

Types of Oil & Gas Drilling & Extraction Wastes	49 of 50 CT Local Bans	Town of Washington	2014 Temp Moratorium	2017 HB 6329 Ban not passed	2018 SB 103 Ban not passed
Gas Drilling Process Drilling Muds	X				X
Gas Drilling Process Drill Cuttings	X				X
Gas Leachate from Solid Wastes & Landfills	X				X
Gas Hydraulic Fracturing Flowback	X	X	X	X	X
Gas Used Frac Sand from Flowback	X	X	X	X	X
Gas Production Process Brine	X	?	?	?	X
Gas Dehydration Process Brine	X	?	?	?	X
Gas Chemicals Used on Pad Surface	X	?	?	?	X
Gas Servicing Fluids for Equipment	X	?	?	?	X
Gas Underground Storage Waste	X				X
Gas LPG Well Storage Waste	X				X
Oil Drilling Process Drilling Muds	X				X
Oil Drilling Process Drill Cuttings	X				X
Oil Leachate from Solid Wastes & Landfills	X				X
Oil Hydraulic Fracturing Flowback*	X	X			X
Oil Used Frac Sand from Flowback	X	X			X
Oil Production Process Brine	X	?			X
Oil Chemicals Used on Pad Surface	X	?			X
Oil Servicing Fluids for Equipment	X	?			X

Flowback is a combination of hydraulic fracturing solution pumped into the well and materials from the shale deposit that mix into this solution underground, which then flows back to the surface for a few weeks after fracturing is completed. It includes water, industry-recycled contaminated fluids, chemicals, frac sand, remaining drill cuttings, brine & naturally-occurring toxins. Wells continue to produce toxic liquid waste/brine for many years while producing oil & gas.



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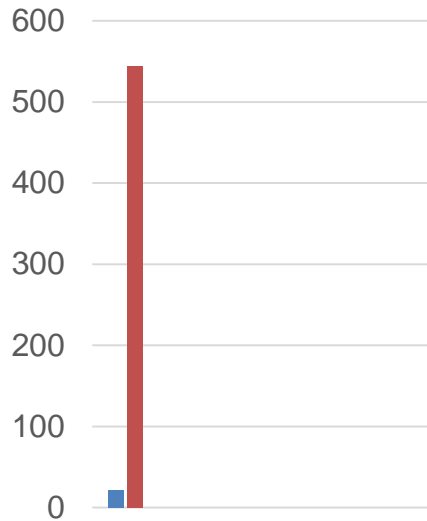
SCHOOL OF EARTH, ENERGY
& ENVIRONMENTAL SCIENCES



PA treatment inadequate.
Increased chloride, bromide,
strontium, radium.

Despite removing >90% of radium,
sediments downstream of discharge
~ 200x greater than upstream levels.

22 Bq/kg vs 544 Bq/kg



Brine used for road spreading
in 14 PA townships tested.

Road spreading causing lead
& radium contamination on
roads, radium & salt run-off.



After industrial facility treatment,
conventional oil & gas well waste
discharge causes radium contamination
in 3 PA waterways, measured up to 650x
normal, background levels.



Waste water spills negatively impact water
quality in streams in WV. 112 private wells
tested with no current detectable impact.