



Filtration

Ecology Fact Sheet

Publication Number 96-413, Revised December 2002

This document may be used by generators interested in treating their own waste by filtration on-site, in accumulation tanks or containers. Generators of hazardous waste who comply with these standards, and the standards in Technical Information Memorandum (TIM) #96-412, *Treatment by Generator*, will meet the requirements of the *Dangerous Waste Regulations*, Chapter 173-303 WAC.

This Fact Sheet provides guidance only for treatment by generator. If treatment is done according to this guidance document, a permit or other written approval is not necessary.

Description and Definitions

Filtration is used to 1) dewater waste effluents, slurries, and sludges generated from industrial treatment processes, and 2) remove undissolved heavy metals present in suspended solids. It does not reduce the toxicity of the waste.

Sludge dewatering eliminates free liquids for landfill disposal, and reduces waste volume for more stable and economical transport and incineration. The major sludge dewatering processes include rotary drum vacuum filters, belt filter presses, and plate and frame filter presses. These methods use either negative or positive pressure to move water through filter media, leaving solids behind.

Other methods of sludge dewatering include gravity thickening through sedimentation, flotation, and centrifugation. These methods are discussed in the Separation Techniques Fact Sheet.

Removal of heavy metals in suspended solids is usually done by granular media filtration. Granular media filtration uses gravity to pass fluid through a bed of granular material, removing solids from the fluid. The suspended solids are removed by straining, physical adsorption, or coagulation-flocculation.

A washwater stream is used to unclog granular filter media and clean the operating parts of the vacuum filter or filter press.

Applicability

Filtration can be used on:

- ◆ Secondary biological sludge
- ◆ Water treatment alum sludge
- ◆ Metal hydroxide sludge
- ◆ Oily sludges (i.e. from API separators and dissolved air flotation units)
- ◆ Brine sludge

Granular media filtration is generally used after gravity separation. It removes additional suspended solids and oils before other treatment processes. It is also a polishing step that lowers the levels of suspended solids and associated contaminants in treated wastes.

If the department determines that the treatment process poses a threat to public health or the environment, the generator may be required to obtain a treatment permit. If the treatment is part of a wastewater treatment operation [regulated by Permit by Rule (PBR)], or the waste is being treated to meet Land Disposal Restriction (LDR) standards, please see "Other Regulatory Requirements", below.

This document is intended solely as guidance. It addresses only the requirements of the *Dangerous Waste Regulations*. The generator is still ultimately responsible for complying with all applicable federal, state and local requirements relating to on-site waste management. Based on the analysis of specific site circumstances, Ecology officials may require a generator to manage their waste in a manner other than as specified in this guidance. Ecology may also revise this Fact Sheet at any time.

Criteria

The following criteria apply in addition to the guidance in TIM 96-412:

A generator may treat his waste by filtration, provided that:

- 1) The filtration equipment and its connection to the tank/container is totally enclosed.
- 2) The dewatered liquid (filtrate) and washwater stream from the filtration process is designated and handled appropriately.
- 3) The filter cake or filter media is accordingly designated and handled as hazardous or non-hazardous waste.
- 4) There are no spills or releases from the operation to the environment, or if there are, they are cleaned up immediately.
- 5) All equipment is decontaminated as needed.

Other Regulatory Requirements

More detailed information on this guidance, or other mechanisms for treatment by generator if this guidance does not apply, is found in Technical Information Memorandum (TIM) No. 96-412, *Treatment by Generator*. Generators must assure compliance with all applicable sections of the *Dangerous Waste Regulations*, Chapter 173-303 WAC, such as proper designation of waste(s); accumulation, handling and labeling standards; reporting standards; spills and discharge requirements; etc. Information on appropriate permit by rule and LDR requirements may be found in the TIM. In addition, the generator must comply with all other applicable federal, state, and local regulations.

Case Examples

The following examples of application of the filtration treatment technology are consistent with this blanket guidance:

- 1) Oily sludge is produced in the oil/water separator unit of a refinery's on-site wastewater treatment system. The sludge is listed under Dangerous Waste No. K051. The sludge is to be dewatered prior to transport off-site to a permitted incineration facility. A mobile filter press unit is brought in and aligned next to the oil/water separator. The sludge is pumped through totally enclosed piping into the filtration unit and processed immediately. The sludge is transported to hazardous waste disposal, and the water is hard-piped back to the oil/water separator.
- 2) Same scenario as Example (1). However, the sludge is pumped to a vacuum truck through totally enclosed piping and then transported to a remote location on-site for processing through a mobile or fixed filtration unit.

Ecology Assistance

For more information please contact a hazardous waste specialist at one of the following Ecology offices:

Northwest Regional Office	425-649-7000
Southwest Regional Office	360-407-6300
Central Regional Office	509-575-2490
Eastern Regional Office	509-329-3400
Industrial Section	360-407-6916
Nuclear Waste	360-407-7100

Ecology is an equal opportunity agency. If you have special accommodation, or require this document in an alternate format, please call the Hazardous Waste and Toxics Reduction Program at (360) 407-6700 (Voice) or 711 or (800) 833-6388 (TTY).