

SHALE “FRACKING” WASTE DISPOSAL

Does “fracking” (unconventional natural gas development) produce waste?

Yes, wastes are produced in the various stages of extracting and developing gas from “fracked” shale.

What types of waste are there?

Wastewater comes up as “flowback” in the beginning when a well has been drilled and the fractures made. There is actually a lot of water held in the deep geological formations with the shale gas. Once the well starts producing, these “produced” fluids come up with the gas and may continue over the life of the well.

Solid wastes include drill cuttings, as well as drilling muds and sludges.

Air emissions, such as flaring or venting of gas and fluids which releases the greenhouse gas methane, and air emissions at waste disposal sites.

How much waste is there?

In Pennsylvania, liquid waste production from oil and gas wells in the Marcellus increased 104% between 2011 and 2014, to 41.3 million barrels [1.7 billion gallons]. Solid wastes increased 516% during the same time, to 1.6 million tons (1).

How is this waste handled?

Wastewater often has been stored in open ponds on people’s properties that are being developed for shale gas. These containment ponds have liners that sometimes tear, allowing the wastewater to spill into the soil. Open ponds also allow wastes to evaporate into the air. Sometimes wastewater from different sites is trucked out and brought to centralized impoundments. Fracking wastewater can also be recycled on site, or trucked out and recycled and then brought to another well site to use in the fracking process. Recycling and reuse is becoming an industry standard, although the salinity of Marcellus waste, and the volume of wastewater being generated, mean that not all wastewater can be recycled.

Wastewater has been illegally dumped into streams, or legally treated in water treatment plants and then released into rivers such as the Allegheny and the Monongahela. For the most part, releases into rivers were stopped through a voluntary order in 2011 when they were found to increase total dissolved solids (TDS) and raise the levels of bromides in rivers leading to the formation of hazardous trihalomethanes that can cause birth defects or cancer (2). As a result, wastewater sent to **injection wells** in Ohio and Pennsylvania increased 69% to 26 million barrels [1.1 billion gallons] in 2014 (1). Injection wells have been linked with an increase in earthquakes in Ohio (3), Oklahoma and elsewhere.

Solid wastes such as drill cuttings and muds are brought to landfills, where they have set off alarms monitoring radioactivity (4). Inconsistencies have been

described in the amount of waste being reported by drilling companies vs. the amount landfills say they have received (5).

Are there concerns for the health of people?

Yes. These wastes contain hazardous and radioactive materials. Waters that come up with gas (“produced waters”) are a particular source of radium – resulting from the decay of uranium and thorium. Radioactive Ra-226 and Ra-228 have been measured in produced waters from Marcellus shale at levels far above drinking water standards (1).

The National Institute of Occupational Safety and Health (NIOSH) documented dangerous exposures to workers handling flowback fluid (6).

What suggestions have been made to handle this waste?

Due to current exemptions in Oil & Gas law, shale wastes are not classified as hazardous even though they contain radioactive materials. An analysis of shale waste policy in four states (PA, OH, WV and NY) describes a need for a systematic plan to deal with the increasing amount of waste to be generated as the number of wells grows. Consistent regulatory oversight - including cradle-to-grave tracking of wastes - and enforcement has been recommended (1).

The Pennsylvania DEP recommended that the use of conventional gas brine to suppress dust on unpaved roads and for road stabilization should be further studied to assess the threat of radiological environmental impacts (7).

Industry is adopting best practices, such as recycling wastewater and moving away from using open impoundments on individual farms. The Pennsylvania Dept. of Environmental Protection proposes closing or more stringent permitting of centralized impoundments in DEP’s revisions of the oil and gas regulations.

References

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*Prepared by the League of Women Voters of Pennsylvania.
Printing and distribution of this handout funded by the Colcom Foundation through "The
Straight Scoop on Shale" grant to the LWVPA Citizen Education Fund.*