

Ohio EPA - DSIWM GUIDANCE

SUBJECT: Use of Shredded Tires In Landfill Construction

RULE: Municipal Solid Waste

Industrial Solid Waste

Residual Waste

OAC 3745-27-08(B)(3)

OAC 3745-29-08(C)(4)

OAC 3745-30-07(C)(1)(I)

OAC 3745-27-08(C)(4)

OAC 3745-29-08(C)(1)(I)

OAC 3745-27-08(C)(1)(I)

DATE: November 1, 1994

Issue:

This interpretation discusses the use of shredded tires as a construction material in landfills, as drainage/protection, and as a frost protection layer material and under what circumstances are waste disposal fees to be collected.

Discussion:

Drainage layer/ Protective Layer/ Frost Protection

The use of shredded tires as part of landfill construction design is generating increased interest. Its most common usage initially has been as a drainage/protective layer above the bottom liner. Recent studies indicate that tire chips are highly durable, they are practically non-biodegradable, have high tensile strength, and have low bulk density. Results of hydraulic and physical testing from one study indicate that over a range of simulated overburden pressures of up to 35 feet of municipal solid waste, hydraulic conductivities ranged from 0.79 to 2.74 cm/sec and chemical resistance properties suggest compatibility with landfill leachate.

Shredded tires should not be placed directly on the FML as a substitute for the granular drainage material. The concern is for potential damage to the FML (puncture) from sharp steel strands (belts) and other metals exposed during the normal shredding process.

Though recent studies indicate that the use of shredded tires in the drainage/protective layers above the LCS is technically feasible, their use in the drainage layers of landfill covers is not recommended, until their long term impact on the environment is determined. Certain research studies recommended that tire chips should not be used in structures where they are in contact with surface/runoff water, since they may leach undesirable substances under adverse environmental conditions.

Shredded tires, as a select waste, have been approved for use above the protective layer for the liner/LCS. In this case the shredded tires are employed for the select waste layer to provide additional protection (thickness) over the protective layer before the placement of general waste. As select waste usage in this case, the shredded tires are considered as waste for disposal (fees charged) and cannot be placed prior to cell certification. See the interpretation document, **Protective Layers**, for additional information.

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Shredded tires are considered as construction material when used as necessary frost protection during the recompacted clay liner construction process [see OAC 3745-27,29,30-08(C)(1)(I)]. These tires would require removal from the top of the clay liner unless FML and granular drainage material are already in place. Shredded tires are not to be used as temporary frost protection during construction of the cap system due to the above mentioned leachate concerns with surface water runoff [see DSIWM Guidance **Use of Shredded Tires for Freeze-Thaw Protection during the Construction of Recompacted Clay Liners and Recompacted Soil Barrier Cap Systems at Solid Waste Landfills**].

The Ohio EPA views the use of shredded tires as a legitimate substitute for other construction materials. The use of shredded tires as a construction material is not considered disposal as long as it is a legitimate use of the product.

Use of shredded tires as a construction material for drainage layers in a landfill must be specified in the approved PTI application and documented in the "Construction Certification Report". If shredded tires were not part of the approved PTI application, the owner/operator will need to submit an **alteration** request [see DSIWM Interpretation, **Administrative Approval Mechanisms for Alterations**] to Ohio EPA.

Note that use of shredded tires as frost protection during construction does not have to be included in a PTI application and is not considered an alteration because it is not a component of the landfill.

Disposal Fees

Shredded tires used as a drainage layer or for frost protection directly above the recompacted soil liner are not considered disposal of a waste material and would not be subject to a state or district disposal fee or district generation fees.

As discussed in the DSIWM Guidance, **Required Protective Layers and Recommended Select Waste Layers**, shredded tires could be used as the recommended select waste layer over the required protection layer to provide additional protection to the FML/LCS before the first layer of general waste placement. However, when shredded tires are used as a "select waste" over the protection layer of new landfills the disposal fee is applied. Also, as stated above, tires used as frost protection above an existing FML and granular drainage material would not have to be removed but disposal fees would be applied.

The owner /operator cannot apply "select waste" (as additional protection) or as frost protection above an FML/LCS, until agency concurrence with the Construction Certification Report is received.

Conclusions:

- 1) Shredded tires may be considered as the actual protective layer (construction) if the process producing the tire shreds removes metal strands and demonstrations show no potential damage to the FML - **state and district disposal fees are not applicable.**
- 2) Shredded tires may be used as a select waste layer for the recommended additional protection above the drainage/protective layer before the placement of actual waste - **considered select waste subject to disposal fees** [see DSIWM Guidance **Required Protective Layers and Recommended Select Waste Layers**].
- 3)
 - (a) Shredded tires may be used as necessary frost protection during construction of the recompacted clay liner and later removed - **state and district disposal fees are not applicable.**
 - (b) Shredded tires used as frost protection after FML and granular LCS in place (on top) would not be removed - **subject to disposal fees** and placed after construction certification.