Guidance for Implementation of New TENORM Laws

(P.A. 688 and P.A. 689 of 2018)

Late last year two bills were passed and signed into law that amended Part 111, Hazardous Waste Management, and Part 115, Solid Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, pertaining to hazardous and solid waste rules. P.A. 688 codified in statute the TENORM disposal guidelines that have existed since 1995 while also adopting some recommendation from the 2014 TENORM Disposal Advisory Panel. The other act, P.A. 689, imposes a tipping fee of $5 per ton that is only required of Hazardous Waste Landfills. Neither affects Type III or CCR landfills. Both Acts will take effect on March 31, 2019.

Below is a summary of the requirements for Type II landfills:

1. Technologically Enhanced Naturally Occurring Radioactive Material, or "TENORM" means naturally occurring radioactive material whose radionuclide concentrations have been increased as a result of human practices. TENORM does not include any of the following material:
   (a) Source material, as defined in Section 11 of the Atomic Energy Act of 1954, 42 U.S.C. 2014, and its progeny in equilibrium.
   (b) Material with concentrations of radium-226, radium-228 and lead-210 each less than 5 picocuries per gram.

2. The statute prohibits a person from delivering to a landfill or Type II landfill for disposal TENORM with any of the following:
   (a) A concentration of radium-226 more than 50 picocuries per gram.
   (b) A concentration of radium-228 more than 50 picocuries per gram.
   (c) A concentration of lead-210 more than 260 picocuries per gram.

3. Except as otherwise specified in the landfill operating license, the owner or operator of a landfill shall not permit the delivery of TENORM for disposal at a landfill unless the generator has provided the following information in writing to the owner or operator of the landfill:
   (a) The concentrations of radium-226, radium-228, lead-210 and any other radionuclide identified using gamma spectroscopy, or equivalent analytical method, in the TENORM based on techniques for representative sampling and waste characterization approved by the Michigan Department of Environmental Quality (MDEQ).
   (b) An estimate of the total mass of TENORM.

(c) An estimate of the total radium-226 activity, the total radium-228 activity, and the total lead-210 activity of the TENORM (i.e. the product of the activity concentration and the mass of the shipment or picocuries per gram times the number of grams).
(d) The proposed date of delivery.

4. The owner or operator of a Type II landfill is required to submit a summary of the TENORM waste received in the prior state fiscal year.

So, what does all these mean for a Type II Landfill operator?

- You should NEVER knowingly accept waste that contains TENORM with concentrations above 50 picocuries per gram of radium-226 and radium-228 or above 260 picocuries per gram of lead-210.

- Although not required under the new law, you may want to install a radiation portal monitors to detect radioactive material present in incoming loads. Alternatively, you may want to have handheld meters available to screen waste that is more likely to contain TENORM (the MDEQ can provide recommendations on equipment). As with other prohibited wastes, it is the operator's responsibility to ensure they are not accepting TENORM wastes. At the same time, waste generators are responsible to disclose the nature of their waste streams and properly characterize the material. Operators should be aware that the kinds of waste streams which typically contain TENORM are:
    a) Oil and natural gas production wastes
    b) Filter media from municipal drinking water treatment facilities and sludges/biosolids from wastewater treatment facilities
    c) Copper mining and production wastes

- If you do accept TENORM waste as defined in PA 688 then you must comply with the following:

    (1) For loads containing TENORM at levels of radium-226 and radium-228 below 50 picocuries per gram and lead-210 below 260 picocuries per gram, the generator is required to provide test results characterizing the estimated total mass of TENORM and the total activity of radium-226, radium-228 and lead-210. Sampling of each load must accurately characterize the radionuclide content. At a minimum, gamma spectroscopy shall be used to analyze samples of the waste. Additional

testing, such as alpha/beta spectroscopy may also be required, on a case-by-case basis. A summary of this information must be submitted annually for all TENORM disposed of at the landfill in the previous fiscal year.

(2) If you dispose of TENORM with a concentration of radium-226, radium-228, or lead-210 above 25 picocuries per gram then the owner or operator of the landfill must do all the following:
   (a) Ensure all TENORM is deposited at least 10 feet below the bottom of the future landfill cap.
   (b) Maintain records of the elevation of TENORM disposed of at the landfill.
   (c) Conduct radiological monitoring of site workers and at the landfill property boundary.
   (d) The hydrogeological monitoring plan must be modified to include testing for radium-226, radium-228, and lead-210.
   (e) Results of all monitoring required shall be included in the environmental monitoring reports per the facility operating license.

(3) If you do accept TENORM wastes with concentrations above 25 pCi/gm then the hydrogeological monitoring plan will need to be revised to analyze for radium-226, radium-228, and lead-210. Samples taken as part of the hydrogeological sampling will need to be tested using gamma spectroscopy. Wet chemical separation of radium isotopes and alpha/beta testing will also be required. The revisions to the hydrogeological plan will be effective immediately regardless of the remaining term left on the current operating license.