Oregon
Kate Brown, Governor

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February 13, 2020

James Denson
PNW/BC Environmental Protection Manager
Waste Management
7227 NE 55th Ave
Portland, OR 97218

Mr. Denson:

Enclosed is a Notice of Violation issued to Chemical Waste Management of the Northwest, a subsidiary of Waste Management, Inc. for violations of Oregon Administrative Rules (OAR) prohibiting the disposal of radioactive materials within the state of Oregon.

As described in the Notice of Violation, the Department of Energy has determined Chemical Waste Management is in violation of OAR 345-050-0006. Chemical Waste Management has thirty (30) days from the receipt of this Notice of Violation to provide a written response to the Department with the information listed in Section V of the Notice. Please review this Notice of Violation carefully to ensure that all corrective measures are completed by the specified deadlines.

I appreciate that you met with my staff on January 24 and again on February 6 to review the facts of this case and respond fully to our inquiries. I appreciate also your openness to joining us in a public process to evaluate the safest and best path forward.

If you have any questions please contact Ken Niles, Assistant Director for Nuclear Safety, at 503-378-4960 or by e-mail at ken.niles@oregon.gov.

Sincerely,

Janine Benner
Director

CC:
Andrew Kennefick, J.D.
CT Corporation System, Registered Agent #003292-27
Patrick Rowe, Oregon Department of Justice

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In the Matter of:	)	Notice of Violation
Chemical Waste Management	)	OAR 345-050-0006
Of the Northwest, Inc.	)	
	)	
Responsible Party	)	

I. Authority

This Notice of Violation is issued by the Oregon Department of Energy (Department) pursuant to OAR 345-029-0020(1).

II. Statement of Facts & Findings

1. On September 11, 2019, the Department was made aware by a North Dakota citizen that potentially radioactive wastes from the company Goodnight Midstream, LLC were allegedly being disposed in an Oregon landfill. Goodnight Midstream provides brine water supply and recycling services to the oil and gas industry for fracking operations. The solid wastes derived from liquid management are of concern because they potentially qualify as Technologically Enhanced Naturally Occurring Radioactive Materials (TENORM) subject to the disposal prohibition in ORS 469.525 and OAR 345-050.
2. Upon receipt of the citizen notification, the Department contacted the Chemical Waste Management of the Northwest facility in Arlington, Oregon (CWM Arlington) to inquire whether they have a relationship with Goodnight Midstream. The Environmental Protection Manager from CWM Arlington promptly searched the company records and confirmed that no relationship existed. Also on September 11, the Department contacted the corporate offices of Goodnight Midstream in Texas to inquire whether the company or any of its subsidiaries were disposing of oilfield wastes in Oregon.

3. On September 13, the Department received a phone call from the Goodnight Midstream office in North Dakota, whereupon we were informed that Goodnight Midstream contracts with a Montana company named Oilfield Waste Logistics (OWL) to manage its solid wastes. Shipping manifests showed that OWL was sending Goodnight Midstream wastes to CWM Arlington. The Department contacted the CWM Arlington Environmental Protection Manager with this new information and was informed that he would investigate the matter.
4. On September 17, 2019, the CWM Arlington Environmental Protection Manager provided the Department with the Waste Profiles and associated analytical data submitted to CWM by OWL, as well as the Hazardous Waste acceptance authorization forms from Waste Management Inc. for the years 2016, 2017, and 2019, with an expiration on the latest authorization of 9/17/2019. The Environmental Protection Manager also notified the Department that acceptance of further waste from OWL was suspended until this matter was resolved.
5. Between 2016 and 2019, CWM Arlington accepted an estimated 1,284.66 tons of TENORM, the vast majority of which was subject to the disposal prohibition in ORS 469.525 and OAR 345-050-0006. This finding is based on waste documentation provided by the facility, which included the following facts:

    5.1. OWL submitted Waste Profiles and associated analytical data to CWM associated with the subject wastes. The Waste Profile document from OWL for 2016 stated, "Material meets ORD Exemptions 345-050-0025." The cited rule does not cover Radium-226 and Radium-228, which are primary constituents of concern for TENORM waste determinations. The Waste Profiles for subsequent years amend the regulatory compliance statement to include OAR 345-050-0030, which is the correct rule for pursuing a Specific Exemption for Ra-226 and Ra-228. However, the provided analytical data clearly show that the samples exceeded the concentration-based exemption limits for radium-bearing materials (less than 5 picocuries per gram of Ra-226) and thorium-bearing materials (less than 20 picocuries per gram of Ra-228). Specifically, the Ra-226 and Ra-228 concentrations for filter socks exceeded the acceptable concentrations in OAR-345-050-0030 in all three waste profiles submitted in 2016, 2017, and 2019. An email from OWL to CWM Arlington, included in the submission to the Department, indicated that approximately 80 percent of the total waste consisted of filter socks.

    5.2. No analytical data are provided for pipe scale materials listed in the Waste Management "EZ Profile" submitted by OWL. Pipe scale contains Naturally Occurring Radioactive Materials (NORM) for which the Department would normally require testing prior to disposal.

    5.3. The submission materials from 2016 contain analytical data from a waste source called "Nuverra Tank Farm." This waste type does not appear to be associated with a waste type listed in the waste profile submitted by OWL. Furthermore, this waste was not analyzed for Ra-226 or Ra-228, but readings for Gross Alpha and Gross Beta exceed the values in Table 1 of OAR 345-050-0025 (see further discussion below).

5.4. The laboratory selected for waste analysis was not accredited in the State of Oregon for Thorium or Uranium isotopes.

5.5. The Gross Alpha and Gross Beta readings for all analyzed wastes exceeded the standard in Table 1 of OAR-345-050-0025.

5.6. Based on the information described above, CWM Arlington provided Hazardous Waste acceptance authorization forms to OWL for the years 2016, 2017, and 2019, with an expiration on the latest authorization of 9/17/2019. In accepting these wastes despite data either missing for some wastes or clearly showing that other wastes exceeded allowable limits, CWM Arlington failed to perform due diligence regarding compliance with Oregon radioactive material disposal rules.

5.7. In a voluntary reporting letter provided to the Department by CWM Arlington on November 13, 2019, CWM Arlington stated that the total waste received under the OWL waste profile was 1,284.66 tons. CWM stated that the waste would have been disposed in landfill modules 2, 3, and 4 – each approximately 12 acres in size – and at all levels of these modules, which are currently approximately 90 feet thick. In subsequent clarifying discussion, CWM Arlington reported that the waste has been disposed no shallower than ten feet from the current landfill surface. CWM Arlington also presented results of preliminary risk modeling, further discussed in Section IV of this Notice.

6. Subsequent to receipt of the Waste Profile information from CWM Arlington, the Department received data from the State of North Dakota consisting of shipment tracking information of TENORM by OWL, Inc. to the CWM Arlington facility. This second source confirmed the approximate volume disposed and reported analytical results for wastes that appear to exceed the concentrations of radionuclides in the Waste Profiles submitted by OWL to CWM Arlington. The maximum combined radionuclide concentration was 1,731 pCi/g for a small quantity of waste (approximately 1.5 tons), while nearly 300 tons contained concentrations between 100 and 400 pCi/g and nearly 150 tons contained concentrations above 400 pCi/g.

7. The Department has determined based on the information in this section that the date of discovery of this violation is September 17, 2019.

III. Violations

The Department has determined that CWM Arlington is in violation of OAR 345-050-0006.

IV. Classification of Violations

Pursuant to OAR 345-029-0020(2)(e)(A) through (C) the Department considered the following factors in determining the classification of the above violations:

a. The performance of the responsible party in taking necessary or appropriate action to correct or prevent the violation.
b. Any similar or related violations by the responsible party in the previous 36 months.
c. Any adverse impact of the violation on public health and safety.

Pursuant to OAR 345-029-0030, a violation of any applicable rule in divisions 22 through 60 of the Rule (Division 50 is the chapter concerning disposal of radioactive material) or violation of any applicable provision of ORS Chapter 469 typically qualifies as a Class I violation. However, the Department has authority to escalate a Class I violation to Class II based on factors including:

". . . whether the responsible party reported the conditions or circumstances of the violation, the duration of the violation, whether the responsible party implemented prompt and effective corrective actions, the impact on public health and safety or on resources protected by Council standards, and the past performance of the responsible party." (OAR 345-029-0030(2))

Furthermore, OAR 345-029-0030 states that in order to escalate a violation to Class II, the Department must find that the violation meets one of the following criteria:

(a) It is a repeated violation. The Department shall consider whether the successive violation could reasonably have been prevented by the responsible party by taking appropriate corrective actions for a prior violation;
(b) It resulted from the same underlying cause or problem as a prior violation;
(c) It is a willful violation; or
(d) The violation results in a significant adverse impact on the health and safety of the public or on the environment.

Based on the following factors, <u>the Department has determined the acts and omissions of CWM as described in this notice to be a Class I Violation</u> as described in OAR 345-029-0030(1)(c).

1. Representatives of CWM Arlington reviewed analytical data provided by OWL Inc. that clearly showed an exceedance of allowable concentrations of naturally occurring radioactive materials per the Oregon Administrative Rules. Nevertheless, CWM Arlington provided disposal authorization on three separate occasions over the course of three years. However, because this Notice of Violation is the first formal violation, the subject disposal actions do not qualify as a "repeated violation" or a violation that, "resulted from the same underlying cause or problem as a prior violation."

2. While the Department determines that the violation resulted from a lack of due diligence on the part of CWM Arlington, there is no evidence to suggest that the violation was willful in nature. In meetings with the Department following discovery of this incident, staff of CWM Arlington stated that they thought they had understood the waste in question to be exempt from the administrative rules associated with radioactive waste disposal, but this incident demonstrated to them that their interpretation of the exemption requirements was in error.
3. The Department has concluded, based on a preliminary assessment of available data, that the disposal action has not resulted in a significant adverse impact on the health and safety of the public or on the environment. This determination is based on the following factors:
    a. Any potential impacts to groundwater resources are currently controlled via the liner and leachate collection system at the landfill. Potential future groundwater risk will need to be determined and appropriately managed as part of a corrective action process (described in Section V of this Notice).
    b. There is currently no exposure pathway that could present a direct exposure, ingestion, or inhalation risk to human receptors from the subject waste in its present location and configuration. Based on statements by CWM Arlington, all subject wastes have been covered by at least ten feet of cover material. This cover provides shielding from direct radiation exposure and prevents potential inhalation or ingestion risks via airborne particulates. The depth of disposal also significantly reduces the emanation of radon gas at the surface of the landfill. Based on radon emanation modeling performed on behalf of CWM Arlington and independently by the Department, the risk to workers or members of the public associated with radon exposure is negligible.
    c. The past risk to landfill operators as a result of exposure to the subject waste materials at the time the waste was emplaced may be estimated to be within regulatory and safety limits based on two recent analyses performed for TENORM disposal questions in other states.
        i. A risk assessment of 1,150 tons of similar TENORM wastes disposed at the Blue Ridge Landfill in Estill County, Kentucky (Risk Assessment Corporation, 2016) determined that the maximum total dose to a landfill worker would be 4.7 millirems if the same worker attended all 92 waste offloading events.
        ii. A study of landfill disposal of TENORM conducted by the Argonne National Laboratory determined that the dose to the maximally exposed landfill worker would be below a regulatory limit of 100 millirem/year for wastes containing an average concentration of less than or equal to 50 pCi/g of total radium, assuming no more than 25,000 tons of TENORM wastes are disposed of in a single landfill per year (Harto et al., 2014, Tables 6.17 and 6.18). Given that the waste disposed at the Arlington

facility totaled 1,284 tons over a span of three years, and the total dose scales linearly to the amount of waste disposed per year, the dose to a worker at the Arlington facility can be reasonably estimated to not have exceeded regulatory limits, even though the concentrations of individual loads disposed at the Arlington facility in some cases exceeded 50 pCi/g.

iii. CWM Arlington staff indicated that landfill workers operate within pressurized vehicle cabins during most waste operations, using personal respiratory protective equipment when operating outside their vehicles. This represents another safety factor in addition to the low values calculated in the above two examples and all but completely cuts off an exposure pathway to workers for inhalation or ingestion of radioactive materials.

4. The violation was not discovered and reported by CWM Arlington via their own auditing efforts. While CWM Arlington has made voluntary efforts to provide the Department with information concerning this violation, the reporting of the violating circumstances only occurred after Department staff brought them to CWM Arlington's attention.
5. Once the unlawful disposal was brought to the attention of CWM Arlington, they immediately and voluntarily ceased acceptance of waste from OWL and have been forthcoming with information regarding the subject waste material.
6. The Department reserves the right to reclassify the violation, should the Department learn of additional information relevant to the classification. Were the Department to reclassify the violation as a Class II violation and issue a notice of assessment of civil penalty as described in OAR 345-029-0060, CWM Arlington would have the right to request a contested case proceeding as provided for in OAR 345-029-0070.

V. Action Required

Pursuant to OAR 345-029-0020(2)(c) CWM Arlington has thirty (30) days from the receipt of this Notice of Violation to provide a written response to the Department. Pursuant to OAR 345-029-0040, the response must include, at a minimum, the following:

(1) Admission or denial of the violation;
(2) If CWM Arlington admits the violation and can determine suitable corrective action:
- (a) The corrective action taken, and results achieved;
- (b) Corrective action that CWM Arlington plans to take to minimize the possibility of recurrence; and
- (c) The date by which the responsible party expects to achieve full compliance.

If CWM Arlington admits the violation and cannot determine suitable corrective actions <u>within the 30-day or other time period</u> specified in the notice of violation, CWM Arlington must provide a preliminary response that includes a date by which they will submit a final response that includes all information described in (2) above.

(3) In order to determine the appropriate corrective action in response to this violation, CWM Arlington shall complete a comprehensive compliance process that entails the following:

(a) Within 30 days, CWM Arlington shall submit a Draft Risk Assessment and Corrective Action Plan (RA/CAP) to the Department for review. The Draft RA/CAP shall follow all substantive requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process, including the following:

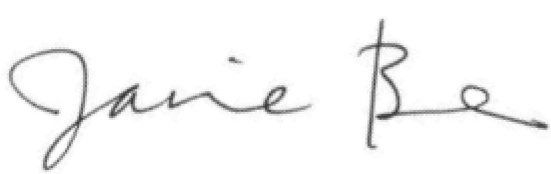
- A quantitative evaluation of past, present, and future potential health risk to reasonably anticipated human receptors resulting from exposure to the subject waste materials.
- An evaluation of reasonable alternatives consistent with the nine evaluation criteria in CERCLA (National Contingency Plan (40CFR300.430(e)(9))).
- Alternatives shall include at minimum two alternatives: exhumation and lawful disposal of all wastes exceeding the definition of “radioactive materials” in OAR 345-050-0006; and in-situ closure.
- Alternatives shall include technological and/or administrative provisions to minimize the possibility of recurrence of the violation.
- Based on the risk assessment and evaluation of alternatives, CWM Arlington shall propose a preferred alternative for final corrective action.

(b) Within 30 days of receiving Department comments on the Draft RA/CAP, CWM Arlington shall submit a Final RA/CAP that adequately responds to all comments and requested revisions. CWM Arlington may request an extension of this deadline with good cause as determined by the Department.

(c) The Department will make the final RA/CAP open to a public comment period of 30 days, with an option to extend upon request by the public.

(d) The Department will consider and respond to all substantive public comments on the RA/CAP and accept or reject the completeness of CWM Arlington’s justification for their preferred alternative.

Issued this 13th day of February, 2020 by the Oregon Department of Energy

By: 

REFERENCES

Risk Assessment Corporation, 2016. FINAL REPORT Dose and Risk Assessment of Technologically Enhanced Naturally Occurring Radioactive Material (TENORM) Disposals at the Blue Ridge Landfill. RAC Report No. 1 - BRLFTENORM-2016. Obtained from the Commonwealth of Kentucky via open records request.

Harto, C., Smith, K., Kamboj, S., and Quinn, J., 2014. Radiological Dose and Risk Assessment of Landfill Disposal of Technologically Enhanced Naturally Occurring Radioactive Materials (TENORM) in North Dakota. Argonne National Laboratory Environmental Science Division. ANL/EVS-14/13.