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Guide to Discharging CERCLA Aqueous Wastes to Publicly Owned Treatment Works (POTWs)

Office of Emergency and Remedial Response
Hazardous Site Control Division 0S-220W

Quick Reference Fact Sheet

The findings of a recent study conducted by EPA indicate that discharge of CERCLA wastewater to a POTW can be a feasible and effective part of a Superfund response action, and that currently, the option of discharging to a POTW is under-utilized. **This guide provides quick reference to the statutory, policy, administrative, and technical factors involved in discharging aqueous wastes generated during Superfund response actions to a POTW.** Additional guidance on evaluating the use of POTWs can be found in three documents: "CERCLA Site Discharges to POTWs--Guidance Manual" (EPA/540/G-90/005, August 1990), "Treatability Manual" (EPA/540/2-90/007, August 1990), and "CERCLA Site Sampling Program Detailed Data Report" (EPA/540/2-90/008, August 1990).

The discharge of aqueous wastes to a publicly-owned treatment works (POTW) as part of a Superfund response action generally is considered to be an off-site activity, even if a CERCLA waste is first pretreated in a wastewater facility located on site. Consequently, all discharges to a POTW still have to be in compliance with the off-site policy, i.e., any facility accepting the waste must have no relevant violations, uncontrolled releases, or other environmental conditions that pose a significant threat to human health, welfare, or the environment, or otherwise affect the satisfactory operation of the facility. In addition, site managers must comply with both substantive and administrative requirements (e.g., permits) of Federal, State, and local laws and regulations.

EVALUATING THE POTW OPTION

Determining the feasibility of utilizing a POTW as a discharge option should begin as early in the remedial process as possible, i.e., once it is known that wastewater streams generated during site characterization, treatability studies, and/or response actions-will require treatment. Wastewater streams at CERCLA sites that may be suitable for treatment in a POTW include ground water, leachate, surface runoff, or process streams generated by remedial activities (e.g., wastewaters from treatment processes). The necessary steps involved in evaluating the POTW option are outlined below.

1. Identify and Characterize CERCLA Wastewater Discharge

In order for a POTW to accept a CERCLA discharge, it will require data on the nature of the discharge, including the constituents within the wastestream. Therefore, data necessary to characterize wastestreams and determine whether a POTW can receive the discharge should be identified and collected as early in the remedial process as possible (e.g., during the sampling phase(s) of the Remedial Investigation/Feasibility Study).

A POTW generally will require sampling information on all Target Compound List (TCL) constituents before it can accept a waste. [The TCL is a list of 152 volatile and semi-volatile organic compounds, pesticides, polychlorinated biphenyls (PCBs), and inorganics used in the contract laboratory program (CLP) under CERCLA.] In addition, POTWs usually require information about conventional pollutants in the wastestream, such as the five-day suspended solids, nitrite-nitrate, total Kjeldahl nitrogen, total phosphorus, oil and grease, total dissolved solids, color, total sulfides, and pH. The wastestream to be discharged also should be characterized in terms of quantity, i.e., as a function of time or expressed in terms of daily average and daily maximum flows and size and frequency of batch discharges.

Lastly, because of the potential applicability of RCRA requirements to a POTW and the waste management requirements that may be triggered during transportation and storage of the wastes, site managers should determine whether a CERCLA wastewater is a RCRA hazardous waste.

If the CERCLA wastestrearn is considered a RCRA hazardous waste, site managers need to determine whether the Domestic Sewage Exclusion (DSE) applies to the discharge of that waste to a POTW. The RCRA DSE exempts domestic sewage, any mixture of domestic sewage, and other wastes, that pass through a sewer system to a POTW for treatment from classification as a solid waste and, therefore as a RCRA hazardous waste. [The Domestic Sewage Exclusion applies only to the actual point discharge; it does not exclude industrial wastewaters while they are being collected, stored, or treated before discharge; sludges that are generated by industrial wastewater treatment; or wastes received within the POT'W's property boundary by truck, rail, or dedicated pipe.]

2. Identify Local POTWs

Once CERCLA wastestreams have been characterized, site managers should identify existing POTWs within a delineated geographic area in which it is technically feasible to transport the CERCLA wastestream. Factors for evaluating the feasibility of transport to a POTW include:

- The distance to the POTW or its existing sewer lines;
- The volume of the wastewater;
- The viscosity or percent solids of the wastewater;
- Topography of the area;
- The need to obtain right-of-way permits; and
- Cost of transportation.

3. Evaluate Regulatory Status

If the determination is made that the discharge of CERCLA aqueous wastes to a POTW is technically feasible, site managers should begin evaluating the regulatory status of the POTW potentially receiving the wastes. One important source of information about the regulatory status and facility-specific acceptance requirements are the municipal authorities responsible for technical and administrative oversight of each POTW. The National Pollutant Discharge Elimination System (NPDES) authority (State or Regional Office of Water) can provide additional information concerning the level of treatment, capacity, operating history, and collection system that will be helpful for screening POTWs.

If the CERCLA waste stream is considered a RCRA hazardous waste and the DSE does not apply, site managers should determine whether the POTW meets RCRA Permit-by-Rule requirements. POTWs operating under an NPDES permit issued before November 8, 1984 currently must be operating under a valid permit and be in compliance with the permit, including RCRA manifesting and reporting requirements. **[In addition, the waste must meet all Federal, State, and local pretreatment requirements** that would apply to the waste if it were discharged through a sewer, pipe, or similar conveyance. The necessary "POTW-specific" analyses of pretreatment requirements are discussed later under step 5.] If the POTW is operating under a permit issued or renewed after November 8, 1984, it also must comply with RCRA correrative action requirements under 40 CFR 264.101.

Site managers should identify the operations and responsibilities of the POTW and the regulations that apply to these activities to ensure compliance with RCRA permit-by-rule requirements. It is important to involve POTW personnel to ensure that accurate and complete information is received and evaluated. As an additional check, site managers can review EPA's Quarterly Noncompliance Report that includes a listing of all POTW facilities that are in significant non-compliance.

4. Evaluate Technical/Administrative Feasibility

If a POTW is determined to be in compliance with its NPDES permit and is technically capable of accepting the waste (see **Highlight 1**), it should be determined whether acceptance of the CERCLA waste is administratively feasible. Negotiations between EPA and the POTW authority concerning administrative feasibility should consider the permitting process and effects of existing local ordinances.

If pollutants exist in the CERCLA wastewater that the POTW did not previously handle, the NPDES permit may require modifications, or the pretreatment program may require revisions to regulate the new pollutant or increased discharges. In such cases, the POTW may be unwilling to have the changes made, or the required changes may not be feasible in a timely manner. Similarly, local ordinances may include prohibitions that make it illegal for the POTW to

Highlight 1
TECHNICAL FACTORS AFFECTING THE FEASIBILITY OF DISCHARGING TO A POTW

- The POTW's hydraulic and organic load capacity;
- The suitability of the POTW's unit operations for treatment of contaminants;
- If the CERCLA wastestream will be discharged to a sewage collection system, whether that system is separate from or combined with the storm drain system, and the capacity of that system to provide proper containment of the wastestream;
- Whether there are combined sewer overflows between the site and the POTW;
- The adequacy of the capacity and age of the sewer piping system for the CERCLA discharge flow rate;
- The sludge disposal processes currently employed by the POTW; and
- The likelihood that the POTW could treat the CERCLA wastestrearn for the duration required.

accept the CERCLA wastes, (e.g., restrictions on accepting only domestic discharges). Consequently, it is necessary to ensure compliance with these laws and regulations or to see if the possibility of obtaining variances exists.

There also may be liability issues associated with a POTW's accepting Superfund wastes. Section 107 of CERCLA states that whenever there is a release or a threatened release of a hazardous substance, the responsible parties can be held liable for the costs of cleanup of that release. Potentially responsible parties (PRPs) include current owners and operators of the facility, those who owned and operated the facility at the time of the release, persons who transported the substances and selected the disposal facility, the generators of the waste, and the persons who arranged for disposal or treatment of the hazardous substances.

Under CERCLA Section 107(j), federally permitted releases as defined in Section 101 (10) are not subject to such liabilities. These releases include discharges covered by an NPDES permit, permit application, or permit administrative record. These releases also include the introduction of any pollutant into a POTW when such pollutant is specified in (and in compliance with) pretreatment standards, and a pretreatment program has been submitted to EPA for approval. Therefore, local limits should be established for all of the pollutants that exist in the CERCLA wastewater to eliminate the possibility of the POTW's being held liable for the release of hazardous wastes.

Section 119 of CERCLA does not authorize indemnification from liability to facilities regulated under RCRA, including RCRA Permit-By-Rule POTWs. At this time, EPA believes that an extension of indemnification to POTWs, even those not subject to RCRA regulations, would be inconsistent with Congressional intent.

5. Evaluate POTW Pretreatment Requirements

Once the best candidate(s) for receiving the discharge has been determined using the four steps outlined above, a POTW-specific analysis of pretreatment requirements designed to prevent pass through, inhibition, and sludge contamination at a POTW should be conducted to ensure that CERCLA discharges are in compliance. Section 307(b) of the CWA established the National Pretreatment Program, which specifies three types of pretreatment standards: general prohibitions, national categorical standards, and local limits (see **Highlight 2**).

General prohibitions are intended to address site-specific problems at POTWs and to apply a broad baseline level of control to all industrial users discharging to any POTW. National categorical standards are technologically-based effluent limits that must be achieved prior to introduction into a POTW of wastes generated by particular categories of industry, such as leather tanning and metal finishing. [EPA however, has not promulgated specific national categorical pretreatment standards that govern the discharge of CERCLA wastes to a POTW. As a result, CERCLA wastes are treated as non-domestic wastestreams, and are subject to the general pretreatment regulations.] Local limits are specific requirements developed and enforced by individual POTWs to implement the national general prohibitions and categorical standards.

Highlight 2
PRETREATMENT STANDARDS SPECIFIED UNDER THE CWA

- **General Prohibitions** - National prohibitions that are applicable to nondomestic uses that control the introduction of contaminants into POTWs to:

(a) prevent interference (i.e., a discharge that inhibits or disrupts a POTW causing a violation of its NPDES permit or other requirements) with the operations of a POTW; and

(b) prevent pass through (i.e., any discharge to a POTW in concentrations that cause a violation of any requirement of the POTW's NPDES permit) of contaminants through the POTW.

- **National Categorical Standards** - National prohibitions that apply to all non-domestic users and protect against:

(a) fire or explosion hazard in Elie sewers or POTWs:
(b) corrosive structural damage to the POTW;
(c) obstruction of flow in the sewer system;
- interference due to the pollutants high concentration or flow rate; or
- an increase in temperature of Wastewater entering the POTW that inhibits biological activity resulting in interference.

- **Local Limits** - Specific requirements that are developed and enforced by individual POTWs to implement the national general and specific prohibitions. States and localities also may impose more stringent requirements than the national limits on dischargers to their regulated facilities.

POTWs also may have a State-approved pretreatment program and be required to have mechanisms in place to ensure that dischargers comply with applicable pretreatment standards and requirements. Most POTWs likely will require some type of self-monitoring program and submission of monitoring results to the POTW on a periodic basis.

An approved pretreatment program for a POTW may not address all of the constituents of the CERCLA discharge, in which case the site manager must proceed as though an approved pretreatment program did not exist, i.e., site managers must determine whether sufficient mechanisms exist to enable the POTW to ensure compliance with appropriate pretreatment requirements.

Whether an approved pretreatment program exists or not, compliance with applicable regulations must be achieved. If an approved program exists, the evaluation of a POTW's pretreatment requirements consists of obtaining the local limits enforced by the POTW to prevent pass through, inhibition, and sludge contamination. If an approved program does not exist or if the pretreatment program does not address all of the components of the CERCLA waste, local limits must be estimated by calculating the mass balances of the wastestrearn to be disposed.

Estimating Local Limits to Meet Standards

Ideally, the POTW will have existing local limitations for all of the contaminants present in the CERCLA discharge. However, in many cases, the POTW will not have local limitations for all of the contaminants in the CERCLA discharge or existing limits may need to be changed as a result of the discharge. In this case, the limits must be developed by the POTW or estimated by the site managers so that pretreatment alternatives may be evaluated. Promulgated national categorical pretreatment standards can be used in calculating local limits for the CERCLA wastewater constituents where limits do not already exist.

When the estimation of local limitations is necessary, the following measures may be taken:

- Obtain Pertinent Regulatory Criteria to Ensure Compliance of Estimated Limits With the Criteria: In estimating local limits it is necessary to comply with limits that have been established on the Federal and State levels. Furthermore, consulting these limits can give necessary guidance for establishing limits on the local level.

- Calculate a mass balance for each compound detected in the CERCLA waste using treatability data: The purpose of the mass balance is to calculate the general treatment efficiency of the POTW and identify which POTW removal mechanisms will be impacted by the removal of each constituent from the CERCLA wastestream. There are several options for calculating the mass balance of a particular contaminant, including the use of POTW-specific or published treatability data and the use of computer models.

- Evaluate the impact of each contaminant on air emissions, treatment plant operations, sludge disposal, and effluent air quality: Data exists (for most contaminants) that makes it possible to calculate the concentration of those contaminants in air emissions, sludge, and also the amount that will be biodegraded by certain operations.

- Estimate local limits and the expected level of

pretreatment necessary to ensure continued compliance with NPDES permit limits and applicable air emission standards, avoiding any exceedance of State water quality standards and maintaining acceptable levels of sludge quality. Using the local limits and the composition of the CERCLA wastewater, determine if and when additional pretreatment is necessary to ensure compliance with the POTW's pretreatment requirements.

(Eventually, the estimated limits must be transferred by the POTW into enforceable limits. Because this process may take time and cause a delay in the evaluation process, site managers should begin this evaluation as early as possible).

Determining Pretreatment Options

Generally, site managers will have several pretreatment options to achieve the identified limits in effect at a POTW:

- Treatment technologies--(e.g., aerobic biological treatment, precipitation, and oxidation);
- Separation technologies --(e.g., clarification, filtration, and oil and grease separation);
- Polishing technologies--(e.g., carbon adsorption and ion exchange).

[Note: in many cases, these technologies may have already been evaluated as part of other alternatives not involving discharge to a POTW.]

Once possible treatment technologies are identified based on the nature of the CERCLA wastes and the pretreatment requirements of the POTW, it is necessary to develop a pretreatment program that will result in CERCLA wastewater that complies with the POTW's pretreatment requirements.

The key steps in the process for evaluating the feasibility of discharging CERCLA wastes to a POTW are summarized in **Highlight 3.**

Highlight 3
PROCESS FOR EVALUATING CERCLA DISCHARGES TO POTWs