyl mercaptan stored onsite at these facilities.



[click to open interactive map](#)

While most of these facilities are chemical manufacturers that use methyl mercaptan in their processes, four of the facilities are railroad car service centers that clean train cars that carry hazardous substances. Other facilities include a petroleum refinery in Texas, two hazardous waste treatment centers (one in Ohio and one in Mississippi), and a plant that manages hazardous waste-derived fuels in Mississippi.

Eight of the 18 facilities using methyl mercaptan are in Texas, with four located in the greater Houston area (including DuPont's La Porte plant). However, the plant storing the most methyl mercaptan is a Union Carbide chemical manufacturing plant in St. Charles, Louisiana, which stores up to 7.75 million pounds of the substance.

Additional facilities in the U.S. may also use methyl mercaptan but are not required to report it to the U.S. Environmental Protection Agency's (EPA) [Risk Management Program \(RMP\)](#) because they fall below the 10,000-pound reporting threshold.

This map serves as an important tool for communities and their leaders to assess potential risks from an accident involving the release of methyl mercaptan. Users can locate facilities using this hazardous chemical and discover how many students go to school within these facilities' danger zones. The map also provides links to additional information so users can follow up with facilities and insist they reduce risks by using the safest processes possible.

Methyl Mercaptan Not the Only Risky Chemical in La Porte

DuPont's La Porte plant reports to EPA's Risk Management Program (RMP). Nearly 13,000 other facilities report to RMP because they use or store large amounts of certain hazardous substances. Methyl mercaptan is just one of many chemicals regulated by RMP because of its high toxicity.

Despite the large amount of methyl mercaptan onsite at the La Porte plant, the chemical of most concern there is hydrofluoric acid. The plant holds enough of this toxic chemical that a leak could affect communities 25 miles away. This danger zone is home to 1.6 million residents and 580 schools (349,660 students). For more information on schools in chemical danger zones, visit our [Kids in Danger Zones](#) resources page.

Improving Chemical Safety

DuPont's tragedy happened less than a month after EPA closed its comment period on improving chemical safety. Included in this "[Request for Information](#)" were many questions surrounding RMP facilities. They received around 100,000 comments from industry representatives, public interest groups, and the general public. The agency is currently reviewing these submissions and will likely announce any proposed rulemaking next spring.

One promising way to prevent chemical accidents is to require facilities to switch to safer chemical alternatives and technologies whenever feasible. Switching to less volatile or toxic chemicals and limiting the amount of chemicals stored on site reduces facilities' danger zones, thus protecting workers and communities.

However, some industry representatives are opposed to safer alternative requirements and insist that they already have sufficient safety requirements in place. In response to our *Kids in Danger Zones* [report](#) in late September, the American Chemical Council released a [statement](#) highlighting their Responsible Care® program, which includes company-level policies for process safety, including managing potential risks and training employees to respond to them. DuPont, in fact, takes part in this program. However, while it is important for facilities to respond appropriately to accidents, more emphasis is needed on *preventing* accidents in the first place – and the most effective approach is to require safer alternatives.

Unfortunately, accidents occur regularly at chemical plants. Some of these accidents cost lives or injure workers and community members. To effectively reduce these risks, EPA must move quickly to require

that all RMP facilities use the safest technologies and chemicals available.

New Study Finds Life-Threatening Formaldehyde Levels at Fracking Sites

by Amanda Frank

People living near fracking sites have reported health problems for years, with symptoms ranging from [respiratory ailments to birth defects](#). But because air and water quality are often not monitored near fracking sites, [surprisingly little is known about the overall public health impacts](#) of the gas drilling process. To help fill the knowledge gap, a new [study](#) explores air quality at fracking sites across several states and finds numerous instances of toxic chemicals above national safety standards.

Coming Clean and Global Community Monitor conducted the air quality study in six states – Arkansas, Colorado, Ohio, Pennsylvania, New York, and Wyoming. It is the first peer-reviewed study on air pollution from fracking that uses samples from multiple U.S. sites.

Breathing Toxic Air

Local residents collected air samples near fracking wells and production pads, as well as wastewater pools and processing stations. (In New York, for example, samples were collected near compressor stations on natural gas pipelines, as the state currently has a [moratorium on fracking](#).)

An accredited laboratory analyzed the samples for the presence of nearly 100 toxic chemical compounds, with alarming results. Twenty-nine out of 76 samples analyzed (38 percent) found toxic chemicals at levels that exceed federal health and safety standards. Those chemicals included:

- [Hydrogen sulfide](#), a deadly gas that has [killed oil workers in the field](#)
- [Formaldehyde](#), a known cancer-causing substance
- [Benzene](#), also known to cause cancer
- [1,3-butadiene](#), a skin and eye irritant that can also effect the neurological system
- [Toluene](#), which can cause neurological effects
- [Ethylbenzene](#), which can affect development
- [Mixed xylenes](#), which can bring on headaches and respiratory problems
- [N-hexane](#), which is found in crude oil and is capable of causing neurological and reproductive issues

In Wyoming, seven sites tested positive for hydrogen sulfide at levels two to 660 times what the U.S. Environmental Protection Agency (EPA) considers life-threatening.

In Arkansas, seven samples tested positive for formaldehyde at levels up to 60 times what EPA classifies as cancer-causing.

Two other states also had chemicals at levels exceeding these standards, including hydrogen sulfide in Colorado and formaldehyde and [benzene](#) in Pennsylvania.

The study noted that chemical exposure thresholds are usually based on the healthy working male population. Vulnerable populations – such as children, pregnant women, and those with respiratory diseases – may experience symptoms at lower exposure levels. Given the close proximity of some of these drilling operations to residential areas and schools, vulnerable populations could easily be at risk. Furthermore, only a fraction of the thousands of chemicals in use by industry even have defined safety thresholds. This means that the possible public health risks from fracking sites could be even greater than these results suggest.

Community-based Monitoring

The organizations were able to gather data from across the country by enlisting volunteers from local communities. Global Community Monitor, one of the project's collaborators, trained teams of "Bucket Brigades" to collect field data. The name refers to the EPA-approved devices that use buckets to capture and seal air samples so that they can be analyzed off-site. Volunteers also used formaldehyde badges, which collect and measure levels of the chemical over an eight-hour period.

Using local volunteers has a number of benefits. Residents have local knowledge of where fracking practices are taking place. They can also choose where to measure based on symptoms that people are experiencing or by perceived odor and fumes (hydrogen sulfide, for instance, can be detected by its rotten egg smell). This allows locals to go out and test air samples when odors or symptoms increase – and thus capture intermittent releases.

Finally, using local volunteers empowers communities to take ownership of the issue and provides them with evidence to back up the health symptoms they experience.

Moving Forward

The study helps fill in some of the gaps surrounding the public health effects of fracking, a poorly understood topic. Some states routinely test air quality but cannot keep pace with the rate of production in many shale fields. Texas, for instance, has one of the most extensive monitoring programs, but this consists of five permanent monitoring sites in a state where over 7,000 wells have been drilled since 2008.

The authors recommend increasing the monitoring of toxins near fracking sites and requiring [public disclosure of chemicals](#) used in fracking fluids. They see community monitoring as an excellent way to tap into local knowledge while extending state resources on air monitoring.

Finally, the regulations requiring that well pads be located a minimum distance from residences must be reevaluated. In the five states in this study with active wells, the average distance permitted between homes and fracking sites ranges between 150 and 500 feet. But the study identified formaldehyde up to 2,500 feet from fracking sites and benzene at more than 800 feet.

The study acknowledges that providing evidence of airborne toxins does not prove that fracking causes health problems. However, the findings do show that the air around fracking sites is often unhealthy and points to the need for greater attention to this vital public health issue.

EPA's War on Toxic Pollution

by Ronald White

A central theme of Sen. Mitch McConnell's (R-KY) recent re-election campaign was attacking the Obama administration's so-called "war on coal." This framing was an attempt to stigmatize the critically important efforts by the U.S. Environmental Protection Agency (EPA) to reduce the impacts on public health and the environment of burning coal in power plants and heavy industry. In fact, EPA is conducting a war on the health impacts caused by pollution and industrial waste, using science and technology as its weapons.

Specifically, EPA's 2012 Mercury and Air Toxics rule would require that power plants that burn coal or oil substantially reduce their emissions of a slew of toxic air pollutants, including mercury, hydrogen chloride, hydrogen fluoride, selenium, arsenic, cadmium, hexavalent chromium, and nickel. Coal burned in power plants is by far our nation's largest source of mercury and also the largest source of hydrogen chloride, hydrogen fluoride, and selenium. Depending on the degree of exposure, the health effects from these pollutants can include nausea, vomiting, central nervous system damage, kidney damage, and lung, skin, and mucus membrane damage. Arsenic and hexavalent chromium are known cancer-causing agents, and cadmium and nickel are classified as probable human carcinogens.

The same controls needed to reduce these toxic pollutants also significantly reduce emissions of toxic particles (or "soot") that have been found in hundreds of studies to be linked to premature death and disease. As highlighted in the Center for Effective Government's July 2014 report [*The Benefits of Public Protections: Ten Rules That Save Lives and Protect the Environment*](#), this rule will prevent between 4,200 and 11,000 adult deaths, 20 infant deaths, 2,800 cases of chronic bronchitis, 4,700 heart attacks, more than 2,600 hospital admissions for lung and heart disease, 3,100 emergency room visits by children with asthma, and 130,000 asthma attacks in children each year, among other health benefits.

McConnell has also set his sights on blocking EPA's pending rules limiting the emission of greenhouse gases from power plants that are a major source of climate change. His opposition defies the [evidence](#) that strong limits on carbon pollution from existing power plants could improve air quality and prevent an estimated 3,500 premature deaths, along with other significant health benefits.

The anti-regulatory zealots in Congress promoting the interests of large polluting industries – industries that contribute large sums to their campaigns – also have their sights on EPA's pending proposal to strengthen the national air quality standard for ozone pollution. The current ozone standard, adopted under the Bush administration in 2008, set an allowable [level of air pollution well above what independent science advisors](#) recommended to EPA a decade ago. (Former EPA Administrator Lisa Jackson called it "legally indefensible.") EPA, now under a court-ordered schedule to complete its review of the current ozone limit, is poised to propose a new standard on Dec. 1 that is expected to fall within the range recommended by the scientific advisors and issue a final rule by October 2015. Depending on the acceptable level of pollution EPA sets, the revised standard will result in modest or substantial reductions in asthma attacks, hospitalizations for respiratory conditions, and premature death from lung diseases, among other health benefits.

McConnell, who will become the Senate Majority Leader in January, has pledged to use a variety of tactics to undermine the Mercury and Air Toxics rule, the new greenhouse gas rules, and a revised ozone standard. These include cutting EPA's budget and/or including stipulations ("riders") in congressional budget appropriations that constrain the agency's ability to issue or implement new rules. It promises to be a busy time for environmental and advocacy groups like ours fighting to defend and improve public health standards. We'll need the public to stand with us.

Perilous Powder: Asbestos in Cosmetics Causes Lung Cancer

by Amanda Frank

When people think of asbestos, they may envision trained workers in hazmat suits removing asbestos insulation from older buildings. What many people don't realize is that asbestos is still used in a variety of consumer products ranging from clothing to floor tiles. A recent [peer-reviewed study](#) found asbestos in one brand of talcum powder and linked its use to a woman's death from lung cancer. The study sheds light on the weakness of federal chemical regulations that have failed to protect consumers from this cancer-causing toxin.

The Study

[Asbestos](#) is a natural mineral fiber found in certain rock formations and soils. It was mined extensively in the 20th century and used in a variety of consumer products. However, asbestos exposure is linked to lung disease, including a rare and deadly lung cancer called [mesothelioma](#). The [identification of health risks from asbestos in the 1960s](#) initiated a [series of bans](#) in the 1970s covering the use of asbestos in insulation and many other construction products.

However, asbestos can occur naturally in [talc](#), a soft mineral used in many baby powders and makeup. This led a team of researchers to examine whether consumers using talc products can be exposed to asbestos and whether this exposure could cause mesothelioma.

Researchers tracked asbestos-contaminated talc from the mines to a talcum powder product, and then into the lung tissue of a woman who had died of asbestos-caused mesothelioma after years of using the product. They confirmed that the powder contained traces of asbestos. Additionally, [they demonstrated the potential for significant asbestos exposure](#) when the talcum powder is used as directed. They had a test subject wearing protective gear apply talcum powder to his upper body in a sealed room about the size of a bathroom. Air filters used in the test chambers consistently collected high levels of inhalable asbestos, and the researchers found that the risk of exposure increases when talcum powder is applied in small, closed spaces (like bathrooms).

Other researchers examined the body of a mesothelioma victim who had used this brand of asbestos-contaminated talcum powder. They found asbestos fibers in her lungs and lymph nodes, concluding that she likely developed mesothelioma through using the talcum powder. They suggested that other mesothelioma cases may be linked to the use of this same product.

Legally Lethal

Today, when construction workers encounter asbestos insulation in older buildings, they must follow specific [safety regulations](#) for its removal in order to prevent exposure. Unfortunately, no such safeguards exist to protect consumers who unknowingly encounter asbestos in everyday products.

We lack these protections because the United States has not issued a comprehensive ban on asbestos. In 1989, the U.S. Environmental Protection Agency (EPA) issued a [rulemaking](#) to phase out most uses of asbestos. The agency used its authority under the [Toxic Substances Control Act](#) of 1976, which grants EPA the power to test and regulate chemicals in use. Unfortunately, industry challenged this rulemaking in the courts on the grounds that it was overly burdensome to businesses, and it was [overturned in 1991](#). The result is a patchwork of asbestos bans that covers insulation and new uses but [grandfathers in many other uses](#).

Furthermore, the U.S. Food and Drug Administration (FDA) is charged with [overseeing cosmetics](#) but has limited authority. Unlike drugs and medical devices, the FDA cannot require cosmetics to be tested before coming to market. This enables asbestos-containing cosmetics to appear on store shelves without the FDA's knowledge – and without any warnings to the public. And a [recent investigation](#) revealed that the FDA is aware of the potential for talc to contain asbestos but is not adequately investigating the dangers.

Conclusions

Over [50 countries](#) have successfully banned asbestos in manufacturing or imports. The U.S. is one of the only developed nations without a comprehensive ban on asbestos. We need to improve our chemical policies so that they can protect consumers from harm.

These policy changes must include [strengthening the Toxic Substances Control Act](#) so that EPA can fulfill its mandate to regulate toxic chemicals. In the nearly 40 years since the law was passed, EPA has tested less than 300 of the more than 84,000 chemicals on its inventory, and [restricted the use of just nine](#). A deadly substance like asbestos with [no safe level of exposure](#) should not be able to fall through the regulatory cracks.

Second, the FDA must investigate asbestos in talcum powder and other talc products and remove any that contain asbestos from the market. The aforementioned study focused on exposure to adults using talcum powder on their upper bodies. The FDA must study the full range of use for talc products (from makeup to feminine hygiene products) and what unique exposure routes these uses represent. Furthermore, given talc's prevalence in baby powder, the agency should also focus attention on the risks it poses to infants and children.

Steps like these can help keep potentially hazardous products out of our homes and reduce the [10,000 American lives lost each year](#) to asbestos exposure.



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