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Contact: Tracy Carluccio, Deputy Director, Delaware Riverkeeper Network, 215.369.1188 x104

**Radioactivity in Marcellus Shale Gas Wells
Threatens Public Health and Contaminates Environment**
***New Delaware Riverkeeper Network review finds PADEP study of Technologically
Enhanced Naturally Occurring Radioactive Materials
incomplete, misleading and fatally flawed***

Bristol, PA – A new report “Review of PADEP TENORM Study Report” was published today by Delaware Riverkeeper Network (DRN) criticizing the findings in the Pennsylvania Department of Environmental Protection’s (PADEP) “Technologically Enhanced Naturally Occurring Radioactive Materials Study Report” (the TENORM Report) as inaccurate and incomplete and criticizing the agency for not taking needed action. Dr. Marvin Resnikoff analyzed PADEP’s report published in January 2015, examining its methodology and data available publicly and obtained by DRN through the Commonwealth’s Right to Know Law*.

The critique concludes that PADEP failed to fully evaluate and take action regarding the impacts on the public, workers, and the environment of dangerous levels of radioactivity in materials produced by hydraulic fracturing of Marcellus Shale gas wells in Pennsylvania.

“PADEP has delivered a grave disservice by issuing a fatally flawed and misleading report on the TENORM being produced by Marcellus Shale gas development, use and waste disposal. The levels and amount of radioactive materials being released in Pennsylvania are alarming and demand immediate action by PADEP for the sake of the public’s health and the environment,” said Maya van Rossum, the Delaware Riverkeeper.

“PADEP’s TENORM Report amounts to a cover up of the truth about the exposure of people to unsafe radioactivity levels from fracking. It’s simply irresponsible for PADEP not to fully and validly examine the potential pathways of radioactive contamination to the public, workers, our

drinking water and the environment; we are being increasingly exposed every day as drilling continues. Turning a blind eye to the dangers of radioactivity unfairly subjects communities where there is gas drilling, where waste trucks travel on roadways, where drill cuttings are being deposited at landfills and gas well burial sites, and where gas is being used, to the dangers of TENORM and the harm caused by high levels of radiation exposure. PADEP must take action to complete a thorough and valid TENORM study and stop the uncontrolled and unmonitored release of radioactive materials being produced by fracking in Pennsylvania,” said Tracy Carluccio, Deputy Director, Delaware Riverkeeper Network.

Dangerous radioactive liquids, gases, and solids are entering the environment and potentially contaminating water supplies through practices used in gas well development, storage of produced fluids, and the transport and disposal of drilling wastes. The radioactive materials are then available to be taken in by people and can increase the likelihood of cancers in those exposed.

The critique examines the failings of the TENORM Report that include:

- Inaccurate radon measurements at drilling sites
- Invalid and/or incomplete sampling for radium-226 in rock cuttings
- Invalid and/or incomplete sampling for radium-226 in wastewater
- Invalid methodology for sampling of buried drill cuttings, including closed pits at individual well sites, sometimes located in the back yards of homes or on active farmland
- Lack of clarity as to whether the concentrated non-recycled drilling fluids and sludges were sampled
- No testing of stream water quality, sediments and in-stream habitats
- Lack of planning to sample fluid production pipes, feeder lines, separator and condensate tanks where radioactive scale can build up over time

The critique criticizes PADEP for failing to take needed action on alarming findings contained in the TENORM Report, including:

- Radium was detected in all landfill leachate samples gathered for the TENORM Report. Since radium-226 is not routinely sampled for or removed by leachate or wastewater treatment systems, radium-226 could be contaminating waterways and drinking water sources where the effluent is discharged. The long life of radium-226 (half-life of 1600 years) elevates the severity of this pollution legacy that has the potential to contaminate the environment and deliver harmful health effects from the

present through to generations to come. This demands action by PADEP to conduct a comprehensive investigation of all discharges of leachate from landfills that accept gas well drill cuttings.

- Brine or wastewater transport is not properly regulated because of lack of proper packaging, placarding, and insurance that accurately reflects the measured level of radioactivity in waste fluids transported by trucks. Immediate action must be taken by PADEP to protect the public and workers from radiation exposure by requiring radium sampling of each transported batch, adequate monitoring and reporting of samples, proper packaging based on sample data, and correct truck placarding of the contents. PADEP must also assure that adequate insurance coverage of trucking is in place to address spills, accidents, and other releases that may occur during transport.

In addition to the above pressing needs for action by PADEP, the flaws identified in the TENORM Report require PADEP to take further immediate action to address the report's numerous shortcomings. These include correcting the inadequacy and/or inaccuracy of sampling for radioactivity of: drill cuttings; radon gas; wastewater; buried drill cuttings and pit waste; non-recycled drilling fluids and sludge; stream sediment and instream-habitats; and production pipes and storage vessels. Until these are accomplished, the findings in the TENORM Report are simply not reliable.

A copy of the critique conducted for DRN by Dr. Resnikoff is available at:

<http://bit.ly/22fg7a7>

* On April 10, 2014 DRN filed a RTK Request to DEP seeking all sample data, locations of sample sites, and information regarding the peer review process, *inter alia*. On May 14, 2015, DEP partially denied the request citing the deliberative process privilege and the noncriminal investigation exceptions to the RTKL. DRN appealed DEP's denial to the OOR, arguing that the requested records were not exempt from disclosure. On July 11, 2014, the OOR ordered the release of all documents requested by DRN, finding that the TENORM Study was a study and therefore did not fall under the noncriminal investigation exception and that the documents were factual, and not deliberative in character. DEP appealed the OOR's decision on August 11, 2014, and on April 10, 2015, the Commonwealth Court held that the records requested were exempt from disclosure under the noncriminal investigation exception to the RTKL. DRN has re-filed a RTK Request seeking the documents DEP has not released.

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