

DESCRIPTION OF THE INDUSTRY

The adoption of the increased pollution control measures required by CWA and RCRA requirements had a number of ancillary effects, one of which has been the formation and development of a waste treatment industry. Several factors have contributed to the growth of this industry. These include: (a) the manner in which manufacturing facilities have elected to comply with CWA and RCRA requirements; (b) EPA's distinction for regulatory purposes between on- and off-site treatment of wastewater in the CWA guidelines program; and (c) the RCRA 1992 used oil management requirements.

A manufacturing facility's options for managing wastes include on-site treatment or sending them off-site. Because a large number of operations (both large and small) have chosen to send their wastes off-site, specialized facilities have developed whose sole commercial operation is the handling of wastewater treatment residuals and industrial process by-products.

Many promulgated effluent guidelines also encouraged the creation of these central treatment centers. Inconsistent treatment of facilities which send their waste off-site to CWT facilities in the guidelines program has resulted in wastewater that is treated off-site being subject to inconsistent standards. EPA acknowledges that this may have created a loop-hole for dischargers to avoid treating their wastewater to standards comparable to categorical standards before discharge. Additionally, RCRA regulations, such as the 1992 used oil management requirements (40 CFR 279) significantly influenced the size and service provided by this industry.

INDUSTRY SIZE

4.1

Based upon responses to EPA's data gathering efforts, the Agency now estimates that there are approximately 223 centralized waste treatment facilities in 38 States. As shown below in Table 4-1, the major concentration of centralized waste treatment facilities is in EPA Regions 4, 5, and 6, due to the proximity of the industries generating the wastes undergoing treatment. Changes in the estimate of the total number of CWT facilities since the 1999 proposal reflect facilities that were included or excluded because of scope changes or clarification. EPA is aware that CWT facilities have entered or left the centralized waste treatment market. This is expected in a service industry. Even so, EPA is comfortable that its estimate of facilities is reasonable and has not adjusted it, other than to account for scope changes and clarifications.

As detailed in Chapter 2, while EPA estimates there are 223 CWT facilities, EPA only has facility-specific information for 163 of these facilities. In preparing the final limitations and standards, EPA conducted its analysis with the known facility specific information and then used the actual data to develop additional information to represent the entire population. Unless otherwise stated, information presented in this document represents the entire population. Table 4-1 provides an example where data is only presented for the facilities for which EPA has facility-specific information.

GENERAL DESCRIPTION

4.2

Centralized waste treatment facilities do not fall into a single description and are as varied as

the wastes they accept. Some treat wastes from a few generating facilities while others treat wastes from hundreds of generators. Some treat only certain types of waste while others accept many wastes. Some treat non-hazardous wastes exclusively while others treat hazardous and non-hazardous wastes. Some primarily treat concentrated wastes while others primarily treat more dilute wastes. For some, their primary business is the treatment of other company's wastes while, for others, centralized waste treatment is ancillary to their main business.

At the time of the original proposal, a few of the facilities in the industry database solely accepted wastes classified as non-hazardous under RCRA. The remaining facilities accepted either hazardous wastes only or a combination of hazardous and non-hazardous wastes. Now, however, the vast majority of the oils facilities accept non-hazardous materials only. As such, EPA believes the market for centralized waste treatment of non-hazardous materials has increased during the 1990s.

EPA has detailed waste receipt information for the facilities in the 1991 Waste Treatment Industry Questionnaire data base. Of the 85 in-scope facilities from the Questionnaire data base, 71 of them are RCRA-permitted treatment, storage, and disposal facilities (TSDFs). As such, most of these facilities were able to use information reported in the 1989 Biennial Hazardous Waste Report to classify the waste accepted for treatment by the appropriate Waste Form and RCRA codes. The Waste Form and RCRA codes reported by the questionnaire respondents are listed in Table 4-2 and Table 4-3, respectively. (Table 14-2 in Chapter 14 lists these Waste Form and RCRA codes along with their associated property and/or pollutants). Some questionnaire respondents, especially those that treat non-hazardous waste, did not report the Waste Form Code information due to the variety and complexity of their operations.

EPA does not have detailed RCRA code and waste code information on waste receipts for the

facilities identified after the original proposal. It is known that the majority of these facilities accept non-hazardous wastes. Of the 78 post-proposal oily waste facilities for which EPA has specific data, only 20 are RCRA-permitted TSDFs.

Centralized waste treatment facilities service a variety of customers. A CWT generally receives a variety of wastes daily from dozens of customers. Some customers routinely generate a particular wastestream and are unable to provide effective on-site treatment of that particular wastestream. Some customers utilize CWT facilities because they generate wastestreams only sporadically (for example tank removal, tank cleaning and remediation wastes) and are unable to economically provide effective on-site treatment of these wastes. Others, many which are small businesses, utilize CWT facilities as their primary source of wastewater treatment.

Table 4-1. Geographic Distribution of CWT Facilities (163 Facilities)

Region	State	# of CWTs	% of CWTs	Region	State	# of CWTs	% of CWTs		
1	Connecticut	5	4.9	5	Illinois	7	25.8		
	Maine	1			Indiana	5			
	Massachusetts	1			Michigan	11			
	Rhode Island	1			Minnesota	2			
2	New Jersey	7	6.8		Ohio	13			
	New York	4			Wisconsin	4			
3	Delaware	1	9.8	6	Louisiana	5	12.9		
	Maryland	2			Oklahoma	2			
	Pennsylvania	7			Texas	14			
	Virginia	6							
4	Alabama	3	19.6	7	Iowa	1	2.5		
	Florida	9			Kansas	2			
	Georgia	3			Missouri	1			
	Kentucky	3			8	Colorado		2	1.8
	Mississippi	1			9	Montana		1	
	North Carolina	3			Arizona	1		9.8	
	South Carolina	2			California	13			
	Tennessee	8			Hawaii	1			
						Nevada		1	
						10		Oregon	2
				Washington	8				

Table 4-2. Waste Form Codes Reported by CWT Facilities in 1989¹

Waste Form Codes										
B001	B106	B112	B119	B206	B219	B310	B501	B507	B515	B604
B101	B107	B113	B201	B207	B305	B312	B502	B508	B518	B605
B102	B108	B114	B202	B208	B306	B313	B504	B510	B519	B607
B103	B109	B115	B203	B209	B307	B315	B505	B511	B601	B608
B104	B110	B116	B204	B210	B308	B316	B506	B513	B603	B609
B105	B111	B117	B205	B211	B309	B319				

¹Table 14-2 in Chapter 14 lists Waste Form Codes and their associated properties.

Table 4-3. RCRA Codes Reported by Facilities in 1989²

RCRA Codes										
D001	D012	F009	K016	K063	P020	P069	U002	U052	U118	U161
D002	D017	F010	K031	K064	P022	P071	U003	U054	U122	U162
D003	D035	F011	K035	K086	P028	P074	U008	U057	U125	U188
D004	F001	F012	K044	K093	P029	P078	U009	U069	U134	U190
D005	F002	F019	K045	K094	P030	P087	U012	U080	U135	U205
D006	F003	F039	K048	K098	P040	P089	U013	U092	U139	U210
D007	F004	K001	K049	K103	P044	P098	U019	U098	U140	U213
D008	F005	K011	K050	K104	P048	P104	U020	U105	U150	U220
D009	F006	K013	K051	P011	P050	P106	U031	U106	U151	U226
D010	F007	K014	K052	P012	P063	P121	U044	U107	U154	U228
D011	F008	K015	K061	P013	P064	P123	U045	U113	U159	U239

²Table 14-2 in Chapter 14 lists Waste Form Codes and their associated properties.

Before a CWT accepts a waste for treatment, the waste generally undergoes rigorous screening for compatibility with other wastes being treated at the facility. Waste generators initially furnish the treatment facility with a sample of the waste stream to be treated. The sample is analyzed to characterize the level of pollutants in the sample and bench-scale treatability tests are performed to determine what treatment is necessary to treat the waste stream. After all analyses and tests are performed, the treatment facility determines the cost for treating the waste stream. If the waste generator accepts the cost of treatment, shipments of the waste stream to the treatment facility will begin. Generally, for each truck load of waste received for treatment, the treatment facility collects a sample from the shipment and analyzes the sample to determine if it is similar to the initial sample tested. If the sample is similar, the shipment of waste will be treated. If the sample is not similar but falls within an allowable range as determined by the treatment facility, the treatment facility will reevaluate the estimated cost of treatment for the shipment. Then, the waste generator decides if the waste will remain at the treatment facility for treatment. If the sample is not similar and does not fall within an allowable range, the treatment facility will decline the shipment for treatment.

Treatment facilities and waste generators complete extensive paperwork during the waste acceptance process. Most of the paperwork is required by Federal, State, and local regulations. The amount of paperwork necessary for accepting a waste stream emphasizes the difficulty of operating centralized waste treatment facilities.

WATER USE AND SOURCES OF WASTEWATER 4.3

Approximately 2.0 billion gallons of wastewater are generated annually at CWT facilities. It is difficult to determine the quantity of wastes attributable to different sources

because facilities generally mix the wastewater prior to treatment. EPA has, as a general matter, however, identified the sources described below as contributing to wastewater discharges at CWT operations that would be subject to the proposed effluent limitations and standards.

Waste Receipts. Most off-site waste received by CWT facilities is aqueous. These aqueous off-site waste receipts comprise the largest portion of the wastewater treated at CWT facilities. Typical waste receipts for the metals subcategory include but are not limited to the following: spent electroplating baths and sludges, spent anodizing solutions, metal finishing rinse water and sludges, and chromate and cyanide wastes. Types of waste accepted for treatment in the oils subcategory include, but are not limited to, the following: lubricants, used petroleum products, used oils, oil spill clean-up, bilge water, tank clean out, off-specification fuels, and underground storage tank remediation waste. Types of wastes accepted for treatment in the organics subcategory include, but are not limited to the following: landfill leachate, groundwater clean-up, solvent-bearing waste, off-specification organic products, still bottoms, used antifreeze, and wastewater from chemical product operations and paint washes.

Solubilization Water. A portion of the off-site waste receipts is in a solid form. Water may be added to the waste to render it treatable.

Used Oil Emulsion-Breaking Wastewater. The wastewater generated as a result of the emulsion breaking or gravity separation process used during the processing of used oil constitutes a major portion of the wastewater treated at oils facilities. EPA estimates that, at a typical oils facility, half of the wastewater treated is a result of oil/water separation processes.

Tanker Truck/Drum/Roll-Off Box Washes. Water is used to clean the equipment used for

transporting wastes. The amount of wastewater generated was difficult to assess because the wash water is normally added to the wastes or used as solubilization water.

Equipment Washes. Water is used to clean waste treatment equipment during unit shut downs or in between batches of waste.

Air Pollution Control Scrubber Blow-Down. Water or acidic or basic solution is used in air emission control scrubbers to control fumes from treatment tanks, storage tanks, and other treatment equipment.

Laboratory-Derived Wastewater. Water is used in on-site laboratories which characterize incoming waste streams and monitor on-site treatment performance.

Industrial Waste Combustor or Landfill Wastewater from On-Site Landfills. Wastewater is generated at some CWT facilities as a result of on-site landfilling or incineration activities.

Contaminated Stormwater. This is stormwater which comes in direct contact with the waste or waste handling and treatment areas. If this contaminated CWT stormwater is introduced to the treatment system, its discharge is subject to the promulgated limitations. The Agency is not regulating under the CWT guideline non-contact stormwater or contaminated stormwater not introduced to the treatment system. Such flows may, in certain circumstances, require permitting under EPA's existing permitting program under 40 CFR 122.26(b)(14) and 40 CFR 403. CWT facilities that introduce non-contaminated stormwater into their treatment system will need to identify this as a source of non-CWT wastewater in their treatment system in their permit applications. This is necessary so that the permit writer may take account of these flows in developing permit limitations that reflect actual treatment.

VOLUME BY TYPE OF DISCHARGE

4.4

In general, three basic options are available for disposal of wastewater treatment effluent: direct, indirect, and zero (or alternative) discharge. Some facilities utilize more than one option (for example, a portion of their wastewater is discharged to a surface water and a portion is evaporated). Direct dischargers are facilities which discharge effluent directly to a surface water. Indirect dischargers are facilities which discharge effluent to a publicly-owned treatment works (POTW). Zero or alternative dischargers do not generate a wastewater or do not discharge to a surface water or POTW. The types of zero or alternative discharge identified in the CWT industry are underground injection control (UIC), off-site transfer for further treatment or disposal, evaporation, and no wastewater generation. Table 4-4 lists the number of facilities utilizing each discharge option.

Average facility wastewater discharge information is presented in Table 4-5 for the indirect and direct discharge options. The proposed effluent limitations guidelines and standards for the CWT industry do not apply to facilities with a zero or alternative discharge.

Table 4-4. Facility Discharge Options

Discharge Option	No. of Facilities with Specific Data	No. of Scaled-Up Facilities
Direct	12	14
Indirect	105	148
Indirect and off-site transfer	1	1
Indirect and no wastewater generation	2	2
UIC	7	9
Off-site transfer	14	22
Evaporation	3	5
Off-site transfer and evaporation	1	1
Zero (not specified)	18	21
Total	163	223

Table 4-5. Quantity of Wastewater Discharged (223 Facilities)

Discharge Option	Quantity of Wastewater Discharged (Million gallons/year)			
	Total	Average	Minimum	Maximum
Direct	535	38.2	0.078	225
Indirect	1,547	10.2	0.0013	177

OFF-SITE TREATMENT INCENTIVES AND COMPARABLE TREATMENT

4.5

As noted before, the adoption of the increased pollution control measures required by the CWA and RCRA regulation was a significant factor in the formation and development of the centralized waste treatment industry. Major contributors to the growth of this industry include EPA decisions about how to structure its CWA effluent limitations guidelines program as well as the manner in which manufacturing facilities have elected to comply with CWA and RCRA requirements.

The CWA requires the establishment of limitations and standards for categories of point sources that discharge into surface waters or introduce pollutants into publicly owned treatment works. At present, facilities that do not discharge wastewater (or introduce pollutants to POTWs) may not be subject to the

requirements of 40 CFR Subchapter N Parts 400 to 471. Such facilities include manufacturing or service facilities that generate no process wastewater, facilities that recycle all contaminated waters, and facilities that use some kind of alternative disposal technology or practice (for example, deep well injection, incineration, evaporation, surface impoundment, land application, and transfer to a centralized waste treatment facility).

Thus, for example, in implementing CWA and RCRA requirements in the electroplating industry, many facilities made process modifications to conserve and recycle process wastewater, to extend the lives of plating baths, and to minimize the generation of wastewater treatment sludges. As the volumes of wastewater were reduced, it became economically attractive to transfer electroplating metal-bearing wastewater to off-site centralized

waste treatment facilities for treatment or metals recovery rather than to invest in on-site treatment systems. In the case of the organic chemicals, plastics, and synthetic fibers (OCPSF) industry, many facilities transferred selected process residuals and small volumes of process wastewater to off-site centralized waste treatment facilities. When estimating the engineering costs for the OCPSF industry to comply with the OCPSF regulation, the Agency assumed, based on economies of scale, in the case of facilities with wastewater flows less than 500 gallons per day, such plants would use off-site rather than on-site wastewater treatment.

The Agency believes that any wastes transferred to an off-site CWT facility should be treated to at least the same level as required for the same wastes if treated on-site at the manufacturing facility. In the absence of appropriate regulations to ensure at least comparable or adequate treatment, the CWT facility may inadvertently offer an economic incentive for increasing the pollutant load to the environment. One of the Agency's primary concerns is the potential for a discharger to reduce its wastewater pollutant concentrations through dilution rather than through appropriate treatment. The final standard is designed to ensure that wastes transferred to centralized waste treatment facilities would be treated to the same levels as on-site treatment or to adequate levels.

This is illustrated by the information the Agency obtained during the data gathering activities for the 1995 proposal. EPA visited 27 centralized waste treatment facilities in an effort to identify well-designed, well-operated candidate treatment systems for sampling. Two of the principal criteria for selecting plants for sampling were based on whether the plant applied waste management practices that increased the effectiveness of the treatment system and whether the treatment system was effective in removing pollutants. This effort was complicated by the level of dilution and co-

dilution of one type of waste with another. For example, many facilities treated metal-bearing and oily wastes in the same treatment system and many facilities mixed non-CWT wastewater with CWT wastewater. Mixing metal-bearing with non-metal-bearing oily wastewater and mixing CWT with non-CWT wastewater provides a dilution effect which generally reduces the efficiency of the wastewater treatment system. Of the 27 plants visited, many were not sampled because of the problems of assessing CWT treatment efficiencies due to dilution of one type of wastewater with another.

The final limitations would ensure, to the extent possible, that metal-bearing wastes are treated with metals control technology, that oily wastes are treated with oils control technology, and that organic wastes are treated with organics control technology.

In developing the final guidelines, EPA noted a wide variation in the size of CWT facilities and the level of treatment provided by these facilities. Often, pollutant removals were poor, and, in some cases, significantly lower than would have been required had the wastewaters been treated at the site where generated. In particular, EPA's survey indicated that some facilities were employing only the most basic pollution control equipment and, as a result, achieved low pollutant removals relative to that easily obtained through the use of other, readily available pollutant control technology. Further, EPA had difficulty in identifying more than a handful of facilities throughout the CWT industry that were achieving optimal removals.