Concerns about produced-water reuse

Massive volumes of wastewater, minimal solutions

Managing the massive amount of wastewater produced by oil and gas operations has been a challenge for New Mexico that is only increasing. Some wells produce up to 10 times more wastewater than oil. The US produces more than 900 billion gallons of wastewater annually from oil and gas operations – enough to fill more than 1,000 football stadiums. This water contains frack fluids and subsurface compounds that are released in the fracking process.

Industry's most common disposal solution has been to pump the wastewater into specialized disposal wells, but the following factors have companies considering alternatives:

- A dramatic increase in the number of earthquakes in some oil and gas regions from wastewater injection. New Mexico does not have codified rules to prevent induced seismicity, though the New Mexico Oil Conservation Division has informal guidelines.
- Concerns about overuse of freshwater in fracking and the need to protect this finite and precious resource.

Photo of an unlined wastewater pit.

Reusing produced water in oil fields?

Some proponents of this option believe produced water may be an opportunity for water-scarce regions. Recycling wastewater within the oilfield is a viable option — as long as spills and leaks, which have significant and long-lasting negative impacts on soil and water, are eliminated.

Managing spills and leaks

- In 2018, OCD reported 656 spills containing produced water to the tune of 91,914 barrels (nearly 4 million gallons).
- Produced water makes up nearly half of the 19,590 spills that occurred in NM since 2000.
- The Pit Rule, which required companies to line wastewater-holding pits to protect groundwater, was largely reversed under Gov. Martinez. NM should revisit these requirements with proposed produced water use to ensure adequate water protection.

Reusing produced water outside the oil fields?

After going from an average of fewer than two earthquakes per year in 2009 to hundreds per year by 2017 due to technical issues surrounding wastewater reinjection, Oklahoma spent years investigating wastewater reuse. Their first multi-year report concluded due to both economics and risks, including research needs, recycling within oil fields should be the focus . California has used treated produced water in crop irrigation for 30 years, but never authorized the use of

produced water from fracked wells on food crops because of questions surrounding the toxicity of these fracking fluids; nor should New Mexico. Even still, CA recently founded a Food Expert Safety Board after worrisome findings and increasing public concern. Launching a study to understand risk *after* permitting isn't in the public's or the industry's interest:

Understanding wastewater chemicals

According to data reported to FracFocus and other current literature, there are 536 different fracking chemicals used in New Mexico that could be found in produced water — from hydrochloric acid to ethylene glycol (antifreeze) – in addition to the subsurface constituents. Unfortunately, we lack key toxicity data and only have standard analytical methods for less than 25% of known constituents — and those don't always work. Produced water in NM is 3-4 times saltier than seawater, and testing technologies do not always perform accurately in such high salt content. Additionally, trade-secret chemicals and well-maintenance chemicals are not included in FracFocus disclosures, which means produced water could contain harmful chemicals we don't know about.

Full disclosure of produced water chemistry is essential to determine potential impacts on people and businesses.

Policymakers can't develop effective standards for wastewater if they don't know what is in it, what water-quality targets should be, or what tools are needed for chemical detection.

Risks of mismanagement
In the 1920s oilfield wastewater was released directly onto West Texas soil, before the industry and regulators fully realized the negative consequences of this practice. It created the Texon Scar, a patch of dead earth so large it can be seen from space nearly a century later. We can't afford a mistake like this again.

Closing research gaps

We must eliminate these data gaps before even considering intentionally introducing produced water to our soil and drinking water. End users, including farmers and ranchers, need to know much more about the wastewater they might receive. To address this problem, we must take a step back and get a big-picture look at what we know and what we *need* to know to make smart decisions on repurposing produced water. The process for understanding whether water is fit for its intended purposes requires evaluating the efficacy of current treatment technologies, improving capabilities for detecting chemicals, understanding toxicological risks, and establishing the right water-quality targets.

Proceed with caution: The first step for New Mexico is to learn a lot more about what's in produced water and how it could threaten human health and the environment.

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