

THE WEEKLY PROFIT

FROM THE SACRIFICE ZONE

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Issue 39

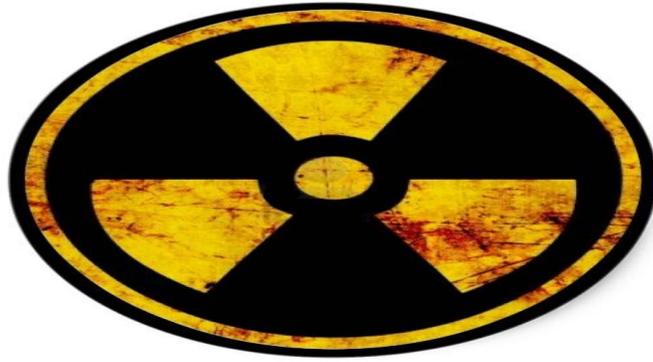
Without prejudice

27th November, 2018



Images Public Domain





Increased Levels of Radon in Pennsylvania Homes Correspond to Onset of Fracking

Johns Hopkins Bloomberg School of Public Health

<https://www.jhsph.edu/news/news-releases/2015/increased-levels-of-radon-in-pennsylvania-homes-correspond-to-onset-of-fracking.html>

“One plausible explanation for elevated radon levels in people’s homes is the development of thousands of unconventional natural gas wells in Pennsylvania over the past 10 years,” says study leader Brian S. Schwartz, MD, a professor in the Department of Environmental Health Sciences at the Bloomberg School. “These findings worry us.”

The disruptive process that brings gas to the surface can also bring heavy metals and organic and radioactive materials such as radium-226, which decays into radon. Most indoor radon exposure has been linked to the diffusion of gas from soil. It is also found in well water, natural gas and ambient air

RADIOACTIVE MATERIALS COULD POSE PROBLEMS FOR THE GAS INDUSTRY – OIL AND GAS JOURNAL

- <https://www.ogj.com/articles/print/volume-88/issue-26/in-this-issue/production/radioactive-materials-could-pose-problems-for-the-gas-industry.html>

RADON: It's radioactive and it's real.

- Radon is an odorless underground radioactive gas that can enter your home through cracks in the foundation.
- Radon is a known human carcinogen and leading cause of lung cancer.
- Our state geology puts Pennsylvanians at risk of high radon levels.



Protect yourself and your loved ones: Do a home radon test.

➤ DIY test kits are easy, inexpensive, and sold at hardware stores.



pennsylvania
DEPARTMENT OF ENVIRONMENTAL
PROTECTION

dep.pa.gov/radon
1-800-23RADON



Why is radiation harmful to us?

The radioactive elements formed by the decay of radon can be inhaled and enter our lungs. Inside the lungs, these elements continue to decay and emit radiation, most importantly alpha particles. These are absorbed by the nearby lung tissues and cause localised damage. This damage can lead to lung cancer.

Public Health England – UK Radon

<https://www.ukradon.org/information/whatisradon>

Radiation Sources in Natural Gas Well Activities

Occupational Health & Safety, Gayle Nicholl 1.10.2012

<https://ohsonline.com/Articles/2012/10/01/Radiation-Sources-in-Natural-Gas-Well-Activities.aspx>

When a well is installed, radioactivity can come to the surface in several ways:

- **Drilling fluid.** During the drilling process, the rock cuttings must be removed so drilling can continue. To this end, drilling fluid is used to bring the rock cuttings to the surface. The drilling fluid can be a liquid, a gas, or a combination of the two. Drill fluid itself is usually a mud-like substance that contains the rock cuttings, which may have radioactive solids, and formation water, which likely has radioactive salts (Resnikoff, et al., 2010).

Fracking. Anywhere from 10 to 40 percent of the water used in fracking comes back up the well (Urbina, 2011) carrying formation water and concentrations of salts that dissolve in the frack water, which includes **NORM**. The work involved in drilling and maintaining a well produces **TENORM**, such as:

- **Scale.** Salts have a specific solubility in water. Once that solubility level is reached, no more of that salt will dissolve in the water. Excess salt – including radioactive salts – will precipitate out on nearby solid surfaces, including the well head and casing. Other areas that can have radioactive scale deposits include the water lines associated with separators, heater treaters, and gas dehydrators.
- **Recycling water.** Radioactive salts are not easily filtered out of water. Each time the water is sent down the well, the concentration of radioactivity in the water increases. In addition, if chemical scale inhibitors are used, the concentration of radioactivity remains in the water. Companies typically use recycled water in many different ways in an effort to be environmentally conscious and efficient. For example, companies routinely spray recycled water on unpaved roads several times a day as a dust suppressant, which could expose workers and the environment to increased radiation levels. In the winter, recycled water can also be sprayed on roadways to de-ice the roads, having a similar result.
- **Separation pits.** Separation pits are used to divide the solids, including drill cuttings, and from the liquids – formation water and drill fluid. As the solids settle out, they may contain increased concentrations of radioactive material. The liquids may also have increased radioactive concentrations.
- **Shale shakers.** A similar concept to the separation pits, shale shakers are used to separate solid and liquid wastes. Both the liquid and solids may contain elevated radioactivity.

- **Filters.** Often cloth or bag filters are employed in the process of cleaning the water before reuse. The fine sediment that collects in the screen or filter may contain elevated radioactivity.
- **Sludge.** Sludge is composed of dissolved (potentially radioactive) salts that precipitate from produced water as its temperature and pressure change.
- **Equipment.** As a result of work processes that spread radioactivity over the work site, the equipment can become contaminated with radiation. Gas processing equipment with the highest radiation levels includes reflux pumps, propane pumps and tanks, and more (EPA, 2011).
- **Production.** Formation water, which contains high concentrations of salts and radioactivity, is brought to the surface along with the extracted gas and oil. **Radon gas is also extracted along with the natural gas.**

NORM – Naturally Occurring Radioactive Material

TENORM – Technically Enhanced Naturally Occurring Radioactive material

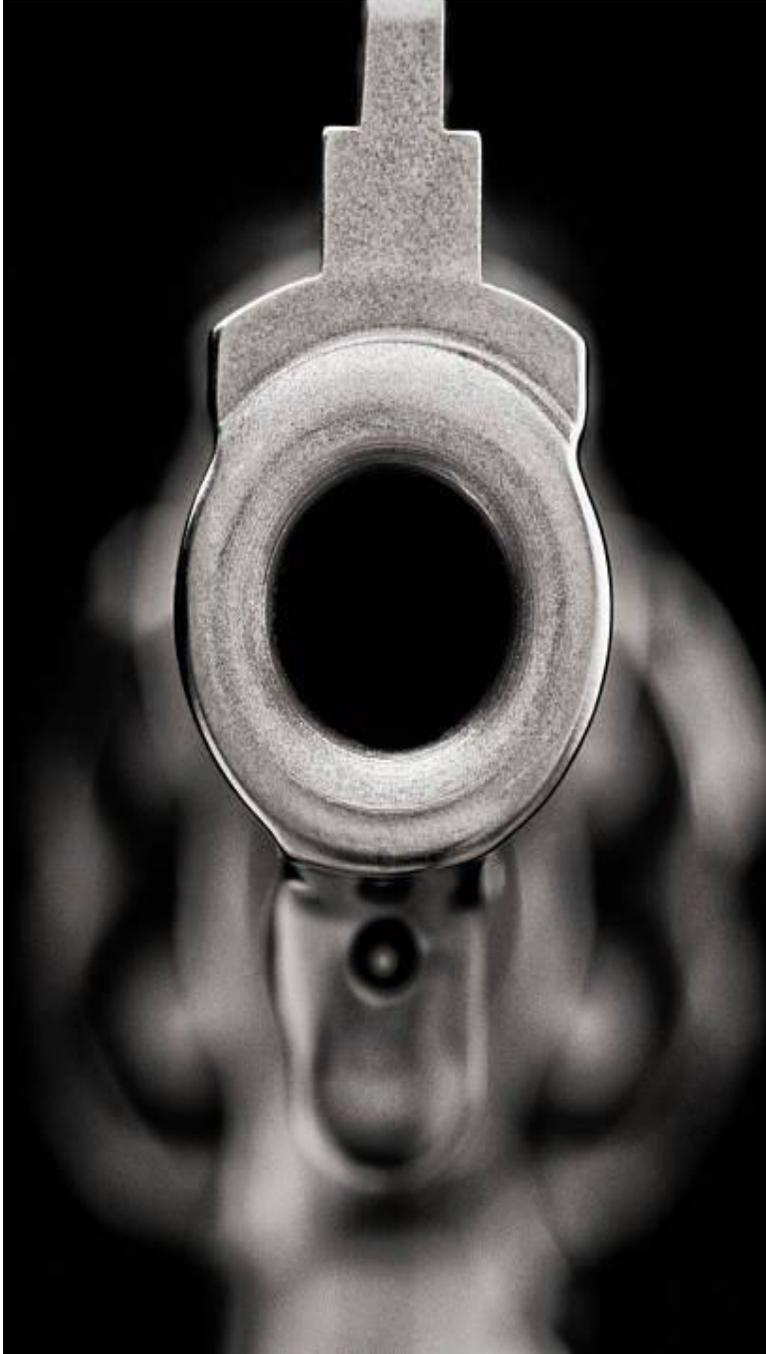
How does this affect workers?

Occupational Exposure

External exposure. External exposure is radiation that enters the human body through the skin. Externally, the most dangerous form of radioactivity is gamma waves. Radon and Radium are gamma-emitters. External exposure may come from any portion of the well pad, including the roads, equipment, sludge, process water, and pipes.

Internal exposure. Internal exposure is radiation that enters the human body through an opening, such as the mouth or lungs. Internally, the most dangerous form of radioactivity is alpha particles. Radon and Radium are also alpha-emitters. Intake of radioactivity into the human body can come from any of the following activities on site: breathing radon gas or dusts contaminated with radiation, smoking, eating, drinking, chewing gum, chewing tobacco, and contact of radioactive materials with open wounds.





When were you planning to mention the dangers of Radon gas and radioactive waste to communities?

Are communities to live their lives staring down the barrel of a radioactive gun?

Are we truly 'Sacrificial Lambs'?

Do you *really* intend to risk this?



How will increases in Methane and Radon help prevent Climate Change?

What about methane and nitrous oxide?

BBC News By Matt McGrath Environment correspondent

- 22 November 2018

The news on these two gases is not good either. Methane is the second most important greenhouse gas, and about 60% of it in the atmosphere comes from human activities like cattle farming, rice cultivation and **fossil fuel extraction**.

Levels in the atmosphere are now about 1,859 parts per billion - 257% of what they were before the industrial revolution, and the rate of increase is pretty constant over the last decade.

Nitrous oxide comes from natural and human sources including fertiliser use and industry. It's now about 122% of pre-industrial levels.



STOP the Frack Attack

End the Madness Ban Fracking

We citizens are watching.

