



THE PIT RULE — Good Questions and Honest Answers

January, 2011

Keep New Mexico's Common Sense Safeguards

Industry says that Pits don't pose a threat to our land and water. Is that true?

No. Pit wastes are toxic and have already caused contamination of New Mexico's land and water.

During the Pit Rule Hearing, the state presented data on the chemicals present in oil and gas industry pits, as well as data on known cases of groundwater contamination caused by these pits. At least 42 different chemical substances have been found in pit wastes, including benzene, mercury, lead, naphthalene and others. 39 of the pit substances found in New Mexico pits are on the federal government's "Priority List of Hazardous Substances,"¹ and all 42 have the potential to cause health problems.

OCD records show that prior to implementation of the Pit Rule there were more than 400 known cases of groundwater contamination that could be linked directly to poorly maintained oil and gas industry waste pits.²

Waste routinely handled in pits and below-grade tanks contains numerous chemicals at concentrations that for other industries would be considered hazardous waste,³ and are present in concentrations that exceed the New Mexico groundwater protection standards.⁴

Will the Pit Rule really benefit all New Mexicans?

Yes. The Pit rule reduces contamination and long-term liability for taxpayers and the industry.

Reduced contamination. In 2006, there were 300 confirmed cases of groundwater contamination from oil and gas pits. By 2008, the number of contamination cases had increased to 421.¹⁰ It's now been more than two years since the passage of the Pit Rule, and since that time there has not been a single groundwater violation at a site covered by the rule.¹¹ The Pit Rule is already preventing the pollution of New Mexico's land and water.

Reduced liability and clean-up costs makes good economic sense for taxpayers and industry. Industry also

benefits by reducing its environmental liability. Many real-world examples from industry show that closed loop drilling can be a financial benefit to operators.²¹ Here in New Mexico, Cimarex, has drilled more than 100 wells using closed-loop systems. According to Dorsey Rogers, field drilling superintendent for Cimarex, *"Closed-loop systems have evolved to a point where they cost no more than conventional drilling and are actually cheaper in most cases... There is a cost to the equipment, but it's offset by the cost of excavation and closing the pit — and the long-term liability is gone."*²²

It is clear is that the cost of "doing it right" can be far less than the cost of cleaning up contaminated sites.

At the OCD Pit Rule hearing, a petroleum accountant who has worked with companies in Texas, Colorado and Wyoming testified that many of her clients who have switched to closed-loop drilling systems have saved money.²³

Industry says that the Pit Rule isn't based on sound science. Is that true?

No. The Pit Rule has the proven science to back it up.

During the Pit Rule Hearing the Oil Conservation Commissioners heard 18 days of testimony, including scientific studies and analysis of pit wastes and movement of contaminants in the environment. Samples collected by both the industry and the state revealed the presence of dozens of chemicals in waste pits.⁹ Testimony was also presented showing that most of the chemicals detected can cause health impacts, and numerous samples contained chemicals at concentrations that exceeded soil and/or water quality standards. The Commissioners were imminently qualified to weigh the shortcomings and strengths of the scientific evidence: Mark Fesmire and Jami Bailey are petroleum engineers, and William Olson holds a Master's degree in hydrology.

► DETAILS ON THE SCIENCE AND ECONOMICS OF PIT RULE ARE ON THE FOLLOWING PAGES

THE SCIENCE BEHIND PIT RULE— MEASURING LIQUID AND SOLID SAMPLES

In 2007, the OCD collected liquid and solid samples from pits in the southeast (25 samples) and the north-west (12 samples) oil and gas producing regions of the state. Analysis of these samples showed:

- Elevated concentrations of more than 75 chemicals and compounds (including mercury, benzene, lead, naphthalene and others) in at least one sample.
- Six samples (five liquid, one solid) failed a test called the Toxicity Characteristic Leaching Procedure (TCLP), meaning they would be considered hazardous waste under federal law, if oil and gas wastes were not exempt from those laws.⁵
- 17 chemicals found in the fluid samples were present at concentrations that exceeded New Mexico’s groundwater standards.⁶

In 2007, the oil and gas industry conducted its own sampling program of pit solids at six drilling reserve pits in New Mexico. They found:

- A total of 42 different chemicals. Of the chemicals detected all have the potential to cause health problems. For example, all of the chemicals are known to harm the liver and and gastrointestinal

system, 90 percent can affect the nervous or respiratory systems, and nearly half cause cancer.⁷

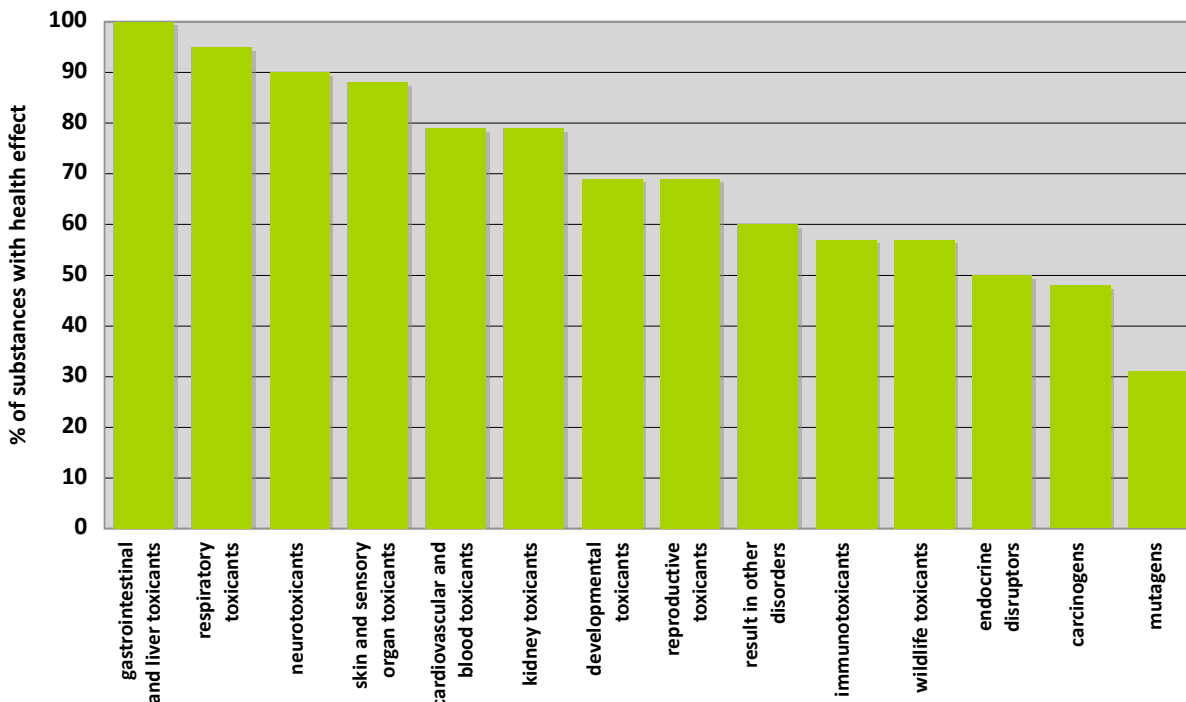
- Benzene, which is known to cause cancer, was found at extremely high levels in some of the samples. For example, in one of the industry pits the fluid contained benzene that was 460 times the concentration allowed in groundwater, and benzene was found in a solid pit sample at 13 times the state’s residential soil screening levels (SSL).⁸

THE ECONOMICS — REDUCING LIABILITY AND CLEANUP COSTS BENEFITS NEW MEXICANS

While proper waste management costs more than burying the waste on-site, the increased cost is minor compared to the cost of fines or cleaning up contaminated soils and groundwater.

It’s extremely expensive to clean up contaminants once they hit groundwater. OCD testified that a pit that contaminates groundwater could cost a million dollars to remediate.¹³ Industry experts concurred. An expert witness for the Independent Petroleum Producers of New

Possible Health Effects Associated with 42 Substances Found NM Drilling Pits



In 2007, the oil and gas industry sampled solids from six New Mexico drilling reserve pits. They found 42 chemicals, all of which can cause health problems, and nearly half can cause cancer.

Mexico, Sam Small, testified that remediation of ground-water contaminated by oil and gas wastes can range from \$100,000s to more than \$1 million,¹⁴ and he stated that the cost of clean-up is more than preventing contamination in the first place.¹⁵

Operators have waste disposal options. They haul wastes to a certified landfill, they can take steps to minimize

The cost of clean-up is more than preventing contamination in the first place

wastes and reduce the potential for soil contamination by using closed loop systems, where wastes are handled in tanks rather than earthen pits.

The cost of digging and hauling pit wastes were estimated to be \$30,000

- \$80,000 depending upon distance from the waste disposal facility.¹⁶ Industry experts provided a range of estimates, only a few of which were based on real-life examples, for the cost of using closed-loop systems. The costs ranged from \$30,000 for a shallow well,¹⁷ to \$160,000¹⁸ for a deeper Dakota formation well, and \$150,000 for a very deep Morrow well.⁹ Higher costs were provided by Merrion Oil and Gas, but during testimony it was revealed that costs were higher than expected because of equipment problems.²⁰

Sources

- 1 TEDX (The Endocrine Disruption Exchange). Nov 15, 2007. "Number of chemicals detected in reserve pits for 6 wells in New Mexico that appear on national toxic chemicals lists." Amended document. http://www.endocrinedisruption.com/files/nm_pits_and_toxics_lists_revised_2-1-08.pdf
- 2 Testimony of Wayne Price, OCD Environmental Bureau Chief. OCD Pit Hearing Document 14015_486_CF, pp. 351 and 352. http://ocdimage.emnrd.state.nm.us/Imaging/FileStore/SantaFeAdmin/CF/61671/14015_486_CF.tif.
- 3 More than 30 years ago, Congress exempted oil and gas industry wastes from the primary federal law governing hazardous wastes (the *Resource Conservation and Recovery Act*), even though many oil and gas wastes meet the Act's definition of hazardous waste. (See Kosnik, R. 2007. *The Oil and Gas Industry's Exclusions and Exemptions to Major Environmental Statutes*. pp. 6-8. EARTHWORKS Oil and Gas Accountability Project. <http://www.earthworksaction.org/pubs/PetroleumExemptions1c.pdf>)
- 4 Ground water protection standards can be found in New Mexico Administration Code (NMAC) 20.6.2, Subsection 3103. Standards for ground water of 10,000 mg/l TDS concentration or less. http://www.nmenv.state.nm.us/NMED_Regs/gwb/20_6_2_NMAC.pdf
- 5 These samples contained elevated concentrations of arsenic, lead, mercury, 2,4-Dinitrotoluene and/or 2-methylnaphthalene. ("OCD's 2007 Sampling Program – What's in a Pit?" p. 34, OCD Exhibit 15, OCD Pit Hearing Document 14015_534_CF, http://ocdimage.emnrd.state.nm.us/Imaging/FileStore/SantaFeAdmin/CF/61671/14015_534_CF.tif)
- 6 They included naphthalene, benzo(a)pyrene, phenol, benzene, toluene, m,p-xylene, chloride, fluoride, sulfate, pH, total dissolved solids, total arsenic, total barium, total cadmium, total chromium, total mercury, total lead. ("OCD's 2007 Sampling Program – What's in a Pit?" pp. 37 and 38, OCD Exhibit 15, OCD Pit Hearing Document 14015_534_CF, http://ocdimage.emnrd.state.nm.us/Imaging/FileStore/SantaFeAdmin/CF/61671/14015_534_CF.tif)
- 7 TEDX (The Endocrine Disruption Exchange). Nov 15, 2007. "Potential Health Effects of Residues in 6 New Mexico Oil and Gas Drilling Reserve Pits Based on Compounds Detected in at Least One Sample." <http://www.endocrinedisruption.com/chemicals.pits.php>
- 8 Benzene in fluid sample 4600 ug/l WQCC 3103 ground water standard 1 ug/l. Benzene in solid sample: 140,000 ug/kg, NMED SSL 10,300 ug/kg.

- Industry data presented as part of OCD Pit Hearing Exhibit 16. (OCD Pit Hearing Document 14015_557_CF, http://ocdimage.emnrd.state.nm.us/Imaging/FileStore/SantaFeAdmin/CF/61671/14015_557_CF.tif). Soil Screening Levels (SSL) are levels below which there is generally no need for further concern. They are not soil clean-up standards. New Mexico Environment Department. Aug. 2009. *Technical Background Document for Development of Soil Screening Levels*. p. 1. http://www.nmenv.state.nm.us/hwb/documents/NMED_SSG_August_2009_Dec09TableA-1_clean.pdf
- 9 Summary tables comparing OCD and industry committee pit samples. (OCD Exhibit 16, OCD Pit Hearing Document 14015_557_CF, http://ocdimage.emnrd.state.nm.us/Imaging/FileStore/SantaFeAdmin/CF/61671/14015_557_CF.tif)
 - 10 Prukop, J. Sept. 17, 2008. "Setting the Record Straight on the Pit Rule." *Farmington Daily Times*. (Guest Columnist). Article available at: <http://oil-gas.state.co.us/RuleMaking/DocsSubmittedAfter0820/A2ColumnbyJoannaPrukopFarmingtonDailyTimes.pdf>
 - 11 January 14, 2011. Personal Communication between Gwen Lachelt, EARTHWORKS Oil and Gas Accountability Project and Glenn Von Gonten, Senior Hydrologist, New Mexico Oil Conservation Division.
 - 12 Testimony of Wayne Price, OCD Environmental Bureau Chief, OCD Pit Hearing Document 14015_485_CF, p. 88, http://ocdimage.emnrd.state.nm.us/Imaging/FileStore/SantaFeAdmin/CF/61671/14015_485_CF.tif
 - 13 Testimony of Sam Small, OCD Pit Hearing Document 14015_500_CF, p. 2807, http://ocdimage.emnrd.state.nm.us/Imaging/FileStore/SantaFeAdmin/CF/61671/14015_500_CF.tif
 - 14 Testimony of Sam Small, OCD Pit Hearing Document 14015_500_CF, p. 2941, http://ocdimage.emnrd.state.nm.us/Imaging/FileStore/SantaFeAdmin/CF/61671/14015_500_CF.tif
 - 15 Testimony of Wayne Price, OCD Environmental Bureau Chief, OCD Pit Hearing Document 14015_485_CF, p. 84, http://ocdimage.emnrd.state.nm.us/Imaging/FileStore/SantaFeAdmin/CF/61671/14015_485_CF.tif
 - 16 Testimony of Tom Mullins, Synergy. OCD Pit Hearing Document 14015_500_CF, pp. 3106-3108, http://ocdimage.emnrd.state.nm.us/Imaging/FileStore/SantaFeAdmin/CF/61671/14015_500_CF.tif
 - 17 Sam Small. IPANM Exhibit 13-5, "A Cost analysis of the impact of draft rule 19.15.17 NMAC on oil and natural gas operations in New Mexico. October, 2007." pp. 4, 5. OCD Pit Hearing Document 14015_591_CF, http://ocdimage.emnrd.state.nm.us/Imaging/FileStore/SantaFeAdmin/CF/61671/14015_591_CF.tif
 - 18 Testimony of Larry Scott, Lynx Petroleum. OCD Pit Hearing Document 14015_501_CF, pp. 3279, http://ocdimage.emnrd.state.nm.us/Imaging/FileStore/SantaFeAdmin/CF/61671/14015_501_CF.tif
 - 19 Tyson Foutz of Merrion Oil and Gas testified that his company used closed loop drilling on two wells in the Farmington area, and that using these wells resulted in an incremental increased cost of \$232,000. But Mr. Foutz admitted that the drilling rig that he used was not optimal for the closed-loop system that he rented, and as a result the waste handling costs were higher than expected. Tyson Foutz, Merrion Oil and Gas. OCD Pit Hearing Document 14015_500_CF, pp. 3030-3041. http://ocdimage.emnrd.state.nm.us/Imaging/FileStore/SantaFeAdmin/CF/61671/14015_500_CF.tif
 - 20 For examples, see Earthworks web site: "Alternatives to Pits" <http://earthworksaction.org/alternativestopits.cfm> Also, Rogers, D., Smith, D., Fout, G. and Marchbanks, W. Dec. 2006. "Closed-loop drilling system: A viable alternative to reserve waste pits," *World Oil*. Vol. 227 No. 12. <http://www.worldoil.com/December-2006-Closed-loop-drilling-system-A-viable-alternative-to-reserve-waste-pits.html>
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