COMMONWEALTH of VIRGINIA
Department of Health
Marissa Levine, MD, MPH
Interim State Health Commissioner
P O BOX 2448
Richmond, VA 23218
TTY 7-1-1 OR
1-800-828-1120

May 14, 2014

**TO:** District Health Directors and Environmental Health Managers

**THROUGH:** Marissa Levine, MD, MPH, FAAFP
State Health Commissioner

**THROUGH:** Allen Knapp, Director
Office of Environmental Health Services

**FROM:** Dwayne Roadcap, Director
Division of Onsite Sewage, Water Services, Environmental Engineering and Marina Programs

**SUBJECT:** GUIDANCE MEMORANDUM AND POLICY (GMP) 143.A

***I. Purpose:*** Identify safe, sanitary, and cost efficient methods to dispose of spent peat media. This policy replaces GMP 143, which is hereby rescinded. This policy considers new information on the characteristics of spent peat and offers an option for onsite burial.

***II. Background:*** Peat is an organic material sometimes used as media in proprietary fixed film treatment. Treatment systems using peat can produce highly treated effluent (10 mg/l or less $BOD_5$ and TSS, and fecal coliform counts less than 2,000 colonies per 100 ml). GMP 147 provides a list of generally approved proprietary systems using peat, producing TL-3 effluent.[1]

Onsite disposal of peat media at a residential property through land application or composting was historically considered unsafe because of the inability to control pathogen contact with children, pets, and vectors (e.g., bugs, flies, mosquitoes, animals). However, proper onsite burial of spent peat will significantly reduce the risk of potential contact. A recent study by Virginia Tech analyzed six spent peat samples for bacteriological and chemical constituents.[2] The study reported that spent peat can comply with Class A biosolids (pathogens less than 1,000 fecal coliform, Most Probable Number (MPN) per gram of total solids-dry weight basis, or less than

---

[1] 12VAC5-613-10 defines "Treatment level 3 effluent" or "TL-3" as having $BOD_5$ and TSS concentrations equal to or less than 10 mg/l each.

[2] 2013. W. L. Daniels, K. Haering, G. Evanylo, and J. Burger. "Final Cumulative Report: Ecoflo Spent Peat Project" Virginia Tech, Blacksburg VA. See Appendix A. The study also evaluated the effect of composting spent peat on the quality of the product. Composting of peat is not addressed in this policy.

three MPN salmonella per four grams (9VAC25-32-675.A.3.a). Tables 1.1 and 1.2 (from the study) summarize results and identify the chemical composition of spent peat samples. A second manufacturer of proprietary technology, Anua, also provided data for review (see Appendix B). Data indicate that spent peat media is below the ceiling concentrations for land applied biosolids found in Table 2, 9VAC25-32-356 by at least a factor of 10.

Peat media used in residential wastewater treatment systems has a life expectancy between seven and 15 years. The time varies depending on the use of the system and system maintenance. Generally, as the number of people served by a peat system increases, and the level of system maintenance decreases, the life span of peat is lessened. With time, all peat will break down and no longer be effective in treating wastewater. The spent peat media must be removed and properly disposed in a safe and sanitary manner; fresh media must be installed to maintain treatment efficiency. The ability of a proprietary treatment unit to produce acceptable effluent quality is dependent on proper replacement of the proprietary media.

***III. Permitting:*** The replacement of peat is considered maintenance and is a reportable incident pursuant to 12VAC5-613 (see also the definition of "maintenance," Va. Code Section 32.1-163). The operator's report must provide sufficient information to explain the method of peat dewatering, peat removal, any stabilization activities, the final disposal of the peat media, and the source of the replacement peat.

Licensed professionals are encouraged to follow the manufacturers' recommendations for properly removing peat from treatment units. Typically, peat is removed by hand or with a vacuum truck that can handle sewage and septage. When removing by hand, the flow to the peat unit is stopped 24 to 72 hours prior to the removal of the peat, which allows drainage and improves handling. A shovel or pitchfork is then used to remove the peat. The units are generally drained to the septic tank, another treatment unit, or to the soil absorption system. Onsite disposal of peat media requires a site and soil evaluation, documented through an application to repair the treatment system. A repair permit from the local health department is only required when a site and soil evaluation is necessary for onsite disposal (see Section V).

**Table 1.1**. Results of pathogen and carbon/nitrogen analysis for six spent peat samples and VT compost subsequently made from those six peat samples.

| Analyte | Spent Peat Sample Number | | | | | | |
|---|---|---|---|---|---|---|---|
| | # 1 | # 2 | # 3 | # 4 | # 5 | # 6 | VT Compost |
| *Salmonella* | ND* | ND | ND | ND | ND | ND | ND |
| *E. coli* (MPN/g†) | 109 | 120 | 129 | 154 | 114 | 163 | ND |
| C (%) | 45.1 | 45.4 | 43.2 | 44.9 | 43.8 | 40.8 | 36.5 |
| N (%) | 1.2 | 1.4 | 1.4 | 1.5 | 1.3 | 1.2 | 3.3 |
| C:N ratio | 36 | 32 | 31 | 29 | 34 | 35 | 11 |

*ND: None Detected
†Most Probable Number (of bacterial colonies) per g.

**Table 1.2**. Results of elemental analysis for six spent peat samples and the VT Compost (VT) made from a blend of the six spent peat samples.

| Elements | Detect. Limit | Spent Peat Sample Number | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | # 1 | # 2 | # 3 | # 4 | # 5 | # 6 | VT Compost |
| | mg/ kg | | | | | | | |
| Nitrogen (Kjeldahl) | 100 | 14.400 | 15.200 | 10.000 | 15.800 | 14.300 | 11.000 | 39.100 |
| Phosphorus | 10 | 1100 | 700 | 1200 | 1100 | 2600 | 1500 | 9600 |
| Potassium | 100 | 400 | 700 | 500 | 500 | 500 | 500 | 17900 |
| Sulfur | 100 | 4300 | 5700 | 4800 | 6600 | 7500 | 5300 | 7400 |
| Calcium | 100 | 24.300 | 22.000 | 31.800 | 20.700 | 72.500 | 33.500 | 44.200 |
| Magnesium | 100 | 3400 | 4400 | 2600 | 1500 | 7700 | 6900 | 6900 |
| Sodium | 100 | 600 | 4200 | 4600 | 3500 | 900 | 2600 | 5600 |
| Iron | 1 | 1610 | 1460 | 1300 | 1500 | 3440 | 8690 | 18000 |
| Aluminum | 10 | 1560 | 650 | 920 | 1490 | 5480 | 3310 | 2090 |
| Manganese | 1 | 69 | 68 | 39 | 77 | 43 | 1290 | 795 |
| Copper | 1 | 75 | 66 | 215 | 425 | 202 | 45 | 497 |
| Zinc | 1 | 41 | 133 | 186 | 263 | 115 | 187 | 509 |
| Cadmium | 1 | BDL* | BDL | BDL | BDL | BDL | BDL | BDL |
| Chromium | 5 | 12 | BDL | 9 | 13 | 12 | 17 | 26 |
| Nickel | 5 | 7 | BDL | 9 | 6 | 6 | 10 | 16 |
| Lead | 5 | BDL | BDL | 8 | 8 | 6 | BDL | BDL |
| Arsenic | 1 | BDL | BDL | 1.1 | 1.5 | 1.3 | BDL | 2.3 |
| Mercury | 0.4 | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| Selenium | 1 | 1 | 3 | 2.5 | 1.4 | 1.3 | 1.1 | 2.4 |
| Molybdenum | 5 | BDL | BDL | BDL | BDL | BDL | BDL | 12 |

*BDL: Below Detection Limit

***IV. Coordination with other Agencies:*** The Department of Environmental Quality (DEQ), Office of Waste Permitting and Compliance and Office of Land Application Programs, concurred with the issuance of this policy on March 23, 2014. This policy specifically addresses on site disposal of spent media for small alternative onsite sewage systems (AOSS), on the property where it was generated, when site and soil conditions allow. Disposal of spent media offsite is not covered by this policy and may be considered on a case by case basis after additional permitting discussion with DEQ occurs.

***V. Disposal Options:*** The following options are available for disposal of spent peat media for small AOSS as defined in 12VAC5-613:

A. Transport of spent media to a landfill.
B. Disposal of spent media on site, on the property where it was generated, when site and soil conditions allow.
C. Composting or land application in accordance with a Virginia Pollutant Abatement (VPA) permit, which is issued by the Department of Environmental Quality.

Options A (transport to a landfill) and C (permitted activity through DEQ) are also applicable to large AOSS. Onsite disposal of spent peat media for large AOSS will be considered on a case by case basis through issuance of a permit by the local health department and consultation with DEQ. The spent peat may be transported to an offsite facility permitted by DEQ for disposal, or processing and beneficial use.

A. Transport of spent media to a landfill.

Dewatered and limed peat is considered solid waste. The Virginia Department of Health (VDH) does not regulate landfills. VDH believes spent peat media from residential applications is safe to landfill, provided that the media is sufficiently dewatered. Nothing in this policy mandates that a landfill must accept spent peat media. Licensed professionals are encouraged to confirm acceptance of spent media with the landfill before delivering it. Based on currently available information, spent media from residential applications is safe to dispose in solid waste landfills provided that:

1. A properly licensed individual removes the spent media.

2. The manufacturer's instructions regarding acceptable peat removal methods are adhered.

3. The spent media is mixed with hydrated lime at a nominal rate of one pound of lime per 0.9-1.0 cubic feet of media. This requirement equals approximately one, 50 pound bag of lime per Puraflo module, three, 50 pound bags of lime for an STB 500 Premier Tech container, or four, 50 pound bags of lime per STB 650 container. The spent media and lime are to be thoroughly combined to ensure adequate contact and mixing of the peat and lime.

4. The spent media does not exhibit free liquid when it is placed in a landfill. If there is any question about the moisture content of the material, the EPA Paint Filter Liquids Test (Method 9095B) should be conducted. To make the field implementation of the test more practical, a one half cup (4 oz, 113.4 grams, or 118 ml.) volume of spent media may be used where a 100 gram or 100 ml. sample is called for in section 6.0 of the EPA Paint Filter Test.

When material is encountered that will not pass the EPA Paint Filter Test, then the spent media must be dewatered prior to disposing in a landfill. Dewatering may occur either on site or off site, but must be done in a manner that does not allow either direct or indirect human exposure to the spent media. When spent media is dewatered on site, the media must be held in an enclosed container that restricts contact by humans or vectors. Additionally, the container used to drain the media must be located in compliance with the setback distances for Pretreatment Units (see 12VAC5-610-597.D, Table 4.1 of the *Sewage Handling and Disposal Regulations*). Liquids leaching from the container must be collected and delivered to a properly permitted treatment system (septic tank, treatment unit, or soil absorption field). The dewatered, limed peat must be transported to the landfill in closed containers with no leakage.

B. Disposal of spent media on site, on the property where it was generated, when site and soil conditions allow.

Offsite, in-ground spent media disposal is prohibited unless permitted by DEQ. Owners interested in composting or land application of spent peat should contact DEQ to obtain proper permits. Spent peat may be transported to an offsite facility for processing, such as a sewage treatment plant or a biosolids processing facility, which is permitted by DEQ. Spent media may be disposed in a trench or other excavation constructed on the property where it was generated, provided the owner submits an application for repair to the local health department and follows the conditions listed below.

1. The location of the trench or excavation complies with all setbacks in Table 4.2 of the Sewage Handling and Disposal Regulations (12VAC5-610-597.D).

2. The disposal trench or excavation does not impact existing site drainage and is not located in areas subject to annual or more frequent flooding, with flooding duration of 24 hours or more. Drainage ways, swales, and the low point of sinkholes should be avoided.

3. The trench or excavation must be at least six feet from the dispersal area of the AOSS (horizontal distance).

4. The bottom of the trench or excavation must be vertically separated by six inches or more above the seasonal water table, or any soil permeability limiting feature. Fill may not be used to create vertical separation.

5. The manufacturer's instructions regarding acceptable peat removal methods must be adhered.

6. Spent media must be placed in the trench or excavation, and mixed with hydrated lime at the same ratio for transport to a landfill. The peat may be mixed in the treatment unit prior to transfer to the excavation, if allowed by the manufacturer.

7. The peat and lime mixture must be compacted to no more than 6 inch lifts, and backfilled with at least six inches of soil. The total thickness of the peat in a trench or excavation should be no more than one foot after compaction. Subsidence will likely occur as the peat degrades. The soil cover above the peat should be slightly mounded to facilitate runoff and offset subsidence. The disturbed area must be seeded and mulched.

The owner shall submit a repair permit application in accordance with 12VAC5-610 with supporting documentation from a licensed onsite sewage system professional that documents the depth to soil limiting features. The licensed professional must document at least two soil borings in the area where the spent peat will be disposed. A site sketch must be provided, which indicates the location and extent of the peat disposal area. The site sketch must also show proper

horizontal and vertical separation distances, as described above. The licensed professional must provide a description of the intended peat removal, lime application, and disposal procedures.

C. Disposal through a DEQ VPA Permit

Owners interested in composting or land application of spent peat should contact DEQ to obtain proper permits. Spent peat may be transported to an offsite facility for processing, such as a sewage treatment plant or a biosolids processing facility, which is permitted by DEQ.

## *VI. Abandonment of Peat Treatment Systems:*

A. Abandonment with Removal of Peat

An owner may want to take a peat treatment system offline and replace it with a new treatment unit or system. The owner shall submit a repair application in accordance with 12VAC5-610 to abandon the tank. Removal of peat must follow one of the prescribed methods in this policy. The location of the abandoned tank must be provided to the local health department. When a peat treatment unit is no longer needed, then the unit shall be properly abandoned and closed as follows:

1. Peat shall be removed in accordance with the manufacturer's instructions and disposed in accordance with one of the alternatives listed and approved by this policy.

2. Mechanical, electrical, and removable tank components, such as lids or tipping pans shall be removed and salvaged, or disposed as solid waste.

3. Plastic tanks should be removed and disposed as solid waste, but may be abandoned in place. Concrete tanks are normally abandoned in place. When a concrete or plastic tank is abandoned in place, the tank top and sides shall be removed or reduced so that they are below the surface of the soil. To the extent possible, the tank sides should be broken to at least one foot below the ground surface. The bottom of the tank shall be broken so it cannot hold water.

4. The tank site shall be backfilled with soil, gravel, or sand and compacted in lifts. The upper foot of backfill shall be soil. The area shall be crowned and seeded for stabilization.

B. Abandonment with Onsite Disposal of Peat

The owner shall submit an application with supporting private sector work for onsite disposal of peat in accordance with 12VAC5-610. The application must document the depth to soil limiting features (with a minimum of two soil borings). A site sketch must be provided that identifies the location of the abandoned tank. The application must provide a description of the intended peat dewatering, lime or portland cement application, and disposal procedures. If the bottom of the peat containment structure is located six or more inches above a limiting feature, then the owner

may leave the peat in the containment structure for disposal by abandonment. The following conditions must be adhered:

1. The separation distance between the bottom of the tank and the limiting feature shall be verified through documentation of at least two soil profiles.

2. The peat unit shall be drained in accordance with the manufacturer's instructions, which usually means cutting flow to the system and allowing free water to drain 24 to 72 hours. The free water must be drained to the septic tank, treatment unit, or soil absorption system.

3. Mechanical, electrical, and removable tank components such as lids or tipping pans shall be removed and salvaged, or disposed as solid waste.

4. Hydrated lime shall be mixed with the peat as detailed for disposal to a landfill. Alternatively, portland cement may be mixed with the peat at a ratio of approximately twice that of hydrated lime (two pounds of portland cement to 0.9-1 cubic foot of peat media).

5. When a concrete or plastic tank is abandoned in place, the tank top and sides shall be removed or reduced so that they are below the surface of the soil. The sides of the tank should be broken at least one foot below the surface of the soil. The bottom of the tank must be broken so it cannot hold water.

6. The tank site shall be backfilled with soil, gravel, or sand and compacted in lifts. The upper foot of backfill shall be soil. The area shall be crowned and seeded for stabilization.

Other abandonment procedures may be considered by the Division and DEQ on a case-by-case basis, if the peat cannot be removed because of site conditions such as, but not limited to, limited access or safety concerns.