

## DATA COLLECTION

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EPA gathered and evaluated technical and economic data from various sources in the course of developing the effluent limitations guidelines and standards for the centralized waste treatment industry. These data sources include the following:

- C EPA's *Preliminary Data Summary for the Hazardous Waste Treatment Industry*;
- C Responses to EPA's "1991 Waste Treatment Industry Questionnaire";
- C Responses to EPA's "Detailed Monitoring Questionnaire";
- C EPA's 1990 - 1997 sampling of selected Centralized waste treatment facilities;
- EPA's 1998 characterization sampling of oil treatment and recovery facilities;
- C Public comments to EPA's 1995 Proposed Rule;
- C Public comments to EPA's 1996 Notice of Data Availability;
- Public comments to EPA's 1999 Supplemental Proposal;
- C Contact with members of the industry, environmental groups, pretreatment coordinators, Association of Municipal Sewage Authorities (AMSA), regional, state, and other government representatives; and
- C Other literature data, commercial publications, and EPA data bases.

EPA used data from these sources to profile the industry with respect to the following: wastes received for treatment and/or recovery; treatment/recovery processes; geographical distribution; and wastewater and solid waste disposal practices. EPA then characterized the wastewater generated by treatment/recovery operations through an evaluation of water usage, type of discharge or disposal, and the occurrence

of conventional, non-conventional, and priority pollutants.

The remainder of this chapter details the data sources utilized in the development of this final rule.

### *PRELIMINARY DATA SUMMARY*

### *2.1*

EPA began an effort to develop effluent limitations guidelines and pretreatment standards for waste treatment operations in 1986. In this initial study, EPA looked at a range of facilities, including centralized waste treatment facilities, landfills, and industrial waste combustors, that received hazardous waste from off-site for treatment, recovery, or disposal. The purpose of the study was to characterize the hazardous waste treatment industry, its operations, and pollutant discharges into national waters. EPA published the results of this study in the *Preliminary Data Summary for the Hazardous Waste Treatment Industry* in 1989 (EPA 440/1-89/100). During the same time period, EPA conducted two similar, but separate, studies of the solvent recycling industry and the used oil reclamation and re-refining industry. In 1989, EPA also published the results of these studies in two reports entitled the *Preliminary Data Summary for the Solvent Recycling Industry* (EPA 440/1-89/102) and the *Preliminary Data Summary for Used Oil Reclamation and Re-refining Industry* (EPA 440/1-89/014).

Based on a thorough analysis of the data presented in the *Preliminary Data Summary for the Hazardous Waste Treatment Industry*, EPA decided it should develop effluent limitations guidelines and standards for the centralized waste treatment industry. EPA also decided to develop standards for landfills and industrial waste combustors which were promulgated in the

Federal Register on January 19, 2000 (65 FR 3007) and January 27, 2000 (65 FR 4360) respectively. In addition to centralized waste treatment facilities, EPA also studied fuel blending operations and waste solidification/stabilization facilities. As detailed and defined in the applicability section of the preamble to this final rule, EPA has decided not to promulgate nationally applicable effluent limitations guidelines and standards for fuel blending and stabilization operations at this time.

**CLEAN WATER ACT SECTION 308**

**QUESTIONNAIRES**

2.2

**Development of Questionnaires**

2.2.1

A major source of information and data used in developing the effluent limitations guidelines and standards for the CWT category is industry responses to questionnaires distributed by EPA under the authority of Section 308 of the CWA. EPA developed two questionnaires, the 1991 Waste Treatment Industry Questionnaire and the Detailed Monitoring Questionnaire, for this study. The 1991 Waste Treatment Industry Questionnaire was designed to request 1989 technical, economic, and financial data from, what EPA believed to be, a census of the industry. The Detailed Monitoring Questionnaire was designed to elicit daily analytical data from a limited number of facilities which would be chosen after receipt and review of the 1991 Waste Treatment Industry Questionnaire responses.

In order to minimize the burden to centralized waste treatment facilities, EPA designed the 1991 Waste Treatment Industry Questionnaire such that recipients could use information reported in their 1989 Hazardous Waste Biennial Report as well as any other readily accessible data. The technical portion of the questionnaire, Part A, specifically requested information on the following:

C Treatment/recovery processes;

- C Types and quantities of waste received for treatment;
- C The industrial waste management practices used;
- C Ancillary waste management operations;
- C The quantity, treatment, and disposal of wastewater generated during industrial waste management;
- C Summary analytical monitoring data;
- C The degree of co-treatment (treatment of CWT wastewater with wastewater from other industrial operations at the facility);
- C Cost of the waste treatment/recovery processes; and
- C The extent of wastewater recycling or reuse at facilities.

Since the summary monitoring information requested in the 1991 Waste Treatment Industry Questionnaire was not sufficient for determination of limitations and industry variability, EPA designed a follow-up questionnaire, the Detailed Monitoring Questionnaire (DMQ), to collect daily analytical data from a limited number of facilities. EPA requested all DMQ facilities to submit effluent wastewater monitoring data in the form of individual data points rather than monthly aggregates, generally for the 1990 calendar year. Some facilities were also requested to submit monitoring data for intermediate waste treatment points in an effort to obtain pollutant removal information across specified treatment technologies.

Since most CWT facilities do not have analytical data for their wastewater treatment system influent, EPA additionally requested DMQ facilities to submit copies of their waste receipts for a six week period. Waste receipts are detailed logs of individual waste shipments sent to a CWT for treatment. EPA selected a six week period to minimize the burden to recipients and to create a manageable database.

EPA sent draft questionnaires to industry trade associations, treatment facilities that had

expressed interest, and environmental groups for review and comment. EPA also conducted a pre-test of the 1991 Waste Treatment Industry Questionnaire at nine centralized waste treatment facilities to determine if the type of information necessary would be received from the questions posed as well as to determine if questions were designed to minimize the burden to facilities. EPA did not conduct a pre-test of the Detailed Monitoring Questionnaire due to the project schedule limitations.

Based on comments from the reviewers, EPA determined the draft questionnaire required minor adjustments in the technical section and substantial revisions for both the economic and financial sections. EPA anticipated extensive comments, since this was EPA's first attempt at requesting detailed information from a service industry as opposed to a manufacturing-based industry.

As required by the Paperwork Reduction Act, 44 U.S.C. 3501 et seq., EPA submitted the questionnaire package (including the revised 1991 Waste Treatment Industry Questionnaire and the Detailed Monitoring Questionnaire) to the Office of Management and Budget (OMB) for review, and published a notice in the *Federal Register* to announce the questionnaire was available for review and comment (55 FR 45161). EPA also redistributed the questionnaire package to industry trade associations, centralized waste treatment industry facilities, and environmental groups that had provided comments on the previous draft and to any others who requested a copy of the questionnaire package.

No additional comments were received and OMB cleared the entire questionnaire package for distribution on April 10, 1991.

### ***Distribution of Questionnaires*** 2.2.2

In 1991, under the authority of Section 308 of the CWA, EPA sent the Waste Treatment Industry Questionnaire to 455 facilities that the

Agency had identified as possible CWT facilities. Because there is no specific centralized waste treatment industry Standard Industrial Code (SIC), identification of facilities was difficult. EPA looked to directories of treatment facilities, other Agency information sources, and even telephone directories to identify the 455 facilities which received the questionnaires. EPA received responses from 413 facilities indicating that 89 treated or recovered material from off-site industrial waste in 1989. The remaining 324 facilities did not treat or recover materials from industrial waste from off-site. Four of the 89 facilities only received waste via a pipeline (fixed delivery system) from the original source of wastewater generation.

EPA obtained additional information from the 1991 Waste Treatment Industry Questionnaire recipients through follow-up phone calls and written requests for clarification of questionnaire responses.

After evaluation of the 1991 Waste Treatment Industry Questionnaire responses, EPA selected 20 in-scope facilities from the 1991 Waste Treatment Industry Questionnaire mailing list to complete the Detailed Monitoring Questionnaire. These facilities were selected based on: the types and quantities of wastes received for treatment; the quantity of on-site generated wastewater not resulting from treatment or recovery of off-site generated waste; the treatment/recovery technologies and practices; and the facility's wastewater discharge permit requirements. All 20 DMQ recipients responded.

### ***WASTEWATER SAMPLING AND SITE VISITS*** 2.3 ***Pre-1989 Sampling Program*** 2.3.1

From 1986 to 1987, EPA conducted site visits and sampled at twelve facilities to characterize the waste streams and on-site treatment technology performance at hazardous waste incinerators, Subtitle C and D landfills, and hazardous waste treatment facilities as part of the

Hazardous Waste Treatment Industry Study. All of the facilities in this sampling program had multiple operations, such as incineration and commercial wastewater treatment. The sampling program did not focus on characterizing the individual waste streams from individual operations. Therefore, the data collected cannot be used for the characterization of centralized waste treatment wastewater, the assessment of treatment performance, or the development of limitations and standards. Information collected in the study is presented in the *Preliminary Data Summary for the Hazardous Waste Treatment Industry* (EPA 440/1-89/100).

### **1989 - 1997 Site Visits**

#### **2.3.2**

Between 1989 and 1993, EPA visited 27 centralized waste treatment facilities. The purpose of these visits was to collect various information about the operation of CWTs, and, in most cases, to evaluate each facility as a potential week-long sampling candidate. EPA selected these facilities based on the information gathered by EPA during the selection of the Waste Treatment Industry Questionnaire recipients and the subsequent questionnaire responses.

In late 1994, EPA visited an additional four facilities which specialize in the treatment of bilge waters and other dilute oily wastes. These facilities were not in operation at the time the questionnaire was mailed, but were identified by EPA through contact with the industry and AMSA. EPA visited these facilities to evaluate them as potential sampling candidates and to determine if CWT operations at facilities which accept dilute oily wastes or used material were significantly different than CWT operations at facilities that accept concentrated oily wastes.

Following the 1995 proposal, EPA visited nine centralized waste treatment facilities, including eight additional oils facilities and one metals facility which had also been visited prior to the proposal. EPA selected these facilities

based on information obtained by EPA through proposal public comments, industry contacts, and EPA regional staff. In late 1997, EPA visited two pipeline facilities identified prior to the proposal (one via the questionnaire and the second through review of the Organic Chemicals, Plastics and Synthetic Fibers (OCPSF) database and follow-up phone calls) in order to characterize operations at pipeline facilities.

During each facility site visit, EPA gathered the following information:

- C The process for accepting waste for treatment or recovery;
- C The types of waste accepted for treatment;
- C Design and operating procedures for treatment technologies;
- C The location of potential sampling points;
- C Site specific sampling requirements;
- C Wastewater generated on-site and its sources;
- C Wastewater discharge option and limitations;
- C Solid waste disposal practices;
- C General facility management practices; and
- C Other facility operations.

Site visit reports were prepared for all visits and are located in the regulatory record for this proposal.

### **Sampling Episodes**

#### **2.3.3**

#### **Facility Selection**

##### **2.3.3.1**

EPA selected facilities to be sampled by reviewing the information received during site visits and assessing whether the wastewater treatment system (1) was theoretically effective in removing pollutants, (2) treated wastes received from a variety of sources, (3) was operated in such a way as to optimize the performance of the treatment technologies, and (4) applied waste management practices that increased the effectiveness of the treatment unit.

EPA also evaluated whether the CWT portion of each facility flow was adequate to

assess the treatment system performance for the centralized waste treatment waste stream. At some facilities, the centralized waste treatment operations were minor portions of the overall site operation. In such cases, where the centralized waste treatment waste stream is commingled with non-centralized waste treatment streams prior to treatment, characterization of this waste stream and assessment of treatment performance is difficult. Therefore, data from these commingled systems could not be used to establish effluent limitations guidelines and standards for the centralized waste treatment industry.

Another important consideration in the sampling facility selection process was the commingling of wastes from more than one centralized waste treatment subcategory. For example, many facilities treated metal-bearing and oily waste in the same treatment system. In such cases, EPA did not select these facilities for treatment technology sampling since EPA could not determine whether a decrease in pollutant concentrations in the commingled stream would be due to an efficient treatment system or dilution.

Using the criteria detailed above, EPA selected 14 facilities to sample in order to collect wastewater treatment efficiency data to be used to establish effluent limitations guidelines and standards for the centralized waste treatment industry. Twelve facilities were sampled prior to the 1995 proposal and four facilities (two additional and two resampled) were sampled after the proposal.

### *Sampling Episodes*

#### 2.3.3.2

After EPA selected a facility to sample, EPA prepared a draft sampling plan which described the location of sample points, the analysis to be performed at specified sample points, and the procedures to be followed during the sampling episode. Prior to sampling, EPA provided a copy of the draft sampling plan to the facility for

review and comment to ensure EPA properly described and understood facility operations. All comments were incorporated into the final sampling plan.

During the sampling episode, EPA collected samples of influent, intermediate, and effluent streams, preserved the samples, and sent them to EPA-approved laboratories. Facilities were given the option to split samples with EPA, but most facilities declined. Sampling episodes were generally conducted over a five-day period during which EPA obtained 24-hour composite samples for continuous systems and grab samples for batch systems.

Following the sampling episode, EPA prepared a draft sampling report that included descriptions of the treatment/recovery processes, sampling procedures, and analytical results. EPA provided draft reports to facilities for comment and review. All corrections were incorporated into the final report. Both final sampling plans and reports for all episodes are located in the regulatory record for this promulgated rule.

The specific constituents analyzed at each episode and sampling point varied and depended on the waste type being treated and the treatment technology being evaluated. At the initial two sampling episodes, the entire spectrum of chemical compounds for which there are EPA-approved analytical methods were analyzed (more than 480 compounds). Table 2-1 provides a complete list of these pollutants (this is a more complete and accurate list than in the 1999 Technical Development Document). After a review of the initial analytical data, the number of constituents analyzed was decreased by omitting analyses for dioxins/furans, pesticides/herbicides, methanol, ethanol, and formaldehyde. Pesticides/herbicides were analyzed on a limited basis depending on the treatment chemicals used at facilities. Dioxin/furan analysis was only performed on a limited basis for solid/filter cake samples to assess possible environmental impacts.

Data resulting from the influent samples

contributed to the characterization of this industry, development of the list of pollutants of concern, and development of raw waste characteristics. EPA used the influent, intermediate, and effluent points to analyze the efficacy of treatment at the facilities and to develop current discharge concentrations, loadings, and treatment technology options for the centralized waste treatment industry. Finally, EPA used data collected from the effluent points to calculate the long term averages (LTAs) for each of the regulatory options. The use of this data is discussed in detail in subsequent chapters.

Table 2-1. Chemical Compounds Analyzed Under EPA Analytical Methods

Pollutant	Cas Num	Pollutant	Cas Num	Pollutant	Cas Num
<i>CLASSICAL WET CHEMISTRY</i>					
Amenable cyanide	C-025	Aldrin	309-00-2	Mevinphos	7786-34-7
Ammonia as nitrogen	7664-41-7	Alpha-BHC	319-84-6	Mirex	2385-85-5
BOD	C-003	Alpha-chlordane	5103-71-9	Monocrotophos	6923-22-4
BOD 5-day	C-002	Azinphos ethyl	2642-71-9	Naled	300-76-5
Chloride	16887-00-6	Azinphos methyl	86-50-0	Nitrofen	1836-75-5
COD	C-004	Beta-BHC	319-85-7	Parathion (Ethyl)	56-38-2
DCOD	C-004D	Captafol	2425-06-1	PCB 1016	12674-11-2
Fluoride	16984-48-8	Captan	133-06-2	PCB 1221	11104-28-2
Hexane extractable material	C-036	Carbophenothion	786-19-6	PCB 1232	11141-16-5
Hexavalent chromium	18540-29-9	Chlorfenvinphos	470-90-6	PCB 1242	53469-21-9
Nitrate/nitrite	C-005	Chlorobenzilate	510-15-6	PCB 1248	12672-29-6
pH	C-006	Chlorpyrifos	2921-88-2	PCB 1254	11097-69-1
Recoverable oil & grease	C-007	Coumaphos	56-72-4	PCB 1260	11096-82-5
SGT-HEM	C-037	Dalapon	75-99-0	PCNB	82-68-8
TDS	C-010	DEF	78-48-8	Phorate	298-02-2
TOC	C-012	Delta-BHC	319-86-8	Phosmet	732-11-6
Total cyanide	57-12-5	Demeton	8065-48-3	Phosphamidon	13171-21-6
Total phenols	C-020	Diallate	2303-16-4	Phosphamidon E	297-99-4
Total phosphorus	14265-44-2	Diazinon	333-41-5	Phosphamidon Z	23783-98-4
Total solids	C-008	Dicamba	1918-00-9	Ronnel	299-84-3
Total sulfide	18496-25-8	Dichlofenthion	97-17-6	Sulfotep	3689-24-5
Total sulfide (iodometric)	18496-25-8	Dichlone	117-80-6	Sulprofos	35400-43-2
TSS	C-009	Dichlorprop	120-36-5	TEPP	107-49-3
<i>1613: DIOXINS/FURANS</i>					
2378-TCDD	1746-01-6	Dichlorvos	62-73-7	Terbufos	13071-79-9
2378-TCDF	51207-31-9	Dicrotophos	141-66-2	Tetrachlorvinphos	22248-79-9
12378-PECDD	40321-76-4	Dieldrin	60-57-1	Toxaphene	8001-35-2
12378-PECDF	57117-41-6	Dimethoate	60-51-5	Trichlorfon	52-68-6
23478-PECDF	57117-31-4	Dinoseb	88-85-7	Trichloronate	327-98-0
123478-HXCDD	39227-28-6	Dioxathion	78-34-2	Tricresylphosphate	78-30-8
123678-HXCDD	57653-85-7	Disulfoton	298-04-4	Trifluralin	1582-09-8
123789-HXCDD	19408-74-3	Endosulfan I	959-98-8	Trimethylphosphate	512-56-1
123478-HXCDF	70648-26-9	Endosulfan II	33213-65-9	<i>1656: PESTICIDES/HERBICIDES</i>	
123678-HXCDF	57117-44-9	Endosulfan sulfate	1031-07-8	(1,2)DB-(3)C-propane	92-12-8
123789-HXCDF	72918-21-9	Endrin	72-20-8	4,4'-DDD	72-54-8
234678-HXCDF	60851-34-5	Endrin aldehyde	7421-93-4	4,4'-DDE	72-55-9
1234678-HPCDD	35822-46-9	Endrin ketone	53494-70-5	4,4'-DDT	50-29-3
1234678-HPCDF	67562-39-4	EPN	2104-64-5	Acephate	30560-19-1
1234789-HPCDF	55673-89-7	Ethion	563-12-2	Alachlor	15972-60-8
OCDD	3268-87-9	Ethoprop	13194-48-4	Aldrin	309-00-2
OCDF	39001-02-0	Famphur	52-85-7	Alpha-BHC	319-84-6
Total HPCDD	37871-00-4	Fensulfothion	115-90-2	Alpha-chlordane	5103-71-9
Total HPCDF	38998-75-3	Fenthion	55-38-9	Atrazine	1912-24-9
Total HXCDD	34465-46-8	Gamma-BHC	58-89-9	Benzfluralin	1861-40-1
Total HXCDF	55684-94-1	Gamma-chlordane	5103-74-2	Beta-BHC	319-85-7
Total PECDD	36088-22-9	Heptachlor	76-44-8	Bromacil	314-40-9
Total PECDF	30402-15-4	Heptachlor epoxide	1024-57-3	Bromoxynil octanoate	1689-99-2
Total TCDD	41903-57-5	HXMeth.phosphoramidate	680-31-9	Butachlor	23184-66-9
Total TCDF	55722-27-5	Isodrin	465-73-6	Captafol	2425-06-1
<i>1618: PESTICIDES/HERBICIDES</i>					
2,4,5-T	93-76-5	Kepone	143-50-0	Captan	133-06-2
2,4,5-TP	93-72-1	Leptophos	21609-90-5	Carbophenothion	786-19-6
2,4-D	94-75-7	Malathion	121-75-5	Chlorobenzilate	510-15-6
2,4-DB	94-82-6	MCPA	94-74-6	Chloroneb	2675-77-6
4,4'-DDD	72-54-8	MCPPP	7085-19-0	Chloropropylate	5836-10-2
4,4'-DDE	72-55-9	Merphos	150-50-5	Chlorothalonil	1897-45-6
4,4'-DDT	50-29-3	Methoxychlor	72-43-5	Cis-permethrin	61949-76-6
		Methyl chlorpyrifos	5598-13-0	Dacthal (DCPA)	1861-32-1
		Methyl parathion	298-00-0	Delta-BHC	319-86-8
		Methyl trithion	953-17-3	Diallate A	2303-16-4A

Table 2-1. Chemical Compounds Analyzed Under EPA Analytical Methods (continued)

Pollutant	Cas Num	Pollutant	Cas Num	Pollutant	Cas Num
Diallate B	230-316-4B	3,5-dichlorophenol	591-35-5	Praseodymium	7440-10-0
Dichlone	117-80-6	3,6-dichlorocatechol	3938-16-7	Rhenium	7440-15-5
Dicofol	115-32-2	4,5,6-trichloroguaiacol	2668-24-8	Rhodium	7440-16-6
Dieldrin	60-57-1	4,5-dichlorocatechol	3428-24-8	Ruthenium	7440-18-8
Endosulfan I	959-98-8	4,5-dichloroguaiacol	2460-49-3	Samarium	7440-19-9
Endosulfan II	33213-65-9	4,6-dichloroguaiacol	16766-31-7	Scandium	7440-20-2
Endrin	72-20-8	4-chloroguaiacol	16766-30-6	Selenium	7782-49-2
Endrin aldehyde	7421-93-4	4-chlorophenol	106-48-9	Silicon	7440-21-3
Endrin ketone	53494-70-5	5,6-dichlorovanillin	18268-69-4	Silver	7440-22-4
Ethalfuralin	55283-68-6	5-chloroguaiacol	3743-23-5	Sodium	7440-23-5
Etridiazole	2593-15-9	6-chlorovanillin	18268-76-3	Strontium	7440-24-6
Fenarimol	60168-88-9	Pentachlorophenol	87-86-5	Sulfur	7704-34-9
Gamma-BHC	58-89-9	Tetrachlorocatechol	1198-55-6	Tantalum	7440-25-7
Gamma-chlordane	5103-74-2	Tetrachloroguaiacol	2539-17-5	Tellurium	13494-80-9
Heptachlor	76-44-8	Trichlorosyringol	2539-26-6	Terbium	7440-27-9
Heptachlor epoxide	1024-57-3			Thallium	7440-28-0
Isodrin	465-73-6	Aluminum	7429-90-5	Thorium	7440-29-1
Isopropalin	33820-53-0	Antimony	7440-36-0	Thulium	7440-30-4
Kepone	143-50-0	Arsenic	7440-38-2	Tin	7440-31-5
Methoxychlor	72-43-5	Barium	7440-39-3	Titanium	7440-32-6
Metribuzin	21087-64-9	Beryllium	7440-41-7	Tungsten	7440-33-7
Mirex	2385-85-5	Bismuth	7440-69-9	Uranium	7440-61-1
Nitrofen	1836-75-5	Boron	7440-42-8	Vanadium	7440-62-2
Noflurazon	27314-13-2	Cadmium	7440-43-9	Ytterbium	7440-64-4
PCB 1016	12674-11-2	Calcium	7440-70-2	Yttrium	7440-65-5
PCB 1221	11104-28-2	Cerium	7440-45-1	Zinc	7440-66-6
PCB 1232	11141-16-5	Chromium	7440-47-3	Zirconium	7440-67-7
PCB 1242	53469-21-9	Cobalt	7440-48-4		
PCB 1248	12672-29-6	Copper	7440-50-8	<i>1624: VOLATILE ORGANICS</i>	
PCB 1254	11097-69-1	Dysprosium	7429-91-6	1,1,1,2-tetrachloroethane	630-20-6
PCB 1260	11096-82-5	Erbium	7440-52-0	1,1,1-trichloroethane	71-55-6
Pendamethalin	40487-42-1	Europium	7440-53-1	1,1,2,2-tetrachloroethane	79-34-5
PCNB	82-68-8	Gadolinium	7440-54-2	1,1,2-trichloroethane	79-00-5
Perthane	72-56-0	Gallium	7440-55-3	1,1-dichloroethane	75-34-3
Propachlor	1918-16-7	Germanium	7440-56-4	1,1-dichloroethene	75-35-4
Propanil	709-98-8	Gold	7440-57-5	1,2,3-trichloropropane	96-18-4
Propazine	139-40-2	Hafnium	7440-58-6	1,2-dibromoethane	106-93-4
Simazine	122-34-9	Holmium	7440-60-0	1,2-dichloroethane	107-06-2
Strobane	8001-50-1	Indium	7440-74-6	1,2-dichloropropane	78-87-5
Terbacil	5902-51-2	Iridium	7553-56-2	1,3-butadiene, 2-chloro-	126-99-8
Terbutylazine	5915-41-3	Iridium	7439-88-5	1,3-dichloropropane	142-28-9
Toxaphene	8001-35-2	Iron	7439-89-6	1,4-dioxane	123-91-1
Trans-permethrin	61949-77-7	Lanthanum	7439-91-0	2-butanone	78-93-3
Triadimefon	43121-43-3	Lead	7439-92-1	2-chloroethylvinyl ether	110-75-8
Trifluralin	1582-09-8	Lithium	7439-93-2	2-hexanone	591-78-6
		Lutetium	7439-94-3	2-propanone	67-64-1
<i>85.01: CHLORINATED PHENOLICS</i>		Magnesium	7439-95-4	2-propen-1-ol	107-18-6
2,3,4,6-tetrachlorophenol	58-90-2	Manganese	7439-96-5	2-propenal	107-02-8
2,3,6-trichlorophenol	933-75-5	Mercury	7439-97-6	2-propenenitrile, 2-methyl-	126-98-7
2,4,5-trichlorophenol	95-95-4	Molybdenum	7439-98-7	3-chloropropene	107-05-1
2,4,6-trichlorophenol	88-06-2	Neodymium	7440-00-8	4-methyl-2-pentanone	108-10-1
2,4-dichlorophenol	120-83-2	Nickel	7440-02-0	Acrylonitrile	107-13-1
2,6-dichlorophenol	87-65-0	Niobium	7440-03-1	Benzene	71-43-2
2-syringaldehyde	134-96-3	Osmium	7440-04-2	Bromodichloromethane	75-27-4
3,4,5-trichlorocatechol	56961-20-7	Palladium	7440-05-3	Bromomethane	74-83-9
3,4,5-trichloroguaiacol	57057-83-7	Phosphorus	7723-14-0	Carbon disulfide	75-15-0
3,4,6-trichloroguaiacol	60712-44-9	Platinum	7440-06-4	Chloroacetonitrile	107-14-2
3,4-dichlorophenol	95-77-2	Potassium	7440-09-7	Chlorobenzene	108-90-7
3,5-dichlorocatechol	13673-92-2			Chloroethane	75-00-3

Table 2-1. Chemical Compounds Analyzed Under EPA Analytical Methods (continued)

Pollutant	Cas Num	Pollutant	Cas Num	Pollutant	Cas Num
Chloroform	67-66-3	2,4,6-trichlorophenol	88-06-2	Bis(2-chloroisopropyl) ether	108-60-1
Chloromethane	74-87-3	2,4-dichlorophenol	120-83-2	Bis(2-ethylhexyl) phthalate	117-81-7
Cis-1,3-dichloropropene	10061-01-5	2,4-dimethylphenol	105-67-9	Butyl benzyl phthalate	85-68-7
Crotonaldehyde	4170-30-3	2,4-dinitrophenol	51-28-5	Carbazole	86-74-8
Dibromochloromethane	124-48-1	2,4-dinitrotoluene	121-14-2	Chrysene	218-01-9
Dibromomethane	74-95-3	2,6-di-tert-butyl-p-benzoquinone	719-22-2	Crotoxyphos	7700-17-6
Diethyl ether	60-29-7	2,6-dichloro-4-nitroaniline	99-30-9	Di-n-butyl phthalate	84-74-2
Ethyl cyanide	107-12-0	2,6-dichlorophenol	87-65-0	Di-n-octyl phthalate	117-84-0
Ethyl methacrylate	97-63-2	2,6-dinitrotoluene	606-20-2	Di-n-propylnitrosamine	621-64-7
Ethylbenzene	100-41-4	2-(methylthio)benzothiazole	615-22-5	Dibenzo(a,h)anthracene	53-70-3
Iodomethane	74-88-4	2-chloronaphthalene	91-58-7	Dibenzofuran	132-64-9
Isobutyl alcohol	78-83-1	2-chlorophenol	95-57-8	Dibenzothiophene	132-65-0
M+P-xylene	179601-23-1	2-isopropylnaphthalene	2027-17-0	Diethyl phthalate	84-66-2
M-xylene	108-38-3	2-methylbenzothiazole	120-75-2	Dimethyl phthalate	131-11-3
Methyl methacrylate	80-62-6	2-methylnaphthalene	91-57-6	Dimethyl sulfone	67-71-0
Methylene chloride	75-09-2	2-nitroaniline	88-74-4	Diphenyl ether	101-84-8
O+P-xylene	136777-61-2	2-nitrophenol	88-75-5	Diphenylamine	122-39-4
O-xylene	95-47-6	2-phenylnaphthalene	612-94-2	Diphenyldisulfide	882-33-7
Tetrachloroethene	127-18-4	2-picoline	109-06-8	Ethane, pentachloro-	76-01-7
Tetrachloromethane	56-23-5	3,3'-dichlorobenzidine	91-94-1	Ethyl methanesulfonate	62-50-0
Toluene	108-88-3	3,3'-dimethoxybenzidine	119-90-4	Ethylenethiourea	96-45-7
Trans-1,2-dichloroethene	156-60-5	3,6-dimethylphenanthrene	1576-67-6	Fluoranthene	206-44-0
Trans-1,3-dichloropropene	10061-02-6	3-methylcholanthrene	56-49-5	Fluorene	86-73-7
Trans-1,4-dichloro-2-butene	110-57-6	3-nitroaniline	99-09-2	Hexachlorobenzene	118-74-1
Tribromomethane	75-25-2	4,4'-methylenebis(2-chloroaniline)	101-14-4	Hexachlorobutadiene	87-68-3
Trichloroethene	79-01-6	4,5-methylene phenanthrene	203-64-5	Hexachlorocyclopentadiene	77-47-4
Trichlorofluoromethane	75-69-4	4-aminobiphenyl	92-67-1	Hexachloroethane	67-72-1
Vinyl acetate	108-05-4	4-bromophenyl phenyl ether	101-55-3	Hexachloropropene	1888-71-7
Vinyl chloride	75-01-4	4-chloro-2-nitroaniline	89-63-4	Hexanoic acid	142-62-1
<i>1625: SEMIVOLATILE ORGANICS</i>		4-chloro-3-methylphenol	59-50-7	Indeno(1,2,3-cd)pyrene	193-39-5
1,2,3-trichlorobenzene	87-61-6	4-chlorophenyl phenyl ether	7005-72-3	Isophorone	78-59-1
1,2,3-trimethoxybenzene	634-36-6	4-nitrophenol	100-02-7	Isosafrole	120-58-1
1,2,4,5-tetrachlorobenzene	95-94-3	5-nitro-o-toluidine	99-55-8	Longifolene	475-20-7
1,2,4-trichlorobenzene	120-82-1	7,12-dimethylbenz(a)anthracene	57-97-6	Malachite green	569-64-2
1,2-dibromo-3-chloropropane	96-12-8	Acenaphthene	83-32-9	Mestranol	72-33-3
1,2-dichlorobenzene	95-50-1	Acenaphthylene	208-96-8	Methapyrilene	91-80-5
1,2-diphenylhydrazine	122-66-7	Acetophenone	98-86-2	Methyl methanesulfonate	66-27-3
1,2:3,4-diepoxybutane	1464-53-5	Alpha-terpineol	98-55-5	N,N-dimethylformamide	68-12-2
1,3,5-trithiane	291-21-4	Aniline	62-53-3	N-decane	124-18-5
1,3-dichloro-2-propanol	96-23-1	Aniline, 2,4,5-trimethyl-	137-17-7	N-docosane	629-97-0
1,3-dichlorobenzene	541-73-1	Anthracene	120-12-7	N-dodecane	112-40-3
1,4-dichlorobenzene	106-46-7	Aramite	140-57-8	N-eicosane	112-95-8
1,4-dinitrobenzene	100-25-4	Benzanthrone	82-05-3	N-hexacosane	630-01-3
1,4-naphthoquinone	130-15-4	Benzenethiol	108-98-5	N-hexadecane	544-76-3
1,5-naphthalenediamine	2243-62-1	Benzidine	92-87-5	N-nitrosodi-n-butylamine	924-16-3
1-bromo-2-chlorobenzene	694-80-4	Benzo(a)anthracene	56-55-3	N-nitrosodiethylamine	55-18-5
1-bromo-3-chlorobenzene	108-37-2	Benzo(a)pyrene	50-32-8	N-nitrosodimethylamine	62-75-9
1-chloro-3-nitrobenzene	121-73-3	Benzo(b)fluoranthene	205-99-2	N-nitrosodiphenylamine	86-30-6
1-methylfluorene	1730-37-6	Benzo(ghi)perylene	191-24-2	N-nitrosomethylethylamine	10595-95-6
1-methylphenanthrene	832-69-9	Benzo(k)fluoranthene	207-08-9	N-nitrosomethylphenylamine	614-00-6
1-naphthylamine	134-32-7	Benzoic Acid	65-85-0	N-nitrosomorpholine	59-89-2
1-phenylnaphthalene	605-02-7	Benzonitrile, 3,5-dibromo-4-hydroxy-	1689-84-5	N-nitrosopiperidine	100-75-4
2,3,4,6-tetrachlorophenol	58-90-2	Benzyl alcohol	100-51-6	N-octacosane	630-02-4
2,3,6-trichlorophenol	933-75-5	Beta-naphthylamine	91-59-8	N-octadecane	593-45-3
2,3-benzofluorene	243-17-4	Biphenyl	92-52-4	N-tetracosane	646-31-1
2,3-dichloroaniline	608-27-5	Biphenyl, 4-nitro-	92-93-3	N-tetradecane	629-59-4
2,3-dichloronitrobenzene	3209-22-1	Bis(2-chloroethoxy)methane	111-91-1	N-triacontane	638-68-6
2,4,5-trichlorophenol	95-95-4	Bis(2-chloroethyl) ether	111-44-4	Naphthalene	91-20-3

Table 2-1. Chemical Compounds Analyzed Under EPA Analytical Methods (continued)

Pollutant	Cas Num	Pollutant	Cas Num	Pollutant	Cas Num
Nitrobenzene	98-95-3	Phenanthrene	85-01-8	Triphenylene	217-59-4
O-anisidine	90-04-0	Phenol	108-95-2	Tripropyleneglycol methyl ether	20324-33-8
O-cresol	95-48-7	Phenol, 2-methyl-4,6-dinitro-	534-52-1	<i>630.1: PESTICIDES/HERBICIDES</i>	
O-toluidine	95-53-4	Phenothiazine	92-84-2	Dithiocarbamate anion	4384-82-1
O-toluidine, 5-chloro-	95-79-4	Pronamide	23950-58-5	<i>1648: TOTAL ORGANIC HALIDES</i>	
P-chloroaniline	106-47-8	Pyrene	129-00-0	Total Organic Halides (TOX)	C022
P-cresol	106-44-5	Pyridine	110-86-1	<i>1650: ADSORBABLE ORGANIC HALIDES</i>	
P-cymene	99-87-6	Resorcinol	108-46-3	Adsorbable organic halides (AOX)	59473-04-0
P-dimethylaminoazobenzene	60-11-7	Safrole	94-59-7	<i>8015: ETHANOL/METHANOL</i>	
P-nitroaniline	100-01-6	Squalene	7683-64-9	Ethanol	64-17-5
Pentachlorobenzene	608-93-5	Styrene	100-42-5	Methanol	67-56-1
Pentachlorophenol	87-86-5	Thianaphthene	95-15-8	<i>REGION 9: FORMALDEHYDE</i>	
Pentamethylbenzene	700-12-9	Thioacetamide	62-55-5	Formaldehyde	50-00-0
Perylene	198-55-0	Thioxanthe-9-one	492-22-8		
Phenacetin	62-44-2	Toluene, 2,4-diamino-	95-80-7		

*Metal-Bearing Waste Treatment and Recovery Sampling* 2.3.3.3

Between 1989 and 1994, EPA conducted six sampling episodes at facilities classified in the metals subcategory. Two of these facilities were re-sampled in 1996 following the proposal. Only one of those facilities sampled discharged to a surface water. The rest are indirect dischargers.

All of the facilities used metals precipitation as a means for treatment, but each of the systems was unique due to the treatment chemicals used and the system configuration and operation. Most facilities precipitated metals in batches. One facility segregated waste shipments into separate batches to optimize the precipitation of specific metals, then commingled the treated batches to precipitate additional metals. Another facility had a continuous system for precipitation in which the wastewater flowed through a series of treatment chambers, each using a different treatment chemical. EPA evaluated the following treatment technologies: primary, secondary, and tertiary precipitation, selective metals precipitation, gravity separation, multi-media filtration, clarification, liquid and sludge filtration, and treatment technologies for cyanide destruction.

EPA conducted sampling at metals facilities after the 1995 proposal to determine what effect total dissolved solids (TDS) concentrations had on the performance of metals precipitation processes. This issue was raised in public comments to the 1995 proposed rule. EPA resampled two facilities which had been sampled prior to the first proposal. The first facility formed the technology basis for the 1995 proposed metals subcategory regulatory option and the second was a facility with high levels of TDS in the influent waste stream. EPA was interested in obtaining additional data from the proposal option facility since they had altered their treatment systems from those previously sampled and because EPA failed to collect TDS information during the original sampling episode.

EPA was interested in collecting additional data from the second facility because the facility has high TDS values. EPA used data from both of the post-proposal sampling episodes to develop regulatory options considered for the re-proposal and the final rule.

*Oily Waste Treatment and Recovery Sampling* 2.3.3.4

Between 1989 and 1994, EPA conducted four sampling episodes at oils subcategory facilities. Two additional oils facilities were sampled in 1996 following the proposal. All six are indirect dischargers and performed an initial gravity separation step with or without emulsion breaking to remove oil from the wastewater. At two facilities, however, the wastewater from the separation step was commingled with other non-oily wastewater prior to further treatment. As such, EPA could only use data from these facilities to characterize the waste streams after emulsion breaking. The other four facilities treated the wastewater from the initial separation step without commingling with non-oils subcategory wastewaters in systems specifically designed to treat oily wastewater. EPA evaluated the following treatment technologies for this subcategory: gravity separation, emulsion breaking, ultrafiltration, dissolved air flotation, biological treatment, reverse osmosis, carbon adsorption, and air stripping.

EPA conducted sampling at oils facilities in late 1994 (just before the proposal) and again after the proposal to address concerns raised at the 1994 public meeting and in the proposal public comments. Specifically, in regard to oils wastewater treatment, the commenters stated that (1) the facility which formed the technology basis for EPA's 1995 proposed option did not treat wastes which were representative of the wastes treated by many other oils facilities, and (2) EPA should evaluate dissolved air flotation as a basis for the regulatory option. All three of the facilities sampled between 1994 and 1996

utilized dissolved air flotation and treated wastes which were generally more dilute than those treated by the 1995 proposal option facility. EPA used data from both of the post-proposal sampling episodes to develop regulatory options considered for the 1999 supplemental proposal. Data from the 1994 episode were not used to develop a regulatory option due to non-optimal performance and highly diluted influent streams; however, EPA used data from this facility to characterize the waste stream after emulsion breaking.

#### *Organic-Bearing Waste Treatment and Recovery Sampling* 2.3.3.5

EPA had difficulty identifying facilities that could be used to characterize waste streams and assess treatment technology performance in the organics subcategory. A large portion of the facilities, whose organic waste treatment operations EPA evaluated, had other industrial operations on-site. For these facilities, CWT waste streams represented a minor component of the overall facility flow.

Between 1989 and 1994, EPA did identify and sample three facilities that treated a significant volume of off-site generated organic waste relative to non-CWT flows. None of these facilities were direct discharging facilities. EPA evaluated several treatment technologies, including the following: air stripping, biological treatment in a sequential batch reactor, multi-media filtration, coagulation/flocculation, carbon adsorption, and CO<sub>2</sub> extraction. EPA chose not to use data from one of the three facilities in calculating effluent levels achievable with its in-place technologies because the facility was experiencing operational difficulties with the treatment system at the time of sampling. In addition, after reviewing the facility's waste receipts during the sampling episode, EPA determined that the facility accepted both oils subcategory and organics subcategory wastestreams and commingled them for

treatment. EPA has also not used data from a second facility in calculating effluent levels achievable with its in-place technologies because, after reviewing this facility's waste receipts during the sampling episode, EPA determined that this facility also accepted both oils subcategory and organics subcategory wastestreams and commingled them for treatment.

#### *1998 Characterization Sampling of Oil Treatment and Recovery Facilities* 2.3.4

EPA received many comments to the original proposal concerning the size and diversity of the oils treatment and recovery subcategory. Many suggested that the subcategory needed to be further subdivided in an effort to better depict the industry. As a result, in 1998, EPA conducted site visits at eleven facilities which treat and/or recover non-hazardous oils wastes, oily wastewater, or used oil material from off-site. While the information collected at these facilities was similar to information collected during previous site visits, these facilities were selected based on waste receipts. The facilities represent a diverse mix of facility size, treatment processes, and geographical locations. EPA collected wastewater samples of their waste receipts and discharged effluent at 11 of these facilities. These samples were one-time grabs and were analyzed for metals, classicals, and semi-volatile organic compounds. In the 1999 supplemental proposal, EPA had not yet incorporated these results (except for influent data from E5046) in developing limitations. At a public hearing on February 18, 1999, EPA described the relevant sampling data, the constraints of evaluating this data, and a comparison of data from hazardous and non-hazardous waste streams. This data showed that, while the mean and median values of influent concentration of hazardous wastestream data are greater than for non-hazardous wastestreams for most pollutants

examined, the ranges of concentration for the hazardous and non-hazardous wastestreams overlap for most pollutants. In its presentation, EPA indicated that it planned to re-examine the oils subcategory in terms of pollutant loadings, removals, limitations and standards, costs, impacts, and benefits. EPA requested comment on this issue, and extended the comment period for this issue by 30 days after the public hearing. EPA's presentation is included in the public record for this rulemaking as DCN 28.1.1 (other supporting information is in Section 28). These data were incorporated into the final analyses related to identifying pollutants of concern and calculating pollutant reductions.

***PUBLIC COMMENTS TO THE 1995 PROPOSAL,  
THE 1996 NOTICE OF DATA AVAILABILITY,  
AND THE 1999 SUPPLEMENTAL PROPOSAL 2.4***

In addition to data obtained through the Waste Treatment Industry Questionnaire, DMQ, site visits and sampling episodes, commenters on the January 27, 1995 proposal (60 FR 5464), the September 16, 1996 Notice of Data Availability (61 FR 48805), and the January 13, 1999 supplemental proposal (64 FR 2280) provided data to EPA. In fact, much of EPA's current characterization of the oily waste treatment and recovery subcategory is based on comments to the 1996 Notice of Data Availability.

As described earlier, following the 1995 proposal, EPA revised its estimate of the number of facilities in the oils subcategory and its description of the oils subcategory. Using new information provided by the industry during the 1995 proposal comment period in conjunction with questionnaire responses and sampling data used to develop the proposal, EPA recharacterized this subcategory of the industry. This recharacterization reflected new data on the wastes treated by the subcategory, the technology in-place, and the pollutants discharged. As part of this recharacterization,

EPA developed individual profiles for each of the newly identified oils facilities by modeling current wastewater treatment performance and treated effluent discharge flow rates. In addition, assuming the same treatment technology options identified at proposal, EPA recalculated the projected costs of the proposed options under consideration, expected pollutant reductions associated with the options, and the projected economic impacts. EPA presented its recharacterization of the oils subcategory in the September 1996 Notice of Data Availability (61 FR 48806).

At the time of the 1995 proposal, EPA estimated there were 35 facilities in the oily waste treatment and recovery subcategory. Through comments received in response to the proposed rule, and communication with the industry, the National Oil Recyclers Association, and EPA Regional staff, EPA identified an additional 240 facilities that appeared to treat oily wastes from off-site. While attempting to confirm mailing addresses for each facility, EPA discovered that 20 of these facilities were either closed or could not be located. EPA then revised its profile of the oily waste treatment and recovery subcategory to include 220 newly-identified facilities. The information in the Notice of Data Availability was based on these 220 additional facilities.

In lieu of sending questionnaires out to the newly-identified oils facilities to collect technical and economic information, EPA used data from secondary sources to estimate facility characteristics such as wastewater flow. For most facilities, information about total facility revenue and employment were available from public sources (such as Dunn and Bradstreet). EPA then used statistical procedures to match the newly-identified facilities to similar facilities that had provided responses to the 1991 Waste Treatment Industry Questionnaire. This matching enabled EPA to estimate the flow of treated wastewater from each of the newly identified facilities. Where EPA had actual

estimates for facility characteristics from the facility or public sources, EPA used the reported values. The estimated facility characteristics included the following:

- C RCRA status;
- C Waste volumes;
- C Recovered oil volume;
- C Wastewater volumes treated and discharged;
- C Wastewater discharge option;
- C Wastewater characteristics;
- C Treatment technologies utilized; and
- C Economic information.

EPA hoped to obtain information from each of the newly identified facilities through comments to the 1996 Notice of Data Availability. In order to facilitate that effort, copies of the Notice and the individual facility profile were mailed to each of the 220 newly identified facilities. Of these, EPA received comments and revised profiles from 100. Therefore, 120 facilities did not provide comments to the Notice or revised facility profiles.

EPA determined the following about the list of newly identified oils facilities:

- C 50 facilities were within the scope of the oily waste treatment and recovery subcategory;
- C 16 facilities were fuel blenders;
- C 31 facilities were out of scope of the oily waste treatment and recovery subcategory; and
- C 3 facilities were closed.

EPA polled 9 of the 120 non-commenting facilities and determined that approximately half are within the scope of the industry. As a result, EPA estimates that half, or sixty, of the 120 non-commenting facilities are within the scope of the oily waste treatment and recovery subcategory. As to these sixty facilities that did not comment, EPA does not necessarily have facility specific information for them.

Finally, through comments to the Notice, EPA also obtained facility specific information on 19 facilities that EPA had not previously identified as possible CWT oils subcategory facilities.

Therefore, EPA's updated data base includes facility-specific information for a total of 104 facilities that are within the scope of the oily waste treatment and recovery subcategory. This total included the 50 facilities for which EPA prepared facility information sheets, 19 new facilities identified through the Notice, and 35 facilities from the questionnaire data base. The number of in-scope facilities from the questionnaire data base changed from the time of proposal due to other facility applicability issues, as discussed in Section 3.1. Finally, as described above, EPA estimated that the entire population of oils subcategory facilities includes an additional 60 facilities for which EPA does not have facility specific information. This brought the total estimate of oils facilities to 164.

Commenters also submitted data during the 1999 comment period. These data were of varying nature and included data characterizing influent and effluent wastestreams at facilities in all subcategories. Most of these data were not from the option technologies or were from mixed wastestreams. However, one facility submitted concentration data for three of its metal-bearing wastestreams. The Agency has used this submitted data to refine its understanding of CWT wastes and to aid in calculation of loadings, identification of pollutants of concern, and development of final limitations and standards.

## **ADDITIONAL DATA SOURCES** 2.5

### **Additional Databases** 2.5.1

Several other data sources were used in developing effluent guidelines for the centralized waste treatment industry. EPA used the data included in the report entitled *Fate of Priority Pollutants in Publicly Owned Treatment Works*

(EPA 440/1-82/303, September 1982), commonly referred to as the “50 POTW Study”, in determining those pollutants that would pass through a POTW. EPA’s National Risk Management Research Laboratory (NRMRL), formerly called the Risk Reduction Engineering Laboratory (RREL), treatability data base was used to supplement the information provided by the 50 POTW Study. A description of references is presented in Section 7.6.2.

***Laboratory Study on the Effect of Total Dissolved Solids on Metals Precipitation***

**2.5.2**

During the comment period for the 1995 proposal, EPA received comments which asserted that high levels of total dissolved solids (TDS) in CWT wastewaters may compromise a CWT’s ability to meet the proposed metal subcategory limitations. The data indicated that for some metal-contaminated wastewaters, as TDS levels increased, the solubility of the metal in wastewater also increased. As such, the commenters claimed that metal-contaminated wastewaters with high TDS could not be treated to achieve the proposed limitations.

At the time of the original proposal, EPA had no data on TDS levels in CWT wastewaters. None of the facilities provided TDS data in their response to the Waste Treatment Industry Questionnaire or the Detailed Monitoring Questionnaire. Additionally, during the sampling episodes prior to the 1995 proposal, EPA did not collect TDS data. As such, EPA lacked the data to estimate TDS levels in wastewaters at the CWT facility which formed the technology basis for the 1995 proposed metals subcategory limitations.

In order to address the comment, EPA (1) collected additional information on TDS levels in metals subcategory wastewaters; (2) conducted additional sampling; (3) consulted literature sources; and (4) conducted bench scale studies.

First, EPA needed to determine the range of

TDS levels in CWT metals subcategory wastewaters. As such, EPA contacted the metals subcategory Waste Treatment Industry Questionnaire respondents to determine the level of TDS in their wastewaters. Most CWT facilities do not collect information on the level of TDS in their wastewaters. Those facilities that provided information indicated that TDS levels in CWT metals subcategory wastewaters range from 10,000 ppm to 100,000 ppm (1 - 10 percent).

Second, EPA resampled the facility which formed the technology basis for the 1995 proposed metals subcategory limitations as well as one other metals subcategory facility, in part, to determine TDS levels in their wastewaters. EPA found TDS levels of 17,000 to 81,000 mg/L.

Third, EPA consulted various literature sources to obtain information about the effect of TDS levels on chemical precipitation. EPA found no data or information which related directly to TDS effects on chemical precipitation.

Fourth, EPA conducted a laboratory study designed to determine the effect of TDS levels on chemical precipitation treatment performance. In this study, EPA conducted a series of bench-scale experiments on five metals: arsenic, chromium, copper, nickel and titanium. These metals were selected because (1) they are commonly found in CWT metals subcategory wastewaters, (2) their optimal precipitation is carried out in a range of pH levels; and/or (3) the data provided in the comments indicated that TDS may have a negative effect on the precipitation of these metals. The preliminary statistical analyses of the data from these studies show no consistent relationship among the five metals, pH levels, TDS concentrations and chemical precipitation effectiveness using hydroxide or a combination of hydroxide and sulfide. (DCN 23.32 describes the study and the statistical analyses in further detail.)

Therefore, because none of these four sources provided consistent and convincing

evidence that TDS compromises a facility's ability to meet the final metal subcategory limitations, EPA has not incorporated the TDS levels into the development of limitations on metals discharges.

## **PUBLIC PARTICIPATION**

### **2.6**

EPA has strived to encourage the participation of all interested parties throughout the development of the CWT guidelines and standards. EPA has met with various industry representatives including the Environmental Technology Council (formerly the Hazardous Waste Treatment Council), the National Solid Waste Management Association (NSWMA), the National Oil Recyclers Association (NORA), and the Chemical Manufacturers Association (CMA). EPA has also participated in industry meetings as well as meetings with individual companies that may be affected by this regulation. EPA also met with environmental groups including members of the Natural Resources Defense Council. Finally, EPA has made a concerted effort to consult with EPA regional staff, pretreatment coordinators, and other state and local entities that will be responsible for implementing this regulation.

EPA sponsored two public meetings, one prior to the original proposal on March 8, 1994 and one prior to this re-proposal on July 27, 1997. The purpose of the public meetings was to share information about the content and status of the proposed regulation. The public meetings also gave interested parties an opportunity to provide information and data on key issues.

On March 24, 1995 (following the original proposal), July 29, 1997 (following the Notice of Availability), and February 18, 1999 (following the supplemental proposal), EPA sponsored workshops and public meetings. The purpose of the workshops was to provide information about the proposed regulation and to present topics on which EPA was soliciting comments. The public meetings gave interested parties the opportunity

to present oral comments on the proposed regulation.

Finally, as detailed in the *Economic Analysis of Effluent Limitations Guidelines and Standards for the Centralized Waste Treatment Industry (EPA 821-R-98-019)*, on November 6, 1997, EPA convened a Small Business Regulatory Flexibility Act (SBREFA) Review Panel in preparing this final rule. The review panel was composed of employees of the EPA program office developing this proposal, the Office of Information and Regulatory Affairs within the Office of Management and Budget and the Chief Counsel for Advocacy of the Small Business Administration (SBA). The panel met over the course of two months and collected the advice and recommendations of representatives of small entities that may be affected by this rule and reported their comments as well as the Panel's findings on the following:

- C The type and number of small entities that would be subject to the proposal.
- C Record keeping, reporting and other compliance requirements that the proposal would impose on small entities subject to the proposal, if promulgated.
- C Identification of relevant Federal rules that may overlap or conflict with the proposed rule.
- C Description of significant regulatory alternatives to the proposed rule which accomplish the stated objectives of the CWA and minimize any significant economic.

The small entity CWT population was represented by members of the National Oil Recyclers Association (NORA), the Environmental Technology Council, and a law firm representing a coalition of CWTs in Michigan. EPA provided each of the small entity representatives and panel members many materials related to the development of this rule. As such, the small entity representatives had the opportunity to comment on many aspects of this

promulgated guideline in addition to those specified above. All of the small entity comments and the panel findings are detailed in the “Final Report of the SBREFA Small Business Advocacy Review Panel on EPA’s Planned Proposed Rule for Effluent Limitations Guidelines and Standards for the Waste Treatment Industry” which is located in the regulatory record accompanying this rule.