



Landfarm Rules 101

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Administrative Rules of Montana (ARM)

Subchapter 17.50.16

Landfarm License and Operation Standards



Overview

- Applicability and scope
- Definitions
- License application
- Siting standards
- Design criteria
- Facility standards
- Operation and maintenance
- Recordkeeping and reporting
- Remediation standards
- Closure and post-closure



Definitions

- Contaminated soil
 - Soil, rocks, dirt, or earth that has been made impure by contact, commingling, or consolidation with organic compounds such as petroleum hydrocarbons (not hazardous)
 - Group II waste (can be landfilled)

Definitions

- Landfarm facility
 - Solid waste management system engaged in controlled remediation through landfarm treatment technologies of non-hazardous contaminated soil
- One-time landfarm
 - Landfarm facility for the remediation of less than 2,400 cubic yards of non-hazardous contaminated soil generated from a single source that will not be used to treat contaminated soil from multiple sources on an on-going basis

Definitions

- Minor landfarm
 - Up to 2,400 cubic yards of contaminated soil per calendar year
- Intermediate landfarm
 - 2,400 to 8,000 cubic yards of contaminated soil per calendar year
- Major landfarm
 - More than 8,000 cubic yards of contaminated soil per calendar year
- Amounts include soil undergoing treatment and soil accepted

Definitions

- Treatment zone (TZ)
 - Total space within a treatment cell that contains contaminated soils for remediation
- Below treatment zone (BTZ)
 - Undisturbed natural soil within the treatment cell of a landfarm facility that directly underlies the treatment zone to a depth of 3 feet

License Application

- Must have a license to operate a landfarm
- Apply on form supplied by DEQ Solid Waste Program
- Application includes:
 - Owner/operator info, site plan/maps, environmental features, liability insurance, design specs, operation and maintenance plan, analytical data
- Permanent facilities require Montana Environmental Policy Act (MEPA) review

Siting Standards

- Permanent
 - >1,000 feet from domestic water wells
 - >500 feet from residential property boundary
 - >150 feet from surface high water mark
 - >25 feet from base of treatment zone to groundwater
 - >25 but <50 feet, groundwater monitoring required
- One-time
 - Same as above, sans groundwater monitoring requirement

Design Criteria

- Treatment cell slope $<2\%$
- Storm water run-on and run-off controls are provided for 24-hour, 25-year storm event

Facility Standards

- Below treatment zone soils must have conductivity $<1 \times 10^{-5}$ cm/sec
- Soil must have $<5\%$ petroleum hydrocarbons by weight and TPH $<50,000$ ppm
- Toxicity Characteristic Leaching Procedure (TCLP) metals concentrations must be less than hazardous waste limits
- May accept waste that fails paint filter liquids test with department approval

Operation and Maintenance

- Soil sampling results for background soils and contaminated soils
 - Petroleum hydrocarbons and TCLP metals
- Newly applied contaminated soil sampling
 - One composite sample (five subsamples) per 200 cubic yards
- Soil application
 - Lifts of <1 foot
 - Tilled twice in first month and monthly thereafter

Operation and Maintenance

- Treatment zone scheduled sampling
 - April, July, October
 - One composite sample (five subsamples) per one-half acre
- Below treatment zone scheduled sampling
 - October
 - One composite sample (five subsamples) per one-half acre
 - Notify DEQ if contaminants have moved into BTZ

Operation and Maintenance

- Groundwater monitoring plan (if required)
 - Analytical requirements determined by soil contaminants
 - Notify DEQ if contaminants are found in groundwater
 - Corrective action
- Application of liquid waste
 - Cannot exceed field capacity of soil
- Bioremediation agents must be approved by DEQ

Recordkeeping and Reporting Requirements

- Maintain operating record and have it available upon request
 - Sampling collection and analytical results
 - Contaminated soil characterization
 - Timeline of management activities (tillage, etc.)
- Annual report
 - Dates and results of sampling events
 - Dates of maintenance events
 - Changes to site map or operational plan

Remediation Standards

- Montana Risk-based Corrective Action Guidance for Petroleum Releases, Table 1

Chemical / Analyte / Compound	Effects - carcinogenicity	RBSL, mg/kg	Basis
For Gasoline & Light Hydrocarbons measured using the Montana Method for Volatile Petroleum Hydrocarbons (VPH)			
MTBE	c	0.078 *	I
Benzene	c	0.07	I
Toluene	n	21	I
Ethylbenzene	c	8.4	dc
Xylenes	n	75	dc
Naphthalene	c	2.9	dc
C9-C10 Aromatics	n	60	dc
C5-C8 Aliphatics	n	90	dc
C9-C12 Aliphatics	n	160	dc
Lead Scavengers			
1,2-Dichloroethane (DCA)	c	0.019	I
1,2-Dibromoethane (EDB)	c	0.000086 *	I
For Diesel & Heavy Hydrocarbons measured using Montana Method for Extractable Petroleum Hydrocarbons (EPH)			
**EPH Screen	n/a	200	n/a
C9-C18 Aliphatics	n	290	dc
C19-C36 Aliphatics	n	25,000	dc
C11-C22 Aromatics	n	370	I
Acenaphthene	n	27	I
Anthracene	n	2,300	dc
Benz(a)anthracene	c	1.6	dc
Benzo(a)pyrene	c	0.17	dc
Benzo(b)fluoranthene	c	1.7	dc
Benzo(k)fluoranthene	c	17	dc
Chrysene	c	170	dc
Dibenzo(a,h)anthracene	c	0.17	dc
Fluoranthene	n	85	I
Fluorene	n	35	I
Indeno(1,2,3-cd)pyrene	c	1.7	dc
Naphthalene	c	2.9	dc
Pyrene	n	83	I
1-Methylnaphthalene	c	2.1	I
2-Methylnaphthalene	n	6.9	I

Remediation Standards

- If soil meets remediation standards:
 - Remove remediated material and replace with more contaminated soil
 - Apply an additional lift of contaminated soil
 - Close and reclaim the treatment cell
- May not supply or use remediated soils in any location that threatens human health and the environment, for residential topsoil, or for any purpose in school playgrounds or daycare centers

Closure

- Submit a closure plan that verifies:
 - Remediation of all contaminated soils
 - Reclamation of all treatment cells and landfarm features
 - Revegetation of disturbed areas
 - Final grading to prevent ponding and erosion
- Complete within 180 of commencing closure
- Notify DEQ of closure

Post-closure

- Monitor for vegetation growth for 2 years
- Monitor groundwater for 2 years (if required)
- Document monitoring

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