



Guidance on Conducting Hazardous Waste Treatability Studies

THIS POLICY DOES NOT HAVE THE FORCE OF LAW

Hazardous Waste

To provide clarification regarding the conditional exemption for samples of hazardous waste that is undergoing treatability studies.

Background Information

To determine if a particular treatment method will be effective on a given waste or what types of wastes remain after the treatment is complete, generators and others send samples of waste to a lab for testing. Ohio law conditionally exempts generators and collectors of samples when these samples are collected for the sole purpose of conducting treatability studies. Laboratories and testing facilities conducting such treatability studies are also exempt from certain hazardous waste regulations, provided that certain requirements are met. The treatability study exemption allows a laboratory or other testing facility to receive, store or treat hazardous waste for the purpose of evaluating hazardous waste treatment technologies without obtaining a hazardous waste permit for such activities. It is not a means to commercially store, treat, or dispose of hazardous waste.

What Types of Samples are Considered Treatability Study Samples?

A sample of hazardous waste can be considered a treatability study sample when:

- 1) the sample is being collected and prepared for transportation by the generator or sample collector; or
- 2) the sample is being accumulated or stored by the generator or sample collector prior to transportation to a laboratory or testing facility; or
- 3) The sample is being transported to the laboratory or testing facility for the purpose of conducting a treatability study.

This can be found in Rule **3745-51-04(E)** of the Ohio Administrative Code (OAC). Generators or collectors of samples intended for treatability studies are not subject to any requirement of Chapters **3745-51 to 3745-53** or to the requirement to notify Ohio EPA or U.S. EPA of regulated waste activity, nor are they required to include the samples in the quantity determinations of OAC Rule **3745-52-34(D)** and OAC Rule **3745-51-05**. However, these exemptions are applicable only as long as certain criteria are met.

What criteria must be met in order for my treatability study sample to be exempt from hazardous waste regulation?

Quantity Restrictions

In treatability studies, for each process being evaluated for each generated waste stream, the generator or sample collector must use no more than:

- 10,000 kilograms of media contaminated with non-acute hazardous waste;
- 1,000 kilograms of non-acute hazardous waste other than contaminated media;
- one kilogram of acute hazardous waste; and
- 2,500 kilograms of media contaminated with acute hazardous waste.

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Therefore, there can be different treatability studies conducted for a certain waste stream with the quantity restrictions applying to each treatability study.

Treatability Study Sample Shipment

A treatability study sample must be shipped to a laboratory or testing facility that is exempt under paragraph (F) of OAC Rule **3745-51-04** or has a hazardous waste permit or interim status, or is operating under permit-by-rule.

The mass of each sample shipment must not exceed 10,000 kilograms. The 10,000 kilograms quantity may be all media contaminated with non-acute hazardous waste, or may include 2,500 kilograms of media contaminated with acute hazardous waste, 1,000 kilograms of hazardous waste, and one kilogram of acute hazardous waste.

The sample must be packaged so that it will not leak, spill, or vaporize from its packaging during shipment. The transportation of each sample shipment must comply with U.S. DOT, U.S. Postal Service (USPS), or any other applicable shipping requirements. See the U.S. DOT website (www.dot.gov) and USPS website (www.usps.com) for more information. If the DOT, USPS, or other shipping requirements do not apply to the shipment of the sample, the following information must accompany the sample:

- 1) The name, mailing address and telephone number of the originator of the sample;
- 2) The name, address and telephone number of the facility that will perform the treatability study;
- 3) The quantity of the sample;
- 4) The date of shipment; and
- 5) A description of the sample, including its U.S. EPA hazardous waste number.

Record Keeping

The generator or sample collector must maintain copies of the shipping documents and a copy of the contract with the facility conducting the treatability study for three years after completion of the study. In addition, the generator or sample collector must maintain documentation showing the following information in its records for three years after the study. This information must also be included in its annual report to Ohio EPA:

- 1) The amount of waste shipped under this exemption
- 2) The name, address and U.S. EPA identification number of the laboratory or testing facility that received the waste;
- 3) The date the shipment was made; and
- 4) Whether or not unused samples and residues were returned to the generator.

What are the Restrictions for Laboratories Conducting Treatability Studies?

The laboratory or testing facility that conducts treatability studies is not subject to the requirements for permitting, closure, etc., listed in **OAC Rules** 3745-50-40 to 3745-50-66, Chapters 3745-51 to 3745-57, 3745-65 to 3745-69, 3745-205, 3745-256, 3745-266, or 3745-270, or to the requirement to notify Ohio EPA or U.S. EPA of regulated waste activity, provided that the testing facility meets the requirements listed below.

Notification

The testing facility must notify the director of Ohio EPA in writing that it intends to conduct treatability studies. This notification must be sent no less than 45 days before conducting treatability studies. According to the U.S. EPA, the general intent of this provision is to ensure that the state agency is aware that a facility is conducting treatability studies.

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This is a one-time notification, and the testing facility does not need to submit this notification before conducting every treatability study. More information about each individual treatability study must be submitted in the annual report to Ohio EPA for treatability studies required by OAC Rule [3745-51-04\(F\)\(9\)](#).

U.S. EPA Identification Number

The laboratory or testing facility conducting the treatability study must have a U.S. EPA identification number. Information about obtaining a U.S. EPA identification number can be found at:

<http://www.epa.ohio.gov/dmwm/Home/Notiform.aspx>

Quantity and Time Restrictions for Laboratory or Testing Facility

A treatability study is a temporary study on a sample of hazardous waste or media contaminated with hazardous waste. Therefore, there are restrictions on the amount of waste or contaminated media that may be treated, the amount of waste or contaminated media that may be stored at the facility, and the amount of time the waste or contaminated media may remain at the facility for the purpose of conducting treatability studies. These restrictions are as follows:

- 1) **Quantity Restriction of Waste or Contaminated Media Subject to Treatment** – The laboratory or testing facility may subject no more than a total of 10,000 kilograms of “as received” media contaminated with non-acute hazardous waste, 2,500 kilograms of media contaminated with acute hazardous waste or 250 kilograms of other “as received” hazardous waste to initiation of treatment in all treatability studies in any single day. “As received” waste refers to the waste as received in the shipment from the generator or sample collector.
- 2) **Quantity Restriction of Waste or Contaminated Media Stored at Facility** - The quantity of “as received” hazardous waste stored at the facility for the purpose of evaluation in treatability studies must not exceed 10,000 kilograms, the total of which can include 10,000 kilograms of media contaminated with non-acute hazardous waste, 2,500 kilograms of media contaminated with acute hazardous waste, 1,000 kilograms of nonacute hazardous wastes other than contaminated media and one kilogram of acute hazardous waste. This quantity limitation does not include treatment materials (including nonhazardous waste) added to “as received” hazardous waste.
- 3) **Treatability Study Time Limitation** - The laboratory or testing facility must ship the unused treatability study samples and/or residues back to the sample originator within 90 days of completion of the study, or within one year (two years for treatability studies involving bioremediation) after the generator or sample collector shipped the sample to the laboratory or testing facility, whichever date first occurs.

The treated material resulting from the treatability study may be archived at the laboratory or testing facility for future evaluation up to five years from the date of initial receipt. The quantity of treated material archived at the facility must not exceed 500 kilograms, and this quantity is counted against the total treatability study sample storage limit for the facility.

In addition to those restrictions described above, the treatability study must not involve the placement of hazardous waste on the land or open burning of hazardous waste.

Frequently Asked Questions

I have reached the quantity and time limitations for my treatability study. How do I continue the study?

The director of Ohio EPA may grant requests, on a case-by-case basis, for additional time and quantity of waste used for treatability studies. Such requests may be granted for up to an additional two years for treatability studies involving bioremediation, or for quantity limits in excess of those specified above for up to an additional 5,000 kilograms of media contaminated with non-acute hazardous waste, 500 kilograms of non-acute hazardous waste, 2,500 kilograms of media contaminated with acute hazardous waste and one kilogram of acute hazardous waste. Factors to be considered in reviewing such requests include the nature of the technology, the type of process (for example, batch versus continuous),

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size of the unit undergoing testing (particularly in relation to scale-up considerations), the time/quantity of material required to reach steady state operating conditions, or test design considerations such as mass balance calculations. The Division of Hazardous Waste Management's Central Office Engineering Unit can provide assistance with this review. The Central Office Engineering Unit can be contacted at (614) 644-2621.

If the facility has initiated or completed the initial treatability study, the director may grant requests, on a case-by-case basis, for authorization to ship, store, and conduct treatability studies on additional quantities when:

- 1) there has been an equipment or mechanical failure during the conduct of a treatability study;
- 2) there is a need to verify the results of a previously conducted treatability study;
- 3) there is a need to study and analyze alternative techniques within a previously evaluated treatment process; or
- 4) there is a need to do further evaluation of an ongoing treatability study to determine final specifications for treatment.

When requesting these additional quantities and/or timeframes, the generator or sample collector must apply to the director in writing, providing the following information:

- 1) the reason why the generator or sample collector requires additional time or quantity of sample for treatability study evaluation, and the additional time or quantity needed.
- 2) documentation accounting for all samples of hazardous waste from the waste stream that have been sent for or undergone treatability studies, including the date each previous sample from the waste stream was shipped, the quantity of each previous shipment, the laboratory or testing facility to which it was shipped, what treatability study processes were conducted on each sample shipped and the available results of each treatability study;
- 3) a description of the technical modifications or change in specifications that will be evaluated and the expected results;
- 4) if such further study is being required due to equipment or mechanical failure, the applicant must include information regarding the reason for the failure or breakdown and also include what procedures or equipment improvements have been made to protect against further breakdowns; and
- 5) such other information that the director considers necessary.

What are the recordkeeping and reporting requirements for a laboratory conducting treatability studies?

The laboratory or testing facility must maintain records for three years following completion of each study that show compliance with the treatment rate limits and the storage time and quantity limits. The following specific information must be included in the record for each treatability study conducted:

- (1) the name, address, and U.S. EPA identification number of the generator or sample collector of each waste sample;
- (2) the date the shipment was received;
- (3) the quantity of waste accepted;
- (4) the quantity of "as received" waste in storage each day;
- (5) the date the treatability study was initiated and the amount of "as received" waste introduced to treatment each day;
- (6) the date the treatability study was concluded; and

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- (7) The date any unused sample or residues generated from the treatability study were returned to the generator or sample collector or, if sent to a designated facility, the name of the facility and the U.S. EPA identification number.

The testing facility must also keep a copy of the treatability study contract on-site along with all shipping papers associated with the transport of treatability study samples to and from the facility for a period ending three years from the completion date of each treatability study.

Treatability Study Annual Report

The laboratory or testing facility must submit a report to the director of Ohio EPA by March 15th of each year that estimates the number of studies and the amount of waste expected to be used in treatability studies during the current year, and includes the following information for the previous calendar year:

- (1) the name, address, and U.S. EPA identification number of the facility conducting the treatability studies;
- (2) the types (by process) of treatability studies conducted;
- (3) the names and addresses of persons for whom studies have been conducted (including their U.S. EPA identification numbers);
- (4) the total quantity of waste in storage each day;
- (5) the quantity and types of waste subjected to treatability studies;
- (6) when each treatability study was conducted; and
- (7) The final disposition of residues and unused samples from each treatability study.

What must the laboratory do with unused samples or residues generated by the treatability study?

The laboratory or testing facility may return unused samples or residues generated by the treatability study to the sample originator or the facility for which the treatability study is being conducted. If the unused samples or residues are not returned to the sample originator, the laboratory or testing facility must determine whether the unused samples or residues are hazardous waste under OAC Rule [3745-51-03](#). If the unused samples or residues are determined to be hazardous waste, the unused samples or residues are subject to [OAC Rules](#) 3745-50-40 to 3745-50-66 and OAC Chapters 3745-51 to 3745-57, 3745-65 to 3745-69, 3745-205, 3745-256, 3745-266, and 3745-270.

What must the laboratory do when terminating treatability studies?

Once the laboratory or testing facility is no longer planning to conduct treatability studies, the facility must notify the Ohio EPA director by letter. The facility must continue to maintain records and keep a copy of the treatability study contract and related shipping papers on-site for three years following the completion of each study. The facility is not required to submit the treatability study annual report if no treatability studies were conducted during the previous year and the facility has notified the director that treatability studies will no longer be conducted.

What are Examples of Treatability Studies?

Past treatability studies include the following examples:

U.S. EPA Test and Evaluation Facility – 2000

U.S. EPA Test and Evaluation Facility (U.S. EPA T&E) conducted a treatability study in 2000 on waste from the Savannah River Site in South Carolina. The purpose of the treatability study was to study the kinetics of the aerobic metabolic biodegradation of trichloroethylene (TCE) and tetrachloroethylene (PCE) in site soils. This study was conducted to aid in the development of treatability protocols for cometabolic bioventing and biosparging of TCE and PCE contaminated soils. U.S. EPA T&E received 43 kilograms of waste and utilized 23 kilograms in the treatability study. The unused sample and treatment residue was shipped to a Safety-Kleen facility for final disposition.

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U.S. Department of Energy - Miamisburg Closure Project - 2002

The U.S. Department of Energy facility located in Miamisburg, Ohio, conducted treatability studies on its own waste materials in order to assist in final disposal of mixed waste streams. The treatability study samples consisted of 305 kilograms of low tritium pump oil and 370 kilograms of high tritium pump oil. The purpose of the treatability study was to examine the applicability of stabilization processes to this waste stream. There were no unused materials or residues meeting the definition of a hazardous waste remaining from this treatability study.

Where Do I Send Treatability Study Notifications (intention to conduct treatability studies, termination of treatability studies) and Annual Reports?

Please send one copy to:

Ohio EPA, Director

c/o DMWM- ERAS

P.O. Box 1049

Columbus, OH 43216-1049

If you have questions regarding information contained in this guidance document, please contact Ohio EPA's Division of the *Division of Materials and Waste Management's* Engineering Unit at (614) 644-2621.

References

1. Ohio Administrative Code Rule [3745-51-04\(E\)-\(F\)](#)
2. Letter, David Brussard, U.S. EPA Office of Solid Waste to Joseph Paulick, Department of the Army, September 9, 1992.
URL: yosemite.epa.gov/osw/rcra.nsf/Documents/17B7EAAB47160FA7852565DA006F04ED
3. RCRA *Orientation Manual: Chapter 1: Hazardous Waste Identification*:
<http://www.epa.gov/wastes/inforesources/pubs/orientat/rom31.pdf>