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June 15, 2020

Earthworks Comments on CDPHE's Regulation and Licensing of Technologically Enhanced Naturally Occurring Radioactive Material (TENORM)

6 CCR 1007-1 Part 20

Thank you for the opportunity to comment on Colorado's Department of Public Health and Environment (CDPHE) Regulation and Licensing of Technologically Enhanced Naturally Occurring Radioactive Materials (TENORM) 6 CCR 1007-1 Part 20. Please accept these comments on behalf of Earthworks, a national nonprofit dedicated to protecting communities and the environment from the impacts of mineral and fossil fuel development while seeking a just, equitable, fair, and sustainable transition to clean energy.

TENORM Definition

Colorado should update the definition of TENORM to better protect public health and the environment and provide clearer application to the regulated community. Current law defines TENORM as: "..naturally occurring radioactive material whose radionuclide concentrations are increased by or as a result of past or present human practices."[1]

Here, the human activity must increase radioactivity or concentrate the NORM.

The Environmental Protection Agency (EPA) offers a better TENORM definition: "Naturally occurring radioactive materials that have been concentrated *or exposed to the accessible environment as a result of human activities such as manufacturing, mineral extraction*, or water processing."[2] (emphasis added)

Here, the human activity brings NORM into contact with the environment. This definition better reflects the purpose of mining, oil, and gas operations- to remove minerals, including NORM, from where they naturally occur deep underground up to the surface.

TENORM Determination 20.3.2

We appreciate that this draft rule requires all generators of waste that may contain TENORM to determine whether that waste meets or exceeds applicable thresholds.[3] Importantly, this proposed rule recognizes that Naturally Occurring Radioactive Material (NORM) and other Exploration and Production (E&P) wastes may become technologically enhanced beyond the point of generation. And the transport, transfer, distribution, disposal, or other processes may result in increased concentrations

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of NORM. As such, we also appreciate this rule's requirement that others along the chain of custody also make a TENORM determination.

If TENORM, Then Hazardous

The precautionary approach also demands that the state presume that **all** TENORM waste streams are hazardous wastes subject to Subtitle C of the Resource Conservation and Recovery Act (RCRA), notwithstanding any individual exemptions for some E&P waste streams. Therefore, in addition to a TENORM determination, this draft rule should also require waste generators perform a hazardousness determination. When tests reveal a certain E&P waste's radioactive concentrations or hazardous characteristics, disposition of that waste should occur accordingly.

The reason is that, as a scientific and practical matter, E&P waste mixtures containing TENORM tend to exhibit at least one RCRA C hazardous characteristic, usually toxicity.[4] Proper characterization will drive science-based decisions resulting in better environmental and public health outcomes.

We appreciate that CDPHE recognizes some waste streams may require a hazardous determination: Pigging waste, tank bottoms, filter solids or cake, condensate sludges, molecular sieve residuals are potentially subject to a RCRA C hazardous determination.[5] We believe this draft rule should expand that list to include the entire suite of E&P wastes including drilling fluids, produced fluids, produced water, and oily waste.

Reliance on the regulatory loophole for hazardous waste creates enormous confusion for the public and regulated community. Radioactive wastes create hazards. The notion that radioactive wastes are somehow not hazardous is nonsensical, unscientific, and is a disservice to communities and the environment. For the oil and gas industry, this draft rule complicates separate regimes for similar waste streams including those: TENORM and hazardous, TENORM and non-hazardous, nonTENORM and hazardous, and nonTENORM and nonhazardous. This confusion carries extra risks and potential liabilities for all waste handlers. Colorado can avoid most of this by coupling a TENORM determination with a hazardous determination for all E&P waste streams.

Colorado's TENORM Rule Should Apply to Hardrock Mining Activities

Colorado law also exempts "byproduct material" and enriched or depleted uranium from TENORM. Byproduct material includes the "tailings or wastes produced by the extraction or concentration of uranium or thorium from ore processed primarily for its source material content, including discrete surface wastes resulting from uranium solution extraction processes".[6]

The result is that the Division of Reclamation, Mining and Safety (DRMS) does not regulate TENORM from Colorado's uranium mines, mills, and mill tailings

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impoundments. The Nuclear Regulatory Commission (NRC) licenses these facilities per Atomic Energy Act Agreement, however, neither they nor the Environmental Protection Agency (EPA) effectively regulate mining TENORM.

Recent litigation against DRMS has led to the VAN-4[7] and Cotter mines[8] commencing reclamation activites instead of receiving successive temporary cessations. We expect this trend to continue as DRMS forces more so-called "zombie" uranium mines to reclaim, resulting in tons of byproduct TENORM churning up throughout the state. Cleaning up more uranium mines benefits public health and the environment. It also compels CDPHE to ensure that this TENORM draft rule applies appropriately to uranium mining reclamation and related activities, rather than exempting them entirely.

Fremont County, Colorado has 56 abandoned uranium mines, nearly all have open pits with overburden containing TENORM.[9] Approximately 1000 abandoned uranium mines exist in the Dolores-San Miguel watershed, where tailings were dumped directly into the creek canyons below, both broadly dispersing waste and leaving it behind forever. Boulder, Clear Creek, Gunnison, Jefferson, Moffat, and Saguache Counties also have concentrated areas with abandoned uranium mines.

Mining activities are human activities. Impounding tons of mine tailings may concentrate NORM; and collecting the waste in piles may expose radiation to the accessible environment. Therefore, CDPHE's rule should exercise broad authorities to address TENORM protection from mine sites and develop specific protections to address TENORM from individual abandoned and operating Colorado mining operations.

Disposal of Waste

Neither hazardous waste nor radioactive waste belong on Colorado's roads or soils. It serves no beneficial use. There are only three proper disposal options for TENORM wastes:

1. A licensed NRC facility
2. A Class I Underground Injection Control (UIC) well designed for radioactive or hazardous materials.
3. A RCRA C licensed facility

Equity, Transparency, and Accountability

The Health Equity and Environmental Justice Principles incorporated by CDPHE in June 2016 clearly "authorizes the incorporation of equity and justice principles and practices into [CDPHE] work where such authority is not specifically identified in regulation or statute."[10] CDPHE has the authority and moral obligation to apply these principles throughout all rulemakings, including this TENORM draft rule.

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Furthermore, CDPHE's 2019-2020 Strategic Plan states (pg.5): *"Staff members...play a critical role in educating people in Colorado so they can make informed choices."* CDPHE's priority goals within the strategic plan include (p.26) *"digital transformation"* and *"[a]dvancing operational excellence that consistently exceeds expectations."* A key strategy of the latter is to *"implement and pilot the Community Participation Principles into CDPHE Division plans by June 30, 2020."*

One guiding Community Participation Principle states that *"[c]ommunities should have access to plain language information and data, and the opportunity to participate in decisions about activities that may affect their environment and health,"* and is followed by an example to *"...establish an outreach plan for involving the affected community in monitoring; compliance and enforcement; permitting; and voluntary programs."*

Community involvement to the degree outlined in CDPHE's Strategic Plan and Community Participation Principles explicitly includes 1) access to data, 2) decision-making power, and 3) participation in various levels of regulatory activity. Yet, in its draft TENORM rule, CDPHE severely limits access, decision-making, and participation by failing to require that all TENORM waste characterization and lab analyses be made part of the public record.

In the current draft, TENORM generators are only required to submit waste analyses to the department upon the agency's request. This approach lacks transparency, keeps TENORM data off the public record, and limits public access to critical environmental health data. Therefore, CDPHE must require that all of registrants' TENORM data, including waste characterization records and hazardous determinations, be regularly submitted to CDPHE in digital formats and uploaded to a publicly accessible, searchable online platform.

Conclusion

Other than testing, this proposal does very little to distinguish normal E&P waste from TENORM. The disposal options generally conform to those already available for most oil and gas wastes, especially Class II UIC well disposal. Because TENORM waste contains radioactive and often hazardous materials, Class II disposal is inappropriate, as is land application or other so-called beneficial uses.

Colorado has waste disposal options for radioactive waste and hazardous waste. This rule should require TENORM wastes conform to those rather than further widening the RCRA C loophole for radioactivity.

[1] See 6 CCR 1007-1.2.2

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[2] U.S. EPA, Evaluation of EPA's Guidelines on Technologically Enhanced Naturally Occurring Radioactive Materials (TENORM)
[3] See Draft Rule Part 20.3.2(1)
[4] See US Environmental Protection Agency. "Regulatory Determination for Oil and Gas and Geothermal Exploration, Development, and Production Wastes." Federal Register, Volume 53, 1988. www.epa.gov/osw/nonhaz/industrial/special/oil/ogreg88.txt.
See also Marcellus Shale Safe Drilling Initiative Study, Draft Partial Response to Comments On Draft Best Practices
Report, April 2014, Classification of wastes under the Resource Conservation and Recovery Act (RCRA)
See also T. Hayes. Sampling and Analysis of Water Streams Associated with the Development of Marcellus Shale Gas, Gas Technology Institute, report prepared for the Marcellus Shale Coalition. December 2009. http://energyindepth.org/wp-content/uploads/marcellus/2012/11/MSCommission-Report.pdf
See also Claudia Zagrean Nagy, California Dep't of Toxic Substances Control, Oil, Exploration and Production Wastes Initiative (2002) at 36
[5] See Draft Rule 20.6.1(5) and 20.6.1(8) and 20.6.1(9).
[6] See 6 CCR 1007-1.2.2
[7] See https://www.scribd.com/document/419857360/INFORM-v-MLRB-Court-of-Apeals-Decision-July-25-2019
[8] See Feb. 3, 2020 letter from Cotter Corporation President, Ken Mushinski to Russell Means, Minerals Program Director, DRMS re: Re: JD-6 Mine, Permit No. M-1977-310; JD-7 Mine, Permit No. M-1979-094HR; JD-8 Mine, Permit No. M-1984-014; JD-9 Mine, Permit No. M-1977-306; SR-11 Mine, Permit No. M-1977-451; SR-13A Mine, Permit No. M-1977-311; SM-18 Mine, Permit No. M-1978-116; LP-21 Mine, Permit No. M-1977-305; CM-25 Mine, PermitNo. M-1977-307; and Mineral Joe Mine, Permit No. M-1977-284
[9] Colorado Geological Survey, Radioactive Mineral Occurrences of Colorado and Bibliography, (Bulletin 40), pp. 38-39.
[10] Department Policy Manual, Number (Part) 2.24, Colorado Department of Public Health & Environment, June 2016. Accessed online June 5, 2020: https://drive.google.com/file/d/1wZzxB3z6g7tWPP4hVTOqsept-S05yCLZ/view

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