NEW MEXICO
OIL AND GAS WASTE REPORT

The failure to safely manage oil and gas waste

October 2020

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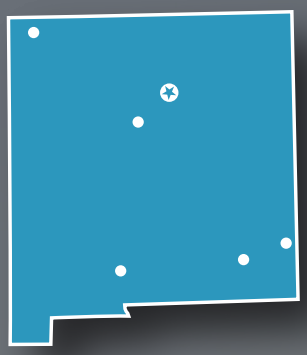

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Dedicated to protecting communities and the environment from the adverse impacts of mineral and energy development while promoting sustainable solutions.

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September 2020—Introduction

The first commercial oil well in New Mexico was drilled in 1922 in Diné territory in the northwest corner of the state, in what is now the Navajo Nation.[1] Five years later, the first well was drilled in the Permian Basin in the southeast corner of the state, where a recent oil and gas boom has helped New Mexico become the 3rd highest oil producing state in the nation[2] and the 8th highest natural gas producer.[3]

The cost of so much oil and gas production is heavy. The Permian Basin produces far more waste than actual oil or gas: about 4 to 7 barrels of liquid wastewater are produced for every single barrel of oil.[4] The toxic wastewater is extremely saline and contains known and unknown toxic chemicals, heavy metals, and radioactive materials. Research has found significant health issues associated with oil and gas development, including respiratory conditions such as asthma, cardiovascular concerns such as heart attacks, adverse birth outcomes, mental health conditions, insomnia, and other acute health effects.[5]

New Mexico continues to expand oil and gas production – 1,905 new drilling permits were issued in 2019 alone. But the state permits these operations in ways that damage the environment and expose industry workers and the public to harmful toxins through improper handling of oil and gas waste. This report outlines the risks posed by the status quo in New Mexico and calls for specific policy changes in order to fully protect land, water, and the public. Recommendations include new standards for testing, tracking, disposal, and remediation of fracking waste to better protect the environment and human health.

Background

New Mexico had 50,613 producing oil and gas wells as of February 2020.[6] The Permian Basin, which extends beneath both Texas and New Mexico, is the source of most of New Mexico's oil production. The San Juan Basin, which extends beneath Colorado and New Mexico, is the primary source of New Mexico's natural gas production. All this production means not only more oil and gas, but also more environmental damage – from climate-disrupting methane emissions to an increasing number of toxic wastewater releases and more.

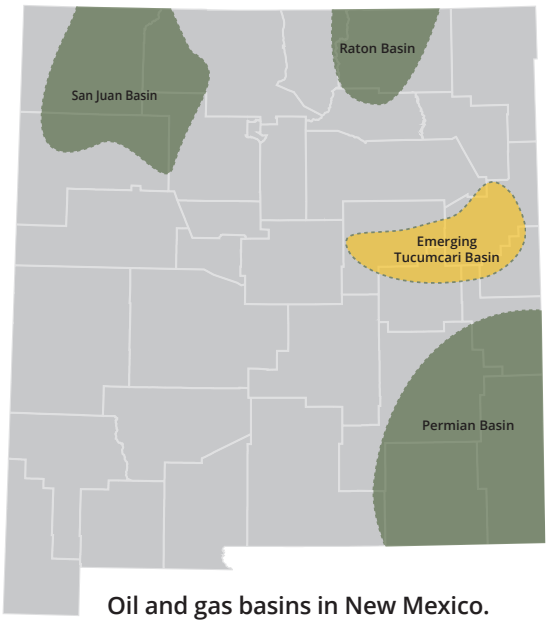
Each well produces dangerous waste streams that must be properly managed during the entire lifetime of each well – but none of them are. For example, in 2019, more than 50 billion gallons of liquid waste, euphemistically named "produced water" by the oil and gas industry, were generated in New Mexico.[7] In addition, more than 1.4 million gallons of produced wastewater have ended up running over the

surface of the earth from 327 spills in the first eight months of 2020 alone.[8] The total volume spilled would cover 4.4 acres with one foot of liquid oil and gas toxic wastewater. When it comes to solid waste, unfortunately, there are no public estimates for the volume generated by the oil and gas industry in New Mexico.

The policy changes recommended at the end of this report would help better manage oil and gas waste streams if implemented through support from the public, elected officials, and the oil and gas workers who are exposed to these wastes every day.

The toxic nature of oil and gas waste poses risks to the environment, worker safety, and public health that are exacerbated by the current regulatory landscape in New Mexico.

But what is oil and gas waste, exactly?



Oil and gas basins in New Mexico.

1.4 million gallons

In the first 8 months of 2020, more than 1.4 million gallons of produced wastewater were released in New Mexico from 327 spills.

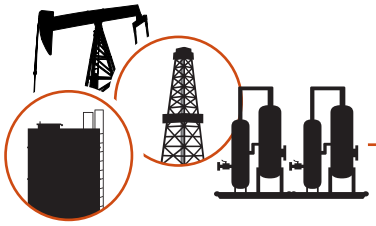
Photo: Jim O'Donnell

Oil and Gas Waste in New Mexico

Whether solid, liquid, semi-solid, or gaseous, all oil and gas waste streams vary in toxicity. Proper testing and tracking is essential to understanding the nature of waste and safer handling and disposal.

New Mexico allows a range of waste storage and disposal methods, including pits, underground injection wells, landfills, treating plants, recycling facilities, and "landfarms," which are permitted to spread contaminated soils, drill cuttings, and tank bottoms over land.[9] Less than 10 percent of waste is reused by the industry for further operations.

Anything other than underground injection is considered a "surface waste management facility" which can be located at a "centralized" facility or a "commercial" facility. Centralized waste facilities are owned and used exclusively by an oil and gas operator for the waste generated by its own operations, while commercial facilities exist for profit and can be owned by a third party that accepts waste from multiple operators.[10]



Liquid Waste

Wastewater

- Flowback (includes fracking additives)
- Produced Water
- Brine
- Effluent from treatment facilities

Leachate

- Rain contaminated by disposed materials that leaches out of landfills

In Between

- Drilling Muds
- Sludge
- Pipe Scale

Solid Waste

- Drill cuttings (includes drilling additives)
- Fracking sand
- Fluid pit liners
- Filter socks
- Well site pad liners
- Contaminated soil
- Retired tanks and equipment

Some facilities have multiple types of waste operations at the same site under one permit. For example, one site might have a landfill, an evaporation pond, and a landfarm. New Mexico also allows dozens of recycling facilities in the state to handle various types of waste, including drilling, fracking, and production wastes.[11]

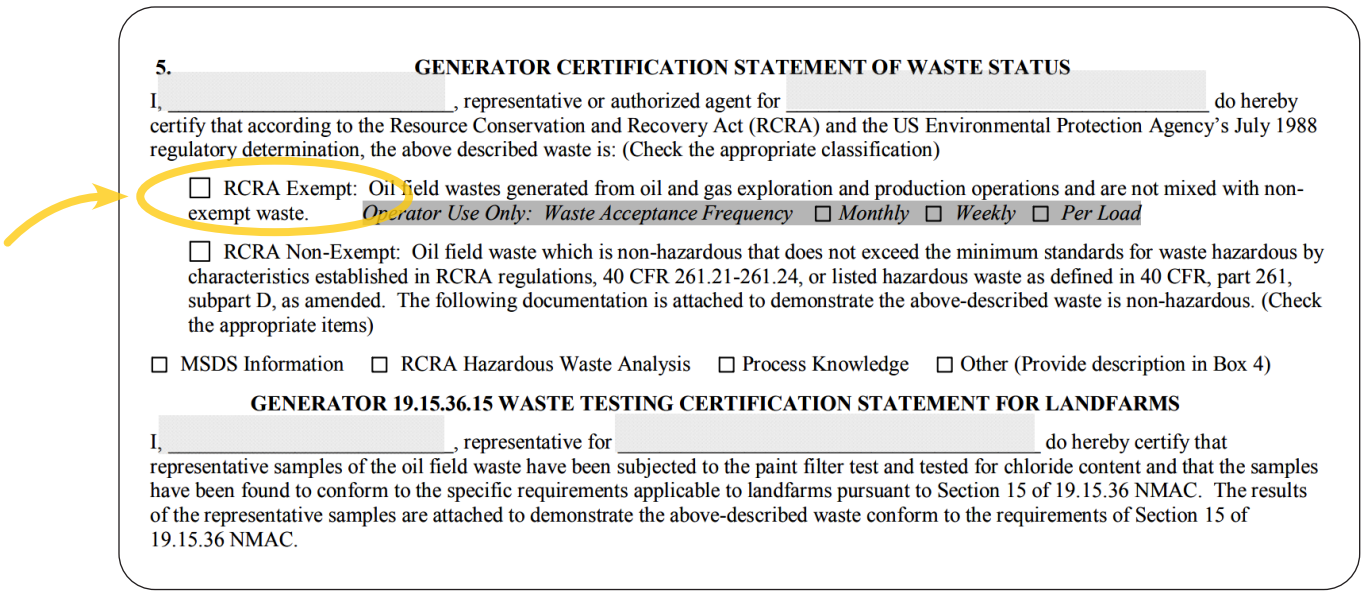
Even though surface waste facilities are technically not allowed under New Mexico law to accept "hazardous waste" or untested "wastes containing regulated naturally occurring radioactive material" (regulated NORM), these facilities are still permitted to take oil and gas wastes that contain hazardous or radioactive materials. How is that so?

Though the state could have safer rules, instead it defers to federal law, which exempts hazardous oil and gas wastes from regulation.

Hazardous

Instead of having its own regulations for handling oil and gas hazardous waste, New Mexico defers to federal hazardous waste law, which doesn't apply to oil and gas drilling and fracking waste. In 1988, the U.S. EPA exempted the industry from federal hazardous waste law, despite finding that oil and gas wastes "contain a wide variety of hazardous constituents."[12] You read that right – it's hazardous, but federal (and state) law pretends it's not.

A surface waste facility accepting both liquid and solid oil and gas waste outside Hobbs, New Mexico.



5. **GENERATOR CERTIFICATION STATEMENT OF WASTE STATUS**

I, _____, representative or authorized agent for _____ do hereby certify that according to the Resource Conservation and Recovery Act (RCRA) and the US Environmental Protection Agency's July 1988 regulatory determination, the above described waste is: (Check the appropriate classification)

☐ RCRA Exempt: Oil field wastes generated from oil and gas exploration and production operations and are not mixed with non-exempt waste. *Operator Use Only: Waste Acceptance Frequency* ☐ *Monthly* ☐ *Weekly* ☐ *Per Load*

☐ RCRA Non-Exempt: Oil field waste which is non-hazardous that does not exceed the minimum standards for waste hazardous by characteristics established in RCRA regulations, 40 CFR 261.21-261.24, or listed hazardous waste as defined in 40 CFR, part 261, subpart D, as amended. The following documentation is attached to demonstrate the above-described waste is non-hazardous. (Check the appropriate items)

☐ MSDS Information ☐ RCRA Hazardous Waste Analysis ☐ Process Knowledge ☐ Other (Provide description in Box 4)

GENERATOR 19.15.36.15 WASTE TESTING CERTIFICATION STATEMENT FOR LANDFARMS

I, _____, representative for _____ do hereby certify that representative samples of the oil field waste have been subjected to the paint filter test and tested for chloride content and that the samples have been found to conform to the specific requirements applicable to landfarms pursuant to Section 15 of 19.15.36 NMAC. The results of the representative samples are attached to demonstrate the above-described waste conform to the requirements of Section 15 of 19.15.36 NMAC.

In forms used by the New Mexico Oil Conservation Division, the industry is simply required to check a box stating that their waste is exempt at the federal level before sending it to surface waste facilities. Here is the State of New Mexico's *REQUEST FOR APPROVAL TO ACCEPT SOLID WASTE* form from the Energy, Minerals and Natural Resources Department.[13]

Radioactive

Similarly, some drilling and fracking wastes that contain radioactive materials are exempt from state laws governing those same radioactive materials. The radioactive materials found in oil and gas waste originate underground where they occur naturally. Once they are changed by human or industrial activity, however, they are often known as Technologically Enhanced Naturally Occurring Radioactive Material (TENORM), meaning that the naturally occurring radioactive materials have been concentrated, further altered, brought to the surface, or otherwise changed in some way that increases the potential for human and environmental exposure.

Some drilling and fracking wastes that contain radioactive materials are exempt from state laws governing those same radioactive materials.

New Mexico does not use the term TENORM in its laws or regulations, but instead labels naturally occurring radioactive material (NORM) that is above certain health and safety thresholds as "regulated NORM." Regulated NORM is subject to disposal standards while NORM below those thresholds is not subject to safeguards.[14] The New Mexico Oil Conservation Division (OCD) reports that it currently does not permit any centralized or commercial surface waste management facilities, including landfills, to accept regulated NORM. This raises the question of where regulated NORM is disposed of in New Mexico.

Some regulated NORM in New Mexico, such as pipe scale, can be left where it has accumulated in abandoned oilfields, for example in pipelines such as flowlines.[15] It can also be disposed of in plugged and aban-

doned oil and gas wells or in Underground Injection Control (UIC) disposal wells, including Class II wells. When injected into a UIC well, the operator must submit an application and then a report with information including the radiation level, quantity, source, and other details.[16] In addition, regulated NORM in New Mexico can be left in pits.[17] Another allowed method is to blend regulated NORM with soil on site to the extent that it is effectively diluted and no longer exceeds the threshold for regulation.[18] There is no data available for how much NORM in New Mexico is disposed of by any of these methods.

Surface Waste Management

As of July 2020, there were 27 active commercial surface waste facilities regulated by the OCD, which is part of the Energy, Minerals, and Natural Resources Department. Of those, 15 have landfarms, 12 have treating plants, 7 have evaporation ponds, and 5 have landfills. As of the same date, there were 6 active centralized surface waste management facilities. Four of them have landfarms and 4 have evaporation ponds.[19] These sites are mostly used to manage solid waste, such as drill cuttings and drilling mud.

Under the current permit system, monthly reports are required for treating plants, which reclaim, treat, and process tank bottoms and waste oil to make it marketable. These reports must include the volume of oil delivered and recovered.[20] Brief reports are also required for tank cleaning and transportation of sediment oil, tank bottoms, and other miscellaneous waste, including the volume, destruction method, and destination.[21]

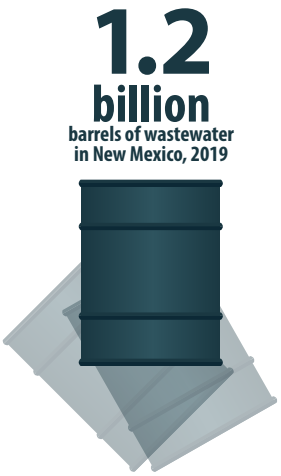
These waste facilities can be located very close to homes, schools, water bodies, hospitals, and more. The setbacks from homes, schools, and hospitals for facilities as large as 500 acres is only 500 feet, less than the length of the average Wal-Mart, and the setback from water bodies like rivers or streams is only 200 feet, less than the width of the average Wal-Mart.[22]

In addition to the waste management facilities regulated by the OCD, there are 15 landfills in the state regulated by the New Mexico Environment Department (NMED) that are permitted to accept oil and gas industry waste.[23] This waste has to be tested for various contaminants and cannot exceed certain thresholds, including benzene, total petroleum hydrocarbons, arsenic, lead, mercury, and others.[24] In general, however, New Mexico's regulatory framework lacks adequate identification, tracking, and reporting of dangerous waste materials throughout the oil and gas production cycle.

This unnatural "mountain" is created by the build up of solid oil and gas drilling debris, called *drill cuttings,* that can contain radioactive materials. This is the "Halfway Site" outside Hobbs, New Mexico operated by R360.

Produced Wastewater

When it comes to wastewater, more than 1.2 billion barrels of liquid waste, also called "produced water," were generated in New Mexico in 2019.[25] That's about 160,000 acre-feet of toxic, saline wastewater, more than twice the volume of sewage produced annually in the Albuquerque metropolitan area. One barrel is equal to 42 gallons.



Based on 2017 estimates, approximately 91 percent of oil and gas wastewater produced in New Mexico is injected underground in a UIC well (this does not include wastewater from the fracking process, known as fracking flowback). Approximately 40 percent of the produced water is injected back underground for enhanced oil recovery and 51 percent is injected underground for disposal. The remaining 9 percent is reused in the oil and gas sector for drilling, drilling muds, fracking fluids, cement, workovers, and more.[26]

The vast majority of oil and gas wastewater reported by the OCD as produced water – 96 percent – comes from the Permian Basin. The annual volume generated approximately doubled from 2010 to 2019.

At the Halfway Site operated by R360, Earthworks documented dumping of oil and gas wastewater into unlined pits.
JUNE 2019

The Produced Water Act: The OCD and NMED need to make and enforce rules to minimize waste and maximize environmental protection

Despite having dozens of facilities accepting oil and gas waste across the state, the industry is still running out of places to put its waste and is pushing regulators to allow discharges to rivers and land.

In recent years, the oil and gas industry has pushed in states like New Mexico for new regulations to make it easier to spread oil and gas wastewater on land for uses unrelated to oil and gas production, so-called "off-field" or "outside the industry" uses. The 2019 Produced Water Act (H.B. 546) opened the door for the use of treated produced water outside of the oilfield for things like crop irrigation, dust suppression, and discharge to waterways – despite no certainty about the efficacy of treatment methods to remove all toxic materials.[27] Amid public outcry from residents, experts, environmentalists, and farmers, the state is considering a rulemaking process for regulating produced wastewater under the Act.[28]

At this time, New Mexico still does not allow oil and gas wastes to be discharged into surface waters or used for irrigation, dust suppression, or de-icing on roads, or for road or well pad construction, although it may be used for on-site maintenance.[29] In August 2020, the OCD proposed new regulations that explicitly disallow any surface use of oil and gas wastewater within the agency's jurisdiction and to require a permit from the NMED in advance of any other use.

The oil and gas industry, however, is pushing for rules that allow off-field use in an attempt to make money off its waste by selling it for uses where fresh water would be more appropriate. Using this wastewater for crop irrigation, for example, would be extremely expensive, complicated, and inefficient. At the same time, regulators allow the industry to use huge amounts of fresh water, a particularly scarce resource in southeast New Mexico, for inside uses, such as fracking and drilling, even though minimally treated wastewater is now deemed suitable by industry leaders for fracking and deep drilling.[30] Currently, as mentioned above, approximately 51percent of New Mexico's produced water is injected into UIC disposal wells each year. That means that roughly 26 billion gallons of wastewater in 2019 was available to replace almost all of the fresh water used, polluted, and wasted by the industry.

Instead of allowing the industry to sell wastewater for uses outside the industry, regulators should require the industry to use the wastewater inside the industry. Significant reduction of fresh water use by the oil and gas industry is achievable. This would not only preserve irreplaceable groundwater that is essential for drinking water, irrigation, livestock watering, and more – it would also reduce the volume of toxic oil and gas wastewater requiring disposal.

Current prohibitions on off-field use are in place to protect land and water, but other waste practices in New Mexico threaten to contaminate both – and already have.

Photo: Charlene Anderson

The Risk of Poorly Regulated Pits

Oil and gas industry pits have long been known as a threat to clean air and clean water in New Mexico. Between the mid-1980s and 2003, the OCD recorded nearly 7,000 cases of pits causing soil and water contamination. In 2007, the state conducted sampling and analysis of waste from pits in both the San Juan and Permian Basins and found approximately 77 different contaminants with possible health effects. Seventeen exceeded New Mexico's standards for ground-water, including benzene, toluene, and xylenes, as well as arsenic, mercury, and lead.[31] In 2008, the OCD confirmed 421 incidents where groundwater had been contaminated by waste from oil and gas pits, including more than 100 from 2006 to 2008 alone.[32]

This alarming data led to a new rule in 2008 to strengthen the standards for oil and gas waste pits. The new rule banned the unlined pits most likely to contaminate groundwater, strengthened the standards for pit liners, required all pits to have a permit, and banned new pits close to water resources and homes. For example, new permanent pits were not allowed within 1000 feet of homes or schools or drinking water wells used by five or more families.[33]

After the new pit rule went into effect, there was clear evidence that water contamination had decreased and the rule was effective. In the first two years of the rule being in effect, there were no groundwater violations at any pits covered by the new rule.[34] It was also clear that the oil and gas industry continued to expand even with the stronger rule in place: drilling doubled in New Mexico from 2009 to 2010.[35] Dismissive of the rule's success, however, the industry worked intensely to overturn the new rule and ultimately it was drastically rewritten in 2013 to loosen protections. Among other changes, the 2013 revision allows pits to be constructed much closer to homes, schools, drinking water wells, rivers and streams, allows a new type of pit for fracking waste, and allows dangerous waste to be buried on site even if it exceeds state safety standards.[36]

Dismissive of the rule's success, however, the industry worked intensely to overturn the new rule and ultimately it was drastically rewritten in 2013 to loosen protections.

Photo: Charlene Anderson

NEW MEXICO PIT RULE

The downgrading of oversight and protection

The 2008 New Mexico Oil and Gas Pit Rule required oil and gas companies to dispose of their waste in safer and more responsible ways. In 2013, the Martinez Administration eliminated nearly every substantive provision of the Rule at the behest of New Mexico's oil and gas industry.

The 2013 pit rule authorizes four different kinds of pits for use in the oil and gas production sector: multi-well fluid management pits, permanent pits, temporary pits for drilling or workover waste, and emergency pits. Each pit type has different liner requirements, except for emergency pits, which are only authorized to be used where there is an immediate danger to fresh water, public health, or the environment in case of a spill, where time is of the essence. They are not intended to be used for more than 48 hours.

DOWNGRADING OF NEW MEXICO PIT RULE		
	2008 Pit Rule →	**Pit Rule as amended in 2013**
1	Purpose of the Pit Rule was "to protect human health and the environment,including free water, soil, wildlife and biodiversity."	Amendments made primarily for the economic benefit of the oil and gas industry
2	Required that waste meet health-based groundwater standards with the understanding that all pits – even lined pits – will eventually leak.	Raised concentration levels of toxins that can be buried in waste pits to meet what a typical drilling operation would produce
3	Prohibited oil and gas companies from permanently burying their waste in pits if the waste did not meet the state's health-based groundwater standards.	Removes this protection, allowing companies to permanently bury waste containing dangerous contaminants, including cancer-causing hydrocarbons, toxic heavy metals, and volatile organic compounds.
4	Required that pits be located away from homes, schools, spring, lakes, perennial waterways, and wells by 500-1000 feet.	Relaxes setbacks to 100' from perennial water courses, 200' from springs, wells or lakes, and 300' from homes or schools. Allows for waste to be buried within seasonal streams and lakes.
5	Required the collection of site-specific groundwater quality data prior to construction of a waste pit/system.	Allows companies to submit educated guesses about groundwater quality, instead of site-specific data.
6	Did not allow for "multi-well fluid management pits".	Allows "multi-well fluid management pits" for the first time in New Mexico. These toxic "frack lakes" can be of unlimited size, and been in place for 5-15 years.

Multi-well fluid management pits and permanent pits have stronger standards than temporary pits.[37] In New Mexico, some pit wastes may still be disposed of by burial on site, including drilling and workover wastes.[38] In addition to the four pit types covered by the pit rule, New Mexico permits so-called skimmer pits, evaporation ponds, storage ponds, and treatment ponds when they are located at commercial and centralized surface waste management facilities. These ponds are pits by another name. They must also be lined but are regulated under different rules.[39]

There is no public information on how much wastewater is allowed to evaporate into the air from ponds or pits. Volatile toxic materials in pits that can evaporate into the air include volatile organic compounds, such as benzene, toluene, ethylbenzene, xylene, hexane, and formaldehyde, as well as radon, a radioactive gas.[40]

Underground Injection

Oil and gas wastewater can be injected underground in three primary ways: in a waste disposal well, in an enhanced oil recovery (EOR) well to increase formation pressure and oil production, or as a component in fracking fluid being injected to frack a well. The first two categories are regulated under the federal Safe Drinking Water Act's Underground Injection Control (UIC) program, where they are considered Class II UIC wells. As of December, 2019, New Mexico had 983 active Class II disposal wells and 3,249 Class II EOR wells, for a total of 4,232. With the rapid expansion of Permian Basin development, the number of injection well permit applications has dramatically risen over time, with 538 new applications in 2019. Monthly reports are required for UIC disposal wells.[41]

OCD does not have enough staff to monitor underground injection wells to ensure compliance with the rules that protect underground sources of drinking water from contamination.

A recent investigation by the Ground Water Protection Council evaluated New Mexico's Class II UIC program and concluded that the OCD does not have enough staff to monitor UIC well construction or mechanical integrity testing, key steps needed to ensure compliance with the rules that protect underground sources of drinking water from contamination risks.[42]

In addition to threats to groundwater, UIC wells present seismic risk. Earthquakes in the Raton Basin of northern New Mexico were linked to underground injection between 2008 and 2010. One study found that there were more than 1,800 earthquakes up to a magnitude 4.3 in only a 2-year period in the Raton Basin (some of which were in the Colorado part of the basin).[43] Earthquakes are also a risk in the southern part of New Mexico. On the Texas side of the Permian Basin, earthquakes have increased from 15 in 2010 to more than 400 small earthquakes per month in 2018.[44] For now, earthquakes in the Permian are largely centered in Texas, but injection wells have also been linked to earthquakes in southeastern New Mexico, including in the Dagger Draw area. Moreover, the seismic risks in New Mexico are expected to increase if more disposal wells are permitted in close proximity.[45]

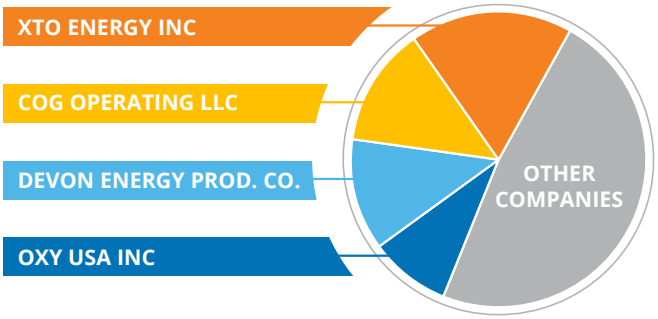
The rapid expansion of UIC permit applications and approvals in New Mexico increases the level of risk. The Groundwater Protection Council found that a significant number of new proposed wells in New Mexico would be in close proximity to each other, raising "serious potential induced seismicity concerns." The Council concluded that the state currently lacks the resources needed to properly analyze new applications for risks to public health, safety, and the environment.

Wastewater Spills in New Mexico

Spills of oil and gas waste are probably illegal in New Mexico, although current state regulation only appears to prohibit the failure to report spills.[46] Most spills as self-reported by industry appear to be caused by negligence because they are reported as occurring due to preventable causes such as equipment failure, corrosion, human error, overflows of tanks or pits, and even "normal operations." Corrosion failures and leaks can be prevented by the use of materials that can stand up to the incredibly corrosive wastewater and by replacement of corroded tanks, pumps, pipes, valves and other equipment. Equipment failures can and should be prevented by proper selection of materials, maintenance, and replacement.[47]

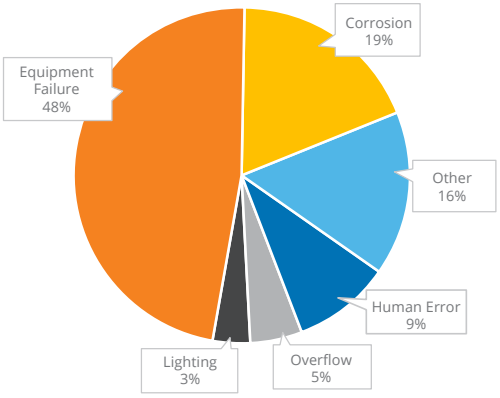
New Mexico has a massive amount of dangerous waste: in 2019 there was an average of more than 2.25 oil- or gas-related spills reported per day, almost 90 percent of which occurred in the Permian Basin where just two counties had more than 500 spills each.[48] The industry reported nearly 4 million gallons of produced wastewater spilled in 2018 and again in 2019, according to the OCD. Most of those spills occurred in Eddy and Lea Counties. Because the spills in the OCD database are self-reported by industry and sometimes lack important data, these numbers might be greater.

822 Wastewater Spills in 2019
3.9 million gallons
With four operators responsible for over half of those spills



Source: OCD Data and Statistics, Spills and Incidents (Search and Listing), available at: http://www.emnrd.state.nm.us/OCD/statistics.html

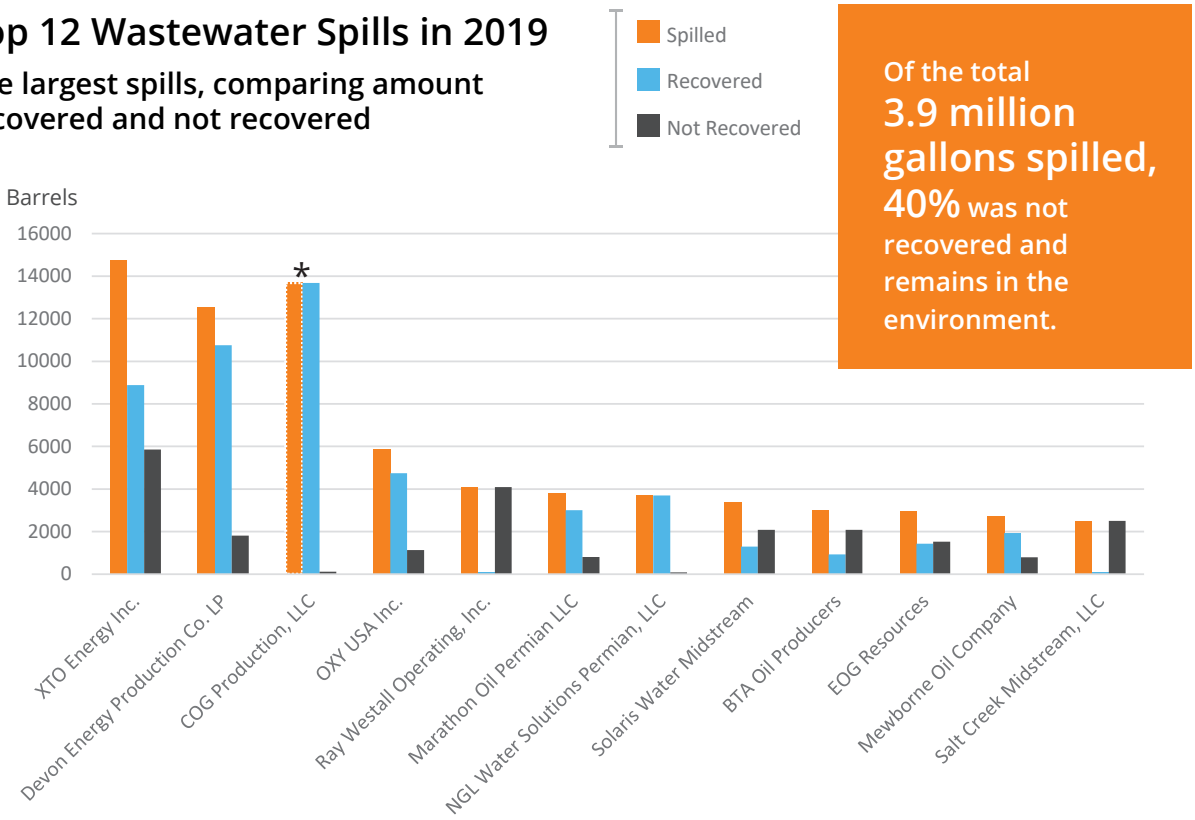
Stated Causes of Wastewater Spills in 2019



Source: OCD Data and Statistics, Spills and Incidents (Search and Listing), available at: http://www.emnrd.state.nm.us/OCD/statistics.html

Top 12 Wastewater Spills in 2019

The largest spills, comparing amount recovered and not recovered



Of the total **3.9 million gallons spilled, 40%** was not recovered and remains in the environment.

***It appears that COG Operating, LLC reported recovering 13,690 barrels from one 2019 spill, while reporting none spilled or lost, indicating missing data. The final report was submitted almost a year late. In general, oil and gas self-reported spill information made publicly available by OCD is missing data, such as the volume of wastewater spilled or a final report date, or contains inconsistent data, such as a mismatch between reported volumes recovered and lost and the volume spilled.**

OCD Data and Statistics, Spills and Incidents (Search and Listing), available at: http://www.emnrd.state.nm.us/OCD/statistics.html

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Where waste is spilled, land becomes contaminated. In 2016, a Duke University study discovered that wastewater spills in North Dakota have caused widespread contamination;[49] scientists also found that rivers and streams "now have levels of radioactive and toxic materials higher than federal drinking water standards as a result."[50]

- In January 2020, a wastewater pipeline exploded near Carlsbad, New Mexico, across the street from a home. It rained toxic liquid waste onto a family, their house, their yard, and all of their animals.[51] The waste poured from the sky for over an hour before the company, WPX Energy, was able to stop it. The homeowners were told they couldn't eat any of the eggs from their chickens; they had to euthanize 18 chickens as well as their dog. They were also told that they shouldn't eat any food grown on their land. Although the operator treated and removed soil from the yard, independent analysis of remaining soil after so-called remediation found "unhealthy levels" of benzene, chloride and total petroleum hydrocarbons.[52]
- In February 2019, there was a spill of 42,000 gallons of produced water and 12,600 gallons of oil in the Counselor Chapter of the Navajo Nation.[53]

Conclusion

New Mexico already has far too many oil and gas waste problems on its hands. Further oil and gas extraction, under the current regulatory regime, all but guarantees more pollution and risk to environmental and public health. OCD inspections of wells, where waste originates, have dramatically declined in recent years, from approximately 50,000 in 2016 to only 31,000 in 2019, despite significant growth in the industry.[54] While we recommend that all new oil and gas be kept in the ground, the likelihood of more extraction alongside the legacy of waste coming out of wells that already exist requires that swift protective measures be enacted through legislation and/or regulatory rulemaking.

Recommendations

New Mexico needs stronger protections based on the physical characteristics of oil and gas waste:

DISCLOSURE

- In order to properly manage oil and gas waste, the contents must be fully understood. The first step in doing so is to require complete transparency regarding the chemicals and additives used in all exploration and production operations. Oil and gas companies must be required to disclose all chemicals used, the same as every other industry.

TEST the WASTE

- Require operators to conduct comprehensive, consistent testing of wastes before they leave the well site. All data should be submitted to regulatory agencies, provided to waste transporters and disposal facilities, and made available to the public. Testing requirements must also apply to all oil and gas wastes that are diluted, downblended, solidified, or bulked with other materials, prior to disposal.

- Adopt policies for the frequent monitoring of groundwater, surface waters, sediment, soil, leachate, and effluent from and near waste treatment and disposal facilities. Regulatory agencies should approach waste management as an ongoing process that requires follow-up and continuous monitoring for changes in environmental conditions.

- Create appropriate testing standards for chemicals present in the oil and gas waste stream. Drinking water standards are inadequate for any liquid oil and gas waste stream because there are hundreds of chemicals used for hydraulic fracturing or present in wastewater for which there are no drinking water standards.

- Ensure testing of any waste that leaves a treatment facility prior to final disposal, for example, solid residual waste resulting from removal of contaminants from wastewater.

CLOSE the HAZARDOUS WASTE and RADIOACTIVE WASTE LOOPHOLES

- Require any oil and gas waste that meets the federal criteria of hazardous waste to comply with state hazardous waste rules. Apply hazardous waste policies to oil and gas wastes through new regulations and/or legislation, ensuring that oil and gas operators follow the same rules as any other industry. This should include any byproducts of waste treatment, such as residuals. New rules should apply to all handling, transportation, treatment, storage, disposal, and any other aspect of waste management.

- Expand existing regulations related to radioactive material to include oil and gas wastes. Involve agencies with experience in testing, detection, and handling radioactive material in the management of oil and gas wastes that contain radioactivity. The fact that radioactivity is "naturally occurring" should never be the basis for declaring a waste safe for disposal.

TRACK the WASTE

- Implement "cradle-to-grave" tracking and reporting systems that are comprehensive, consistent, binding, verifiable, and transparent for all oil and gas waste streams, including the residuals from waste treatment. Tracking systems should require online forms for operators and databases that encompass origin, destination, transport, volumes, types, and disposal method. Although operators, transporters, and waste facilities would provide this information, regulatory agencies should adopt mechanisms to verify its accuracy and compare records from different parties. All reports and data should be made available online to the public.

- Require disposal facilities to obtain consistent, detailed documentation from waste generators and transporters regarding the type, characteristics, and content of waste. State regulators should revise their waste characterization forms to include binding standards for allowable concentrations of chemicals, radioactivity, and other contaminants and to ensure that operators submit testing results from certified, independent laboratories. Factors such as "operator knowledge" or written declarations should not be considered a sufficient means of verification.


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PROTECT the ENVIRONMENT

- Prohibit open-air pits and centralized impoundments; only fully contained, "closed-loop" storage and treatment systems should be allowed.
- Prohibit the burial and land-spreading of waste. All waste should be safely removed from well sites within established timeframes related to well development and completion stages, and be included in well restoration guidelines.
- Prohibit the reuse of oil and gas wastes, including but not limited to road spreading, river discharge, crop irrigation, and creation of new construction or pavement materials.
- Require treatment and disposal of wastes at specialized facilities designed and equipped to remove chemicals, radioactive elements, total dissolved solids, metals, and other contaminants.
- Strengthen standards for current and future UIC well facilities that accept oil and gas wastes, including but not limited to comprehensive chemical testing, more frequent injection rate and pressure monitoring, mapping and analysis of faults and seismic risk, and stronger leak detection systems.
- Apply a "zero discharge" prohibition on all oil and gas wastewater from treatment facilities. Specially-equipped, centralized wastewater treatment facilities should only be permitted for the treatment of produced water and flowback for recycling purposes so as to reduce the use of freshwater resources.

HOLD INDUSTRY ACCOUNTABLE

- Expand and strengthen financial assurance mechanisms for oil and operators that cover the costs of safe and proper waste removal, storage, transportation, handling, disposal, site closures, remediation, and more, in order to ensure that the public does not bear the burden of long-term environmental remediation.

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