More Than A Pipeline,
It's A Toxic Industrial Infrastructure

By Mina Hamilton

Summary

A little known aspect of modern, high-pressure, gas pipelines is that they require large compressor stations. These stations help concentrate and move the pressurized gas along quickly and efficiently. As compressor stations release large amounts of methane, they contribute significantly to global warming. They are noisy, humming 24/7, and are subject to dangerous explosions and fires. At public meetings and during the Federal Energy Regulatory Commission application process, gas pipeline companies have not revealed the number, location and size of planned compressor stations.

Kinder Morgan/Tennessee Gas Pipeline's Northeast Direct Project is a high-pressure gas pipeline. It will carry gas from Marcellus Shale deposits in PA, across NY to Stephentown, NY. A new route includes a segment that crosses Berkshire, Hampshire and Franklin Counties in MA, then loops north up into NH before the pipeline drops back down to Dracut, MA. Multiple compressor stations are planned. The compressor stations will include acres of industrial plant, plus buffer zones.[1]

Miles of this pipeline are "greenfield" - meaning the route cuts through terrain previously untouched by gas pipeline infrastructure, including working farms, state forests, wetlands and other environmentally sensitive areas.

Compressor stations are significant contributors to global warming. During ventings known as "blow-downs," large quantities of methane are released to the atmosphere. In the first two decades after methane is

---

Mina Hamilton writes on environmental issues. Her articles have been published in *Mother Jones*, *the Progressive*, *the Nation*, and *In These Times.* She has been a Research Associate at Radioactive Waste Management Associates, was Co-Founder and Co-Director of the Sierra Club Radioactive Waste Campaign, and served on Greenpeace USA's Board of Directors. She can be reached at minaham@aol.com.

[1] According to the company's filing with FERC in 2015, its Northfield compressor station would include about 10 acres of industrial plant surrounded by a large buffer zone, bringing the total acreage to 242 acres.

released it is 79 to105 times more powerful than CO2 at destabilizing the climate.[2]

Compressor stations also leak methane via valves and gaskets that weaken and leak from corrosion and thermal stress. A study by Cornell University scientists Bob Howard and Anthony Ingraffea estimates leaks. They found that anywhere from 3.6% to 7.9% of unburned methane leaks out at gas wellheads and along pipeline infrastructure before reaching end users.[3]

Compressor stations release significant amounts of toxins. These toxins include benzene, toluene, sulfuric oxide, and formaldehyde. Citizens within 1500 feet of compressor stations in PA, TX, LA and other states have suffered from nose bleeds, rashes, headaches, sore throats, dizziness, nausea, vomiting and extreme fatigue.

A relatively small compressor station emits **45 tons** of nitrogen oxides (NOx) **per year**.[4] In the presence of sunlight, these toxins interact with volatile organic compounds to produce ground-level ozone. Ozone inhibits crop growth by up to 30%. The nitrogen oxides increase the risk of asthma and other respiratory problems.[5] In addition, NOx cause acid rain which damages trees, acidifies lakes and destroys aquatic species.[6]

Compressor stations also release radon-222. This radioactive gas precipitates out as radioactive polonium and lead. During blow-downs these toxins deposit in surrounding areas.[7] The amount of radon released will vary, depending on the distance of the compressor station from the well-drilling site.

---

[2] http://www.greenpeace.org/usa/en/campaigns/global-warming-and-energy/science/Natural-Gas-and-Global-Warming/

[3] http://www.motherjones.com/environment/2014/09/methane-fracking-obama-climate-change-bill-mckibben

[4] Author's Note: An earlier version of this Resource Paper stated that Redd station released 46.5 tons of *nitrous* oxides. Redd emits 45 tons of *nitrogen* oxides. Nitrogen oxides or NOx are a class of volatile gases that include, but are not limited to, nitrous oxides.

[5] Columbia Gas Transmission pipeline application to the PA Department of Environmental Protection for two turbines with a total of 9,400 horsepower at Redd Compressor Station in Washington County. Some compressor stations on the Kinder Morgan pipeline could be up to 10 times the size of the Redd station.

[6] http://www.nchh.org/Portals/0/Contents/EPA_Nitrogen_Oxides.pdf

[7] Rowan, E.L. and Kraemer, T.F.,2012, Radon-222Content of natural gas samples from Upper and Middle Devonian sandstone and shale reservoirs in Pennsylvania: Preliminary data: US Geological Survey Open File Report 2012-1159. Available at http://pubs usgs gov/of/2012/1159

Compressor stations are noisy. "Blow-downs" can last for two hours. The noise is comparable to a commercial jet taking off. Blow-downs are needed if a gas pipeline is taken off-line for maintenance, in the event of emergencies, or to accommodate fluctuating demand. They often are scheduled for the middle of the night.[8]

The sound of regular compressor station operation has been compared to four diesel locomotive engines running 24/7. Residents as far as a mile away can hear the racket. This humming can cause hearing impairment, learning disabilities and cardiovascular problems.

Compressor stations are dangerous. Since 2011, there have been explosions and fires at compressor stations in Lathrop, PA; Brooklyn Township, PA; Montrose, PA; Branchville, NJ; Windsor, NY; Pinedale, WY; Marengo County, AL; Oaktown, IN; Langton, OK; Nine Mile Canyon in UT – among others. Explosions have required midnight evacuations of nearby residents, with people evacuated out to a one-mile radius.

Compressor stations are fully automated, without staff on-site. In emergencies, local fire departments (often volunteer) must wait for gas pipeline crews to arrive from distant depots hours away.

Gas pipeline companies have not been transparent regarding the location of planned compressor stations. For years it has been standard gas pipeline company policy *not* to reveal the details regarding planned compressor stations – until the last minute. During the spring and summer of 2014 Kinder Morgan repeatedly refused to identify either the exact locations, or planned horsepower, of compressor stations planned for MA.

In 2015 Kinder Morgan finally identified the nine compressor stations planned for the Northeast Direct pipeline, including extremely large new stations in both Windsor and Northfield, MA. Existing compressor stations in Wright, NY and Dracut, MA would also be substantially "upgraded." An "upgrade" usually means additional compressors on site - and more noise and pollution.

---

[8] http://dearsusquehanna.blogspot.com/2013/07/lathrop-compressor-station-blow-down.html
http://epa.gov/gasstar/documents/ll_compressorsoffline.pdf

To mask the full environmental impact of a proposed line, gas pipeline companies sometimes do not include *all* of the planned compressors stations in initial Federal Energy Regulatory Commission (FERC) applications.

An example of this tactic is the case of the Millennium Pipeline and Compressor Station in Minisink, NY: Millennium put in its FERC application for the pipeline in 2006 and the compressor station application in 2011, **five years later.**[9] This type of segmentation is illegal, but remains an industry-wide practice.[10]

Will Kinder Morgan "pop-out" additional compressor stations for its Northeast Direct Project? This is not yet clear.

The author wishes to thank the following for valuable advice and in-put: Anna Gyorgy, Women & Life on Earth internet project; Jim Cutler of NoFrackedGas in Mass; Pramilla Malick of Stop the Minisink Compressor Station; and Tracy Carluccio of the Delaware Riverkeeper. This paper, originally published in October, 2014, was updated on February 3, 2016.

[9] Personal communication Pramilla Malick of Stop the Minisink Compressor Station.

[10] US Court of Appeals for the District of Columbia ruled on June 6, 2014 that segmentation is illegal and that FERC should not permit segmented applications. Whether Kinder Morgan or FERC will abide by this ruling is unclear. An application for non-contiguous sections of the Northeast Pipeline in NY, MA and CT was submitted to FERC by Kinder Morgan in the summer of 2014 – **after** said District Court ruling.