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Solid Waste Management Program
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POLICY ON
RECYCLING ASPHALT ROOFING SHINGLES
IN VERMONT

May 2015

Applicable Rules and Guidance:

Solid Waste Management Rules, effective March 15, 2012, Vermont Department of Environmental Conservation (VTDEC), Solid Waste Management Program.

<http://www.anr.state.vt.us/dec/wastediv/solid/documents/SWRule.final.pdf>

Vermont Regulations for Asbestos Control (VRAC), 18 V.S.A. Chapter 26, effective February 1987, amended November 1995, Vermont Department of Health (VDOH).

http://healthvermont.gov/regs/asbestos_control_reg.pdf

Air Pollution Control Regulations, effective July 5, 2014, VTDEC, Air Quality & Climate Division.

<http://www.anr.state.vt.us/air/docs/regs2014/AQCD%20Regulations%202014.pdf#zoom=100>

“Policy on the Management of Asbestos Containing Waste and Vermiculite Insulation in Vermont,” February 2013, VTDEC, Solid Waste Management Program.

<http://www.anr.state.vt.us/dec/wastediv/solid/pubs/finalasbestospolicy2013.pdf>

Terms:

Asbestos Containing Material (ACM) is defined as material that contains greater than 1% by weight of asbestos.

Incidental waste means construction and demolition waste or municipal solid waste not typically associated with residential roof repair, replacement or removal.

Recycled Asphalt Shingles (RAS) means a product produced from pre- and/or post-consumer asphalt roofing shingles that have been processed.

Background:

An estimated 10 million tons of waste shingles are generated every year in the United States, with an estimated 25,000 tons being generated in Vermont. Most of these are post-consumer, tear-off roofing shingles. Currently, end markets for recycled asphalt shingles include feed stock for hot mix asphalt (HMA) and cold patch, feedstock for driving surfaces on rural roads, aggregate for road bases, recycling into new shingles, and fuel. Asphalt shingles are being recycled, or allowed to be included in HMA, in 26 states.

The exact composition of a particular shingle depends on the manufacturer and the roofing application, but the shingle manufacturing process is similar in each instance. Shingles are an organic or fiberglass felt impregnated with liquid asphalt that has been stabilized with limestone. One side of the shingle is coated with small-sized aggregate for protection against physical damage and damage from ultraviolet rays. Because of their simple make up, valuable components, and relative ease of job site segregation, asphalt shingle recycling is attractive.

A variety of obstacles exist in the collection, processing and marketing of used asphalt shingles. Incidental construction and demolition wastes, or other contaminants, need to be excluded. Nails need to be thoroughly removed from tear-off shingles during processing before the final product is released.

Asbestos contamination has been an ongoing concern with shingle recycling. The National Emissions Standards for Hazardous Air Pollutants (NESHAP) defines asbestos containing material (ACM) as any material containing more than 1% asbestos, and shingles are considered a potential ACM. However, information regarding the historic inclusion of asbestos in roofing shingles is inconsistent. Certainly, asbestos is not used in the production of new asphalt shingles, and it is unclear as to what degree asbestos was used in roofing shingle manufacturing. Asbestos was more commonly used in built-up roofs, mastics, underlayments and other roofing production. A recent national compilation of asbestos analyses data from shingle recyclers indicated positive (>1% asbestos) results at an approximate 1.5% frequency.

Effective January 1, 2015, 10 V.S.A. §6605m defines “architectural waste” as a subset of construction and demolition waste, comprised of “discarded drywall, metal, asphalt shingles, clean wood, plywood, and oriented-strand board (OSB).” The law requires that a generator of more than 40 cubic yards—or about one large roll-off container—of architectural waste from a commercial project bring that waste to an architectural waste recycling facility if there is one located within 20 miles. With a law that mandates recycling of asphalt shingles if markets exist, it is imperative that proper, cost-effective, and practicable end-use markets be developed and fostered.

Applicability:

The collection, storage, transfer, or processing of waste asphalt roofing shingles is subject to the requirements of the Solid Waste Management Rules (as well as the Vermont Regulations for Asbestos Control and Air Pollution Control Regulations, as applicable.) Persons intending to recycle asphalt shingles must first obtain a solid waste management facility certification or amend an existing facility certification. This policy, therefore, is not exhaustive as to the facility certification process or the comprehensive requirements therein, but is intended to present Solid Waste Management Program expectations and practices for recycling shingles at a certified facility. Site specific design and operation standards must be incorporated into an approved Facility Management Plan and will be conditioned in the certification.

It is preferable to determine if roofing materials contain asbestos prior to when tear-off activities occur; however, this policy allows for the asbestos-containing material determination to be performed on the waste shingles at a shingle collection and recycling facility.

Vermont Asbestos Inspector licensure is encouraged, but not required, for sampling of roofing and any other material specifically listed in Section 6.1 (A) – (G) of the Vermont Regulations for Asbestos Control (VRAC). While any individual may perform the sampling, representative samples of roofing materials must be conducted in accordance with ASTM Standard Practice E2356. All bulk samples of suspect asbestos-containing materials must be submitted to a Vermont-licensed Asbestos Analytical Entity if asbestos analysis is desired. Removal and handling of asbestos-containing roofing materials must be conducted in accordance with VRAC Section 6.3, unless a variance request per VRAC Section 6.4 is approved by the VDOH.

Asphalt Shingle Recycling Management:

(A) Allowed Wastes and Materials:

The management of Recycled Asphalt Shingles (RAS) is limited to post-consumer, “three-tab” roofing shingles (both new and “tear-off” scrap shingles).

(B) Prohibited Wastes and Materials

The Permittee shall not accept:

- (i) Asphalt shingles from any other source other than residential and/or former residential sources;
- (ii) Any rolled or commercial roofing;
- (iii) Any asphalt *siding* shingle wastes;
- (iv) Any hazardous waste;
- (v) Any other solid waste not specifically authorized under the Facility certification.

(C) Screening

All facility personnel who will come into contact with asphalt roofing shingles shall be given asbestos awareness training, at a minimum, prior to starting their job duties. Asbestos awareness training will consist of identifying the health hazards of asbestos, describing types of materials that may contain asbestos (including the difference between friable and non-friable), and worker protection. Personnel shall also be familiar with this document and the Facility Management Plan. All incoming loads of asphalt shingles shall be screened by trained facility personnel. For each load the employee shall:

- (i) Record the date, time, origin of the waste (project name and location), quantity, roof “history” if known, generator, driver’s name;
- (ii) Visually inspect the load for prohibited wastes, and incidental wastes, and the shingles for the suspected presence of asbestos fibers; and
- (iii) Determine whether the load of asphalt shingles is:

- (1) From a single source and certified by the generator to be from buildings constructed after 1980, or new roofing scrap;
- (2) From a single source, and have been certified by the generator, with appropriate documentation and analytical results, to be Asbestos Containing Materials-free; or
- (3) From a single or mixed source(s), containing some or all shingles from a building constructed before 1980, and untested for the presence of asbestos;

Incidental wastes associated with incoming loads shall not exceed a total of five (5%) percent by volume of the overall load. Should the incidental wastes be determined to be greater than 5%, the entire load shall be rejected, reloaded as necessary, or processed at the facility if allowed by the certification.

(D) Sample Collection and Analysis Requirements

- (i) Asphalt shingles from sources (1) and (2), above, do not require sampling for asbestos.
- (ii) Asphalt shingles from source (3) shall be sampled for asbestos content using Polarized Light Microscopy (PLM), EPA Test Method 600/R-93-116, or an equivalent test method approved by the VDOH. The analysis is to be performed by a VDOH-licensed Asbestos Analytical Entity, and the results are to include both the type and percent asbestos. Asbestos detected at less than 1% by weight will be reported as "trace."

Samples for asbestos shall be collected from 10% of incoming loads of source (iii), or at least one sample per 50 tons of material received at the facility. In addition, the Permittee shall conduct sampling for asbestos content from all suspected loads. Loads that have been subjected to sampling shall be segregated and remain unprocessed until analytical results are obtained.

If asbestos is detected in a sample at greater than 1% by weight, the Solid Waste Management Program will be notified within 24 hours of receiving the results. The segregated load shall be managed as Asbestos Containing Material in accordance with the paragraph below. If no asbestos, or a trace amount of asbestos is detected in the sample, the load that the sample was obtained from may be incorporated in the unprocessed shingles area or container.

Asphalt shingles determined to contain asbestos are to be managed in accordance with Section 6 of the Vermont Regulations for Asbestos Control and disposed of in accordance with the Agency of Natural Resources' "Policy on the Management of Asbestos Containing Waste and Vermiculite Insulation in Vermont"

Asbestos containing shingles shall be removed from the facility within five business days of receiving the analytical results.

All records, inspection reports, and analytical data shall be maintained on-site and available to Agency personnel or their designees during normal business hours.

(E) Asphalt Shingle Storage and Processing:

Unless the load contains prohibited, or incidental waste, shingles from sources (1) and (2) and those from source (3) that were not required to be analyzed, or that were determined to contain less than 1% asbestos by weight shall be stockpiled in an area designated in the approved Facility Management Plan (FMP). The Permittee(s) shall ensure that the amounts of roofing materials accepted, stored and processed do not exceed the amounts listed in the Material Acceptance and Storage Limitations in the Certification. Loads that contain the presence of landfill-banned materials, over 5% incidental wastes, or prohibited wastes shall be rejected, reloaded in the generator's vehicle, or subject to processing to remove the contaminants if the facility is a certified transfer station or architectural waste recycling facility. The processing shall be performed in an enclosed building.

Asphalt shingle processing (nail removal and shredding into a recycled product), if performed at the facility, shall be done in accordance with an approved Facility Management Plan. Specific to shingle recycling, the FMP shall include a:

- (i) Description of traffic flow to and within the shingle storage and/or processing area;
- (ii) System for measuring and recording quantities of asphalt shingles received, incidental waste separated, and, if applicable, RAS produced;
- (iii) System for maintaining inspection logs, sampling records, asbestos analyses, and personnel training records;
- (iv) Procedures for load rejection or segregation;
- (v) Means to control dust and other emissions, noise, litter, and any other nuisance conditions;
- (vi) Description of the processing equipment and associated air pollution control system (i.e., water sprays), equipment to separate metal debris (e.g., nails and staples), and screening equipment for the RAS, if applicable.

Approval of the manufacture or use of Recycled Asphalt Shingles (RAS) as required pursuant to a solid waste certification is not an endorsement of RAS for any advertised benefits as asserted by the Permittee.

The Permittee shall notify, in writing, all recipients of the RAS that:

- (i) RAS shall only be used according to industry or governmental standards
 - (1) in the manufacturing of new shingles;
 - (2) in the construction of roads and parking lots;
 - (3) as an ingredient in sub-base and/or aggregate base;
 - (4) in bituminous concrete for patching (cold patch) applications; or
 - (5) in hot mix asphalt applications.