

**REQUIREMENTS FOR THE CHARACTERIZATION OF TENORM WASTES**  
*FORMERLY TITLED "REQUIREMENTS FOR THE MANAGEMENT OF SPECIAL WASTES ASSOCIATED WITH THE  
DEVELOPMENT OF OIL AND GAS RESOURCES"*  
**MONTANA DEQ – SOLID WASTE PROGRAM**  
*February, 2012*  
**REVISED August, 2017**

## **Introduction**

This document identifies the specific requirements for characterization of TENORM wastes derived from activities, such as oil and gas exploration and production. Other possible sources of TENORM include drinking water and wastewater treatment wastes, fertilizer production, as well as mining and mineral processing wastes. TENORM is not regulated by Environmental Protection Agency or the Nuclear Regulatory Commission. As a result, TENORM is regulated by individual states.

### **Waste Characterization - Sample Collection and Analytical Requirements**

All licensed solid waste management facilities must document the initial characterization of TENORM waste prior to acceptance and management on site. The initial characterization criteria include:

- Generator information;
- Identification of the waste source location, volume, physical state, and type;
- Identification of the process producing the waste;
- Method of receipt; and,
- Contaminant concentrations or exposure rate.

To facilitate the collection samples of waste characterization, the TENORM waste generator must collect at least one composite sample that consists of 5 sub-samples per 200 cubic yards of contaminated material except for TENORM contaminated filter socks from the same contaminant source. A waste generator of TENORM contaminated filter socks generated from the same contaminant source must collect at least 1 composite sample that consists of 5 sub-samples per 20 cubic yards or less. Table 1 provides the list of constituents for waste characterization. Table 2 provides a list of common TENORM contaminated wastes and the specific waste characterization requirements for the different types of TENORM.

**Table 1: Characterization Requirements for TENORM Waste**

Total Extractable Hydrocarbons (C9–C36) by EPH Massachusetts Method **and**  
Total Purgeable Hydrocarbons (C5-C12) by VPH Massachusetts Method

Polynuclear Aromatic Hydrocarbons (PAH) by Method 8270  
(in accordance with the Department's RBCA guidance Table 1, Tier 1 Surface Soils RBSL's)

Volatile Organic Compounds (VOC) by Method 8260b

Toxicity Characteristics Leaching Procedure (TCLP) Metals

TCLP Benzene

Flash Point

pH

Paint Filter Liquids Test

Total Chloride and Specific Conductance

Radium-226, Radium-228

**Table 2: Waste Characterization Requirements for the different types of TENORM Waste**

<i>Description of Waste Item</i>	<i>Required Testing or Recommended Treatment</i>
Asbestos-containing material	Comply with state and federal rules for removal and disposal
Bags (empty) paper	None
Land clearing vegetative debris, uncontaminated	None
Buckets, detergent (empty)	None
Buckets, grease (empty)	None
Concrete, contaminated from compressor stations, oil, or gas facilities	Test for contaminants of concern on case-by-case
Concrete, uncontaminated	None
Containers, empty	None
Drill cuttings	See Table 1
Barrels, drums, 5-gallon buckets (empty)	None
Fiberglass tanks & pipe (empty)	Clean, cut, or shred
Filters – amine, dehydration, glycol	EPH, VPH, TCLP Benzene,
Filters – cooling tower	Total Chromium
Filters – saltwater	EPH, VPH, Rad-226, Rad-228
Filters – waste oil (1) entire unit is inside metal container	Separate parts, recycle oil and metal parts
Filters – waste oil (2) replaceable fiber or paper filter inside unit	Total Lead and Benzene
Filters – water or wastewater treatment	Rad-226, Rad-228
Iron sponge	Allow to oxidize completely to prevent combustion
Office trash, routine	None
Metal plates, pipes, cable	None, recycle
Molecular sieves	None
Muds – drilling	See Table 1
Muds – sacks of unused drilling mud	Return to vendor or use at other sites
Muds – unused additives	Return to vendor or use at other sites
“Pigging waste” from gathering line in primary field operations	See Table 1
“Pigging waste” from transmission lines	See Table 1
Pipe scale & other deposits removed from piping and equipment	RCRA Metals, Rad-226, Rad-228
Pipe dope, unused	Review MSDS for lead, reuse
Plastic pit liners	Decontaminate
Pumps, valves, etc...	None
Rags and gloves, used	None
Sand – produced during exploration	See Table 1
Soil – containing crude oil hydrocarbon	See Table 1
Soil – containing lube oil hydrocarbons	RCRA Metals, PCB's, EPH, VPH
Sulfur – ferrous elemental sulfur and soil contaminated with sulfur	Recover elemental sulfur – case-by-case
Sorbent pads – crude oil and exempt wastes	RCRA Metals, EPH, VPH, TCLP Benzene
Sorbent pads – lube oil and other non-exempt wastes	RCRA Metals, EPH, VPH, TCLP Benzene
Tank seals – rubber	Drain, recycle
Tower packing	Chromium
Water-treatment backwash solids	RCRA Metals, Rad-226, Rad-228
Wooden pallets, uncontaminated	None

\*Adapted from: Texas Commission on Environmental Quality, Waste Permits Division, Regulatory Guidance RG-003, September, 2006

\*\*40 CFR Part 261.4(b) *Solid wastes which are not hazardous wastes*. The following solid wastes are not hazardous wastes:

(5) Drilling fluids, produced waters, and other wastes associated with the exploration, development, or production of crude oil, natural gas or geothermal energy.