PRESUMPTIVE MACT
FOR PUBLICLY OWNED TREATMENT WORKS
(POTW)

EMISSION STANDARDS DIVISION
OFFICE OF AIR QUALITY PLANNING AND STANDARDS
U.S. ENVIRONMENTAL PROTECTION AGENCY

RESEARCH TRIANGLE PARK,
NORTH CAROLINA

JUNE 8, 1995

PURPOSE

- Describe the presumptive MACT process
- Provide background and overview of EPA work to date on POTW source category
- Summarize current status of POTW MACT standard development
- Lay groundwork for MACT determination:
  - Present options considered thus far
  - Present current team recommendation
  - Present issues for consideration during MACT standard development
- Present presumptive MACT determination
- Outline future activities

OVERVIEW OF PRESENTATION

- Definition of Presumptive MACT
- The Presumptive MACT Process
- Statutory Requirements
- Profile of the Industry
- POTW HAP Emission Points
- Pollutants of Concern
- Information and Data Collection
- Model POTW and Wastestreams
- Control Options Identified for POTW
- Current Industry Practices
- Three Key Questions (and options):
  - Which facilities would be affected?
  - Which facilities would have to control?
  - What controls would be required?
- Team Recommendations for Presumptive MACT
- Method 305
- Issues for Consideration During MACT Standard Development

PRESUMPTIVE MACT IS…

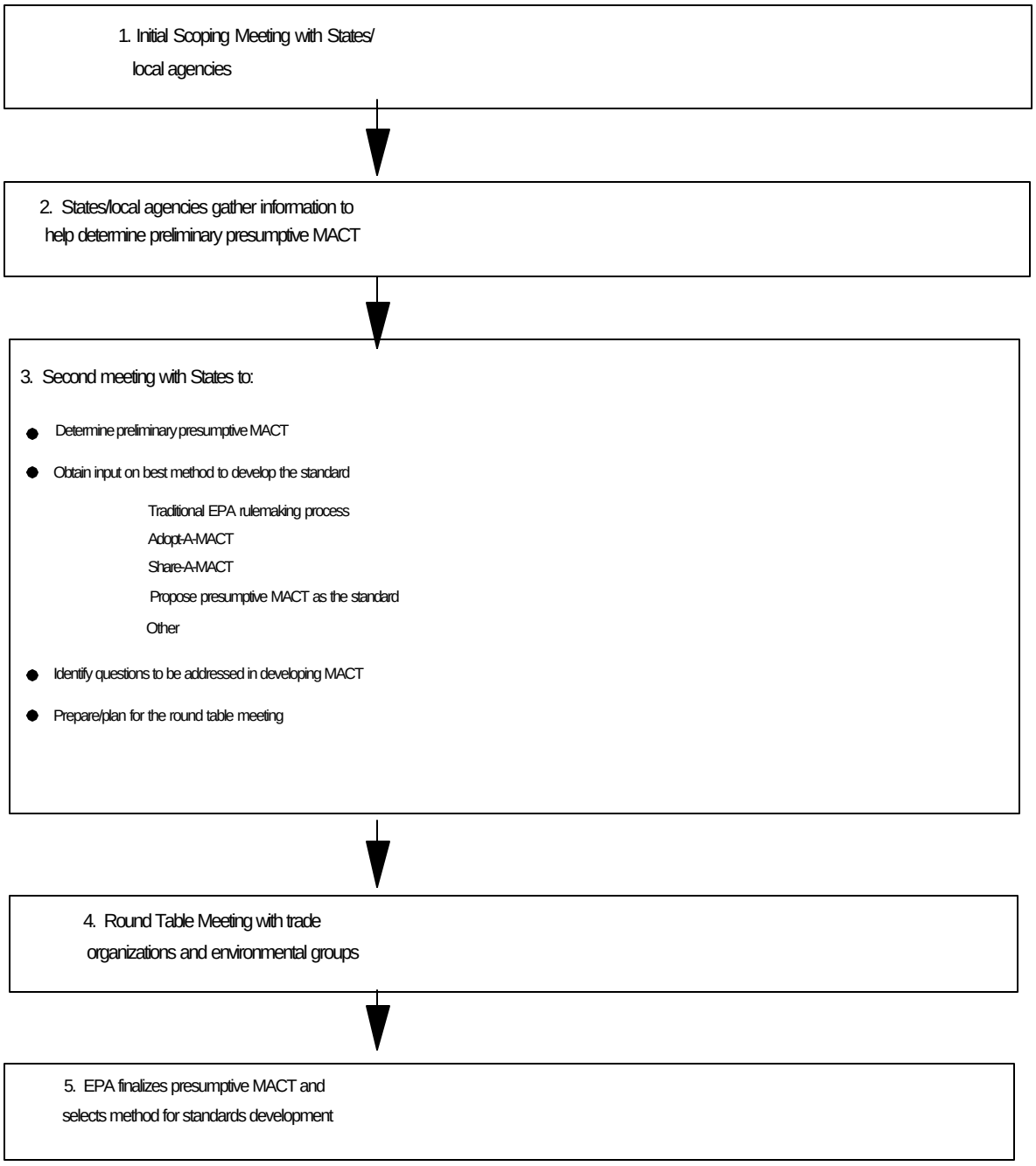
- Estimate of what the proposed MACT would be based on a review of currently available information

- Assists State and local agencies in making case-by-case MACT determinations

- Not a regulation - offered only for guidance and information

- Starting point for the MACT standard development process

THE PRESUMPTIVE MACT PROCESS



STATUTORY REQUIREMENTS

- Promulgation of emissions standards for listed source categories required under Section 112(d) of the Clean Air Act (CAA)

- POTW is a listed source category under Section 112(c)

- Section 112(e)(5) requires the EPA to promulgate standards for POTW by November 15, 1995

- If no MACT standard within 18 months (May 1997 for POTW), Section 112(j)(2) requires major sources* to apply for a permit (in States with approved permit programs) and comply with emissions limitations equivalent to MACT

- Section 112(g) requires compliance with MACT on a case-by-case basis for major source modifications when no national MACT standard has been set by EPA

** "Major source" means any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit considering controls, in the aggregate, 10 tons per year of any HAP or 25 tons per year of any combination of HAP.*

INDUSTRY PROFILE*

- POTW are publicly-owned facilities that receive and treat sewage and/or wastewater from residences, commercial activities, and industries

- Approximately 15,600 POTW nationwide

- 29.5 billion gallons of wastewater treated daily

- Range in size from < 0.1 million gallons per day (MGD) to > 500 MGD

- The majority of facilities (~ 80 percent) are 1 MGD or less

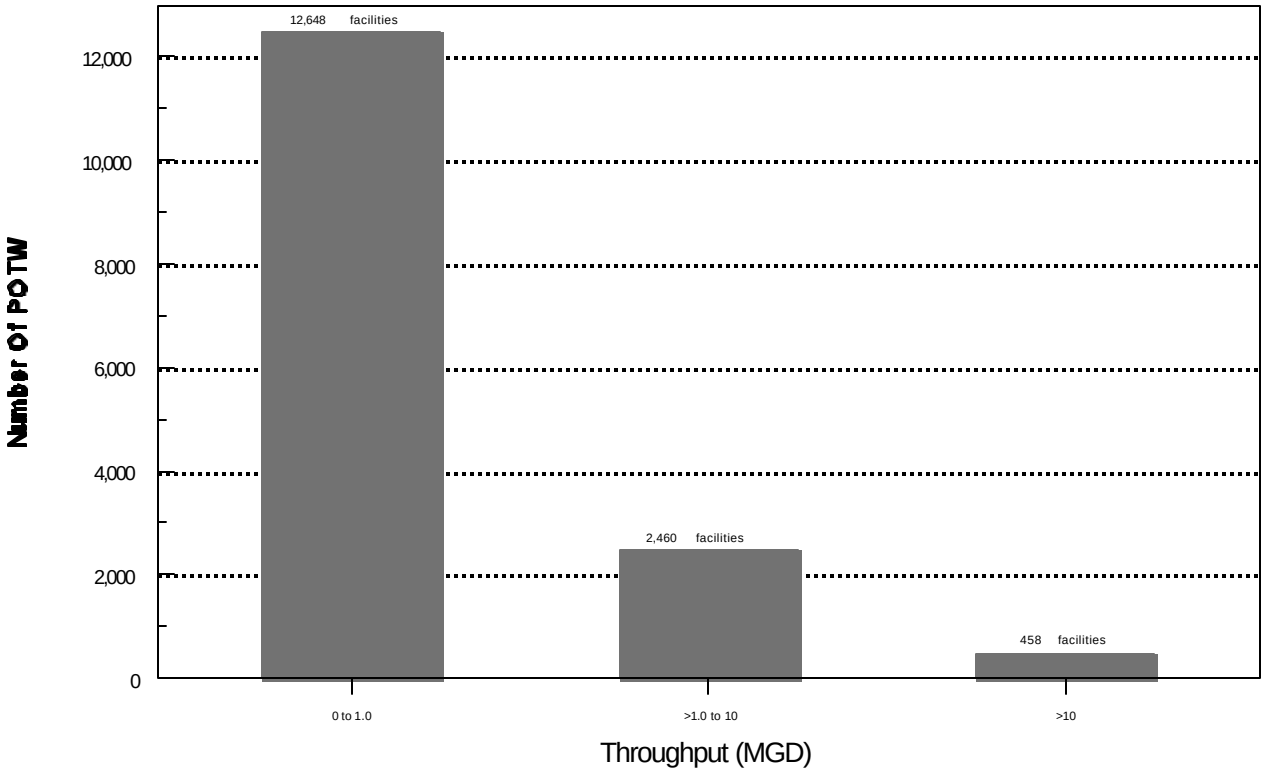
- Some facilities primarily treat wastewater from industrial users

---

** This data comes from the 1992 Needs Survey Report to Congress -*

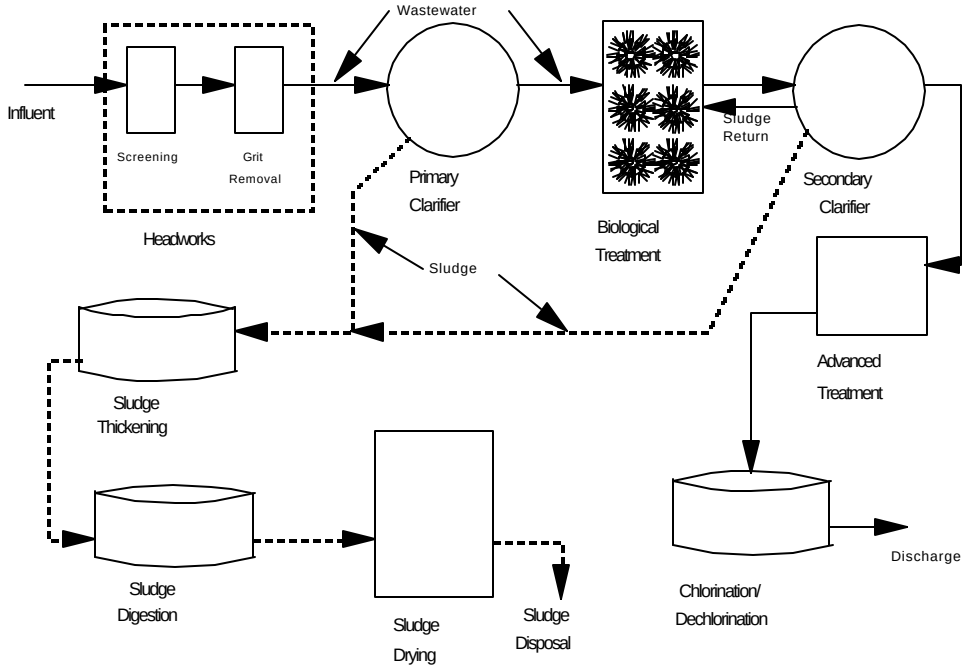
Assessment of Needed Publicly Owned Wastewater Treatment Facilities in the United States.

POTW SIZE DISTRIBUTION



* This data comes from the 1992 Needs Survey Report to Congress - Assessment of Needed Publicly Owned Wastewater Treatment Facilities in the United States. The 1992 Report does not break POTW with greater than 10 MGD flow into smaller increments. However, based on the 1988 Needs Survey, the EPA estimates that approximately 110 POTW have a flow greater than 50 MGD.

GENERAL SCHEMATIC FOR A POTW



POTW HAP EMISSION POINTS

- HAP emission points that have been identified include:

  - headworks - includes bar screens, grit chambers

  - clarifiers - where solids are settled from wastewater

  - aeration basins - activated sludge processes where bacteria digest/remove organics from wastewater

  - solids handling operations - sludge (solids from clarifiers) undergoes biological treatment and dewatering prior to disposal

POLLUTANTS OF CONCERN

- CAA lists 189 hazardous air pollutants (HAP)

- All 189 HAP must be used in the determination of major sources (facility applicability)

- EPA has determined that 76 of the 189 HAP are pollutants of concern for POTW (see Appendix A)

- AMSA has provided data and rationale that could result in shortening the list from 76 to 29 compounds (see Appendix B).

  - Modelling differences and proposed removal of compounds reporting zero discharge in the 1992 Toxic Release Inventory System (TRIS) constitute the majority of differences between the two lists

  - The EPA has indicated that TRIS data may be useful for eliminating compounds from the list on a site-specific basis, but it is not appropriate for shortening the list on a nationwide basis

  - The EPA and AMSA are continuing discussions on shortening the list of pollutants of concern

POLLUTANTS OF CONCERN (Cont.)

- Conclusions:

  - The 76 compounds in Appendix A remain pollutants of concern for POTW

  - Pollutants of concern should be used to determine applicability of control requirements within the POTW MACT standard

  - A State or local agency may shorten the list of 76 HAP to determine source category applicability on a site-by-site basis if it is demonstrated that certain HAP do not exist at the source

INFORMATION AND DATA COLLECTION

- A literature search has been conducted
- Series of meetings and contacts held with AMSA to inform the industry of EPA's intentions and to solicit their input
- Existing State regulations reviewed: no rules specific to air emissions from POTW have been identified (a few states, like California, have general air toxic regulations that have been applied to POTW)
- Scoping model POTW analysis conducted with model POTW and wastestreams
- Recent meetings with State and local agencies have provided additional information
- AMSA has conducted research (i.e., POTW surveys, model plant development and analysis) which will be considered during MACT standard development

SCOPING MODEL POTW ANALYSIS

- Six model POTW developed to represent range of POTW sizes and treatment processes

  - Based on information from EPA and industry studies

  - Represent 3, 30, and 200 MGD plants

  - Include all key processes used at POTW

  - Include various types, sizes, configurations, and operating parameters of processes

- Three conservative model wastestreams developed - strong, medium, and weak

  - Based on industrial discharges of HAP compounds to POTW as reported in EPA's Toxic Release Inventory (TRI) database, as this was the only data available on a national level at the time of the scoping analysis

  - Weak wastestream concentrations were derived by dividing the total quantity of each HAP compound reported in the TRI by the total quantity of wastewater treated by POTW nationwide

(cont.)

SCOPING MODEL POTW ANALYSIS (Cont.)

- Medium wastestream concentration = weak wastestream concentration X 2

- Strong wastestream concentration = weak wastestream concentration X 10

- Emissions from model plants treating model wastestreams estimated using emission factors developed from the WATER7 model*

- Information from AMSA and State and local agencies indicates that weak model wastestream is more representative of actual conditions

- AMSA has developed model POTW and wastestreams and estimated emissions using TOXCHEM+, which will be considered during MACT standard development

* *When model plants were run using WATER8 (a revision of WATER7), the results were comparable to those from the WATER7 model.*

CONTROL OPTIONS FOR POTW

Two general control options have been identified for POTW:

- Pretreatment - control of pollutant discharges at the source

  - POTW limits the amount of HAP an industrial plant can discharge to it

  - Already done to meet NPDES discharge limits

- Control devices - suppress/control emissions at POTW

- Cover treatment processes up to the point where HAP in the wastewater is removed/destroyed (e.g., the biological treatment unit). Examples applicable to POTW include:

  - fixed or floating roofs on tanks
  - equipping surface impoundments with floating membrane covers or air-supported structures
  - equipping other units (e.g., sumps) with fixed enclosures or covers

Process modifications (lowering weir height, replace coarse bubble aeration with fine bubble or pure oxygen, etc.) can also reduce emissions. Data on reduction efficiency are not conclusive.

CURRENT INDUSTRY PRACTICES

- The majority of facilities are uncontrolled for air emissions

- Where suppression controls are used:

    - for odor control
    - small "boutique" POTW, i.e., POTW that are designed for special aesthetic conditions

- Larger POTW have pretreatment programs, but generally not for meeting emission limitations

- A few POTW are dedicated solely to industrial facilities

THREE KEY QUESTIONS

- Which POTW would be affected by presumptive MACT?
- Among the facilities affected, who must apply controls?
- What controls would be required?

WHICH FACILITIES WOULD BE AFFECTED? - OPTIONS FOR FACILITY APPLICABILITY

A facility can be:

- A POTW only (i.e., wastewater treatment operations)

- A POTW collocated on the same site with other sources (e.g., landfill, sludge incinerator, internal combustion engines)

Facility Applicability Option 1: POTW located at facilities that are major or area sources

Facility Applicability Option 2: POTW located at facilities that are major sources

Presumptive MACT: Option 2

NOTE: At this time, there are not sufficient data to support the regulation of POTW that are area sources. However, POTW as area sources may be considered under the Urban Air Toxics area source program.

WHICH AFFECTED FACILITIES MUST APPLY CONTROLS? - SOURCE CATEGORY APPLICABILITY OPTIONS

Source Category Applicability Option 1:

Controls must be applied if the following conditions are met:

(i) The influent dry weather flow to the POTW is greater than 50 MGD; and
(ii) The influent VOHAP concentration is greater than 10 parts per million by weight on an annual average basis.

Source Category Applicability Option 2:

Controls must be applied if any two of the following conditions are met:

(i) The influent dry weather flow to the POTW is greater than 50 MGD;
(ii) The influent VOHAP concentration is greater than 5 parts per million by weight on an annual average basis; or
(iii) The percentage of industrial flow to the POTW's influent is greater than 30 percent.

WHICH AFFECTED FACILITIES MUST APPLY CONTROLS? - SOURCE CATEGORY APPLICABILITY OPTIONS (Cont.)

Source Category Applicability Option 3:

Controls must be applied if the following conditions are met:

(i) The influent dry weather flow to the POTW is greater than 350 MGD;
(ii) The influent HAP concentration is greater than 100 parts per million by weight on an annual average basis; and
(iii) The percentage of industrial contribution to the POTW's influent is greater than 30 percent.

Source Category Applicability Option 4:

Controls must be applied if the following condition is met:

(i) The total mass of VOHAP in the influent to the POTW is greater than 20 tons per year of any single pollutant of concern or 50 tons per year of any combination of pollutants of concern, as determined by measuring the VOHAP concentration and multiplying that value by the annual flow to the POTW.

WHICH AFFECTED FACILITIES MUST APPLY CONTROLS? - SOURCE CATEGORY APPLICABILITY OPTIONS (Cont.)

Presumptive MACT: Option 2

Option 2 was chosen over the other options because it was believed that the applicability criteria in this option would best target POTW of concern.

- Clear and concise

- Eliminates most POTW likely not to exceed the major source emission cutoff (i.e., small facilities with minimal industrial flow)

- Allows a closer look at smaller POTW with high industrial flow contribution

- Low emitting wastewater treatment operations not penalized (i.e., required to control emissions) because higher emitting operations are located at the same facility

WHAT CONTROLS WOULD BE REQUIRED - OPTIONS

Control Option 1: No control required

Control Option 2: Equip units at POTW up to the biological treatment unit with covers, or achieve a comparable degree of emission reduction using pretreatment or process modifications

Control Option 3: Modify the POTW or the operation of the POTW so that it no longer meets the source category applicability criteria

Control Option 4: Reduce wastewater emissions from the POTW to below 10 tons per year of any single HAP or 25 tons per year of any combination of HAP

Presumptive MACT: Meet criteria of either option 2,3, or 4

- Provides control of HAP emissions
- Consistent with the EPA's intent to provide maximum flexibility to POTW in meeting the requirements of presumptive MACT

RECOMMENDATION FOR PRESUMPTIVE MACT

NOTE: Presumptive MACT recommendations are made as guidance only and will be refined during MACT standard development

- POTW affected by presumptive MACT would be those located at major sources of HAP

- Controls must be applied if <u>any two</u> of the following conditions are met:

  (i) The influent dry weather flow to the POTW is greater than 50 MGD;

  (ii) The influent VOHAP concentration is greater than 5 parts per million by weight on an annual average basis; or

  (iii) The percentage of industrial contribution to the POTW's influent is greater than 30 percent.

RECOMMENDATION FOR PRESUMPTIVE MACT (Cont.)

- POTW could use emissions modeling (e.g. WATER8) or source testing to confirm that emissions exceed 10/25 tons per year of HAP

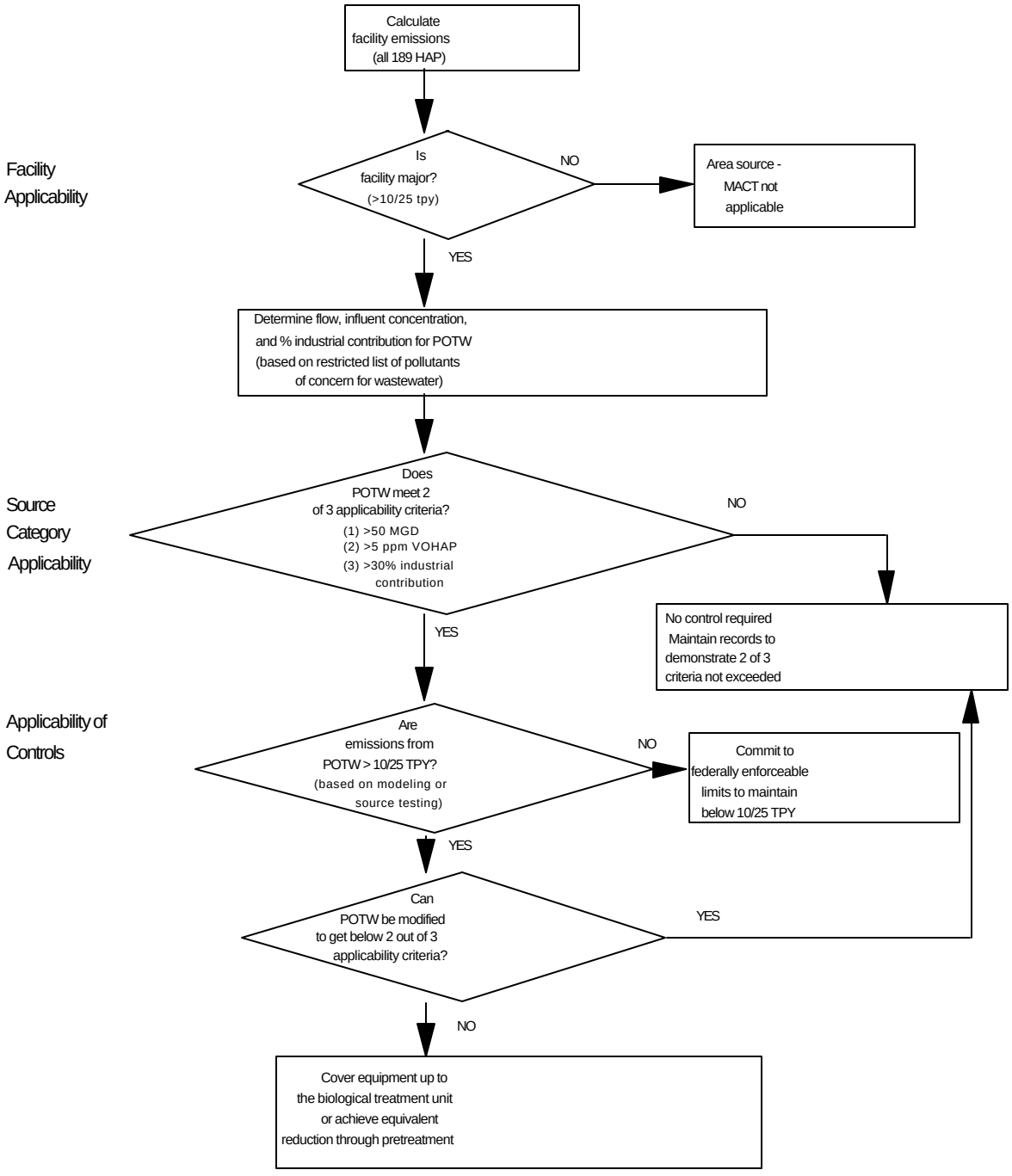
- For POTW that exceed the cutoffs, either:

  A. Use source control (pretreatment) to reduce flow and/or HAP concentrations in POTW influent to below control cutoffs above; or

  B. Develop control approach (source control, engineering controls at the POTW, or a combination of these) that is demonstrated to reduce HAP emissions such that the POTW portion of the facility is no longer a major source; or

  C. Equip POTW units up to the biological treatment unit with covers, or achieve a comparable degree of emission reduction using pretreatment or process modifications

Sequence of Activities Under Preliminary Presumptive MACT for POTW



HOW SHOULD INFLUENT CONCENTRATION BE DETERMINED?

- Method 305 (refer to Appendix E for details); or
- Methods 624 and 625 (for approved list of analytes); or
- Methods 8240 and 8260 (for approved list of analytes); or
- other equivalent method

For methods other than Method 305, results may be corrected to the fractional recovery predicted for Method 305 (using fraction measured (f_m) correction factors).

ISSUES FOR CONSIDERATION DURING MACT STANDARD DEVELOPMENT

- Should the 600 and 8000 series test methods be modified?
  - Methods 624, 625, 8240, and 8260 commonly used for compliance with Clean Water Act requirements
  - Uncertainty exists about whether quality assurance/quality control (QA/QC) procedures for these methods allow full reflection of potential HAP emissions
  - Further review and analysis needed prior to rule proposal
- What are the efficiencies of covers at POTW?
  - How do existing covers for odor control compare to covers installed to limit HAP/VOC emissions?
  - Can an emission reduction target be established?
- What is the MACT floor for existing and new POTW?
  - How do the best-controlled POTW control emissions?
  - What is the effectiveness of these controls?

ISSUES FOR CONSIDERATION DURING MACT STANDARD DEVELOPMENT (Cont.)

- What are the costs involved in controlling POTW emissions?

  - What is the cost of source control?

  - What are the costs incurred in covering POTW?

- Can the applicability criteria be modified to better screen out POTW that are not of concern?

- Can HAP of concern list be shortened?

  - AMSA has provided data to justify shortening the list on a nationwide basis (see Appendix B)

  - Methodology for making site-specific determination of HAP of concern could be developed

NEXT STEPS

- Continue and refine technical analysis
- Proposal of POTW NESHAP - February 1996
- Review and address public comments
- Final POTW NESHAP - March 1997

Appendix A

PROPERTIES OF HAZARDOUS AIR POLLUTANTS OF CONCERN

CAS No.	Chemical Name	$f_{m\,305}$	HLC (x/y)	Solubility (ppmw)	Vap.Press (mm Hg)
75070	Acetaldhyde	1.000	4.87	497,000	904
75058	Acetonitrile	0.989	1.11	646,000	92
107028	Acrolein	1.000	4.57	400,000	200
107131	Acrylonitrile	0.999	5.44	65,200	100
107051	Allyl chloride	1.000	515	4,000	362
71432	Benzene (including benzene from gasoline)	1.000	308	1,780	94
100447	Benzyl chloride	1.000	17.7	116	-1.5
92524	Biphenyl	0.864	22.7	7.0	-0.1
75252	Bromoform	0.998	29.6	3,190	5.4
106990	1,3-Butadiene	1.000	3,960	735	2,110
75150	Carbon disulfide	1.000	1,060	2,000	366
56235	Carbon tetrachloride	1.000	1,680	800	114
43581	Carbonyl sulfide	1.000	5.50	1,150	8,970
108907	Chlorobenzene	1.000	209	481	12
67663	Chloroform	1.000	221	7,840	195
126998	Chloroprene	1.000	51.6		-200
98828	Cumene	1.000	728	71	4.57
3547044	DDE	0.990	97.8	0.065	⟨0.01
334883	Diazomethane	0.999	0.712	potentially explosive	⟩1,000
132649	Dibenzofurans	0.967	222		0.008
106467	1,4-Dichlorobenzene(p)	1.000	176	79	1.79
542756	1,3-Dichloropropene	1.000	197	2,700	28
119904	3,3'-Dimethoxybenzidine	0.0003	135		
121697	N,N-Dimethylaniline	0.0008	0.77		-0.8
106898	Epichlorohydrin (1-Chloro-2,3-epoxypropane)	0.939	1.86	60,000	-17.0

PROPERTIES OF HAZARDOUS AIR POLLUTANTS OF CONCERN

CAS No.	Chemical Name	$f_{m\,305}$	HLC (x/y)	Solubility (ppmw)	Vap.Press (mm Hg)
106887	1,2-Epoxybutane	1.000	25.7		~200
140885	Ethyl acrylate	1.000	14.1	20,000	38
100414	Ethyl benzene	1.000	438	100	9.5
75003	Ethyl chloride (Chloroethane)	1.000	672	9,050	1,200
106934	Ethylene dibromide (Dibromoethane)	0.999	36.1	4,000	12
107062	Ethylene dichloride (1,2-Dichloroethane)	1.000	65.4	8,300	79
151564	Ethylene imine (Aziridine)	0.867	25.2	1,000,000	160
75218	Ethylene oxide	1.000	13.2	311,000	1,330
75343	Ethylidene dichloride (1,1-Dichloroethane)	1.000	312	5,500	227
0	Glycol ethers[a]	~0.1	~0.1		
76448	Heptachlor	0.566	128	0.056	3.0E-4
118741	Hexachlorobenzene	0.966	94.5	0.006	1.5E-5
87683	Hexachlorobutadiene	0.883	572	2.0	0.22
77474	Hexachlorocyclopentadiene	0.826	369	0.80	0.060
67721	Hexachloroethane	0.499	464	8 to 50	~0.4
110543	Hexane	1.000	42,700	13	150
74839	Methyl bromide (Bromomethane)	1.000	381	13,400	1,640
74873	Methyl chloride (Choromethane)	1.000	490	6,250	4,340
71556	Methyl chloroform (1,1,1-Trichloroethane)	1.000	967	4,400	133
78933	Methyl ethyl ketone (2-Butanone)	0.990	7.22	100,000	90
74884	Methyl iodide (Iodomethane)	1.000	141	18,000	407
108101	Methyl isobutyl ketone (Hexone)	0.979	21.7	19,000	19
80626	Methyl methacrylate	0.999	7.83		36
1634044	Methyl tert butyl ether	1.000	30.8	52,100	252
75092	Methylene chloride (Dichloromethane)	1.000	164	20,000	437

PROPERTIES OF HAZARDOUS AIR POLLUTANTS OF CONCERN

CAS No.	Chemical Name	$f_{m\,305}$	HLC (x/y)	Solubility (ppmw)	Vap.Press (mm Hg)
91203	Naphthalene	0.994	26.8	34	0.18
79469	2-Nitropropane	0.989	6.61	17,000	18
75445	Phosgene	1.000	780	decomp. in water	1,220
1336363	Polychlorinated biphenyls[b] (Aroclors)	1.000	48.0		7.6E-4
123386	Propionaldehyde	0.999	3.32	405,000	340
78875	Propylene dichloride (1,2-Dichloropropane)	1.000	159	2,750	50
75569	Propylene oxide	1.000	19.8	259,000	500
100425	Styrene	1.000	145	300	
96093	Styrene oxide	0.830	4.96	2,800	0.076
79345	1,1,2,2-Tetrachloroethane	0.999	13.9	2,900	5.34
127184	Tetrachloroethylene (Perchloroethylene)	1.000	983	200	18
108883	Toluene	1.000	357	530	29
8001352	Toxaphene (chlorinated camphene)	0.0499	272	1.75	0.40
120821	1,2,4-Trichlorobenzene	1.000	107	30	0.26
79005	1,1,2-Trichloroethane	1.000	45.8	4,390	22
79016	Trichloroethylene	1.000	567	1,100	69
121448	Triethylamine	1.000	6.94	72,900	73
540841	2,2,4-Trimethylpentane	1.000	185,000	0.56	49
108054	Vinyl acetate	1.000	28.2	25,000	115
593602	Vinyl Bromide	1.000	376		760
75014	Vinyl chloride	1.000	1,470	6,000	2,950
75354	Vinylidene chloride (1,1-Dichloroethylene)	1.000	1,440	3,350	597
1330207	Xylenes (isomers and mixture)	1.000	292	180	~7
95476	o-Xylenes	1.000	271	187	6.64
108383	m-Xylenes	1.000	413	175	8.36

PROPERTIES OF HAZARDOUS AIR POLLUTANTS OF CONCERN

CAS No.	Chemical Name	$f_{m\ 305}$	HLC (x/y)	Solubility (ppmw)	Vap.Press (mm Hg)
106423	p-Xylenes	1.000	413	168	8.74

Key:

$f_{m\ 305}$ - EPA Method 305 recovery factor.
HLC - Henry's Law Constant at 25°C
Solubility - solubility in water at 25°C
Vap.Press - pure component vapor pressure at 25°C

[a]Ethylene glycol dimethyl ether is the glycol ether of concern.

[b]The following PCB's are of concern: PCB 1221, PCB 1232, PCB1242, PCB 1248, and PCB 1254.

APPENDIX B

1990 CLEAN AIR ACT AMENDMENTS
COMPLIANCE WITH TITLE III REQUIREMENTS FOR POTWS
REVISED (JUNE 2, 1995) PROPOSED LIST OF COMPOUNDS

BACKGROUND

The 189 Hazardous Air Pollutants (HAPs) were listed in the Clean Air Act Amendments of 1990. Through modeling efforts performed by EPA for the SOCMI HON, EPA eliminated 81 compounds that were not expected to be present in wastewater and emitted into the atmosphere, thereby leaving 108 compounds or 126 compounds including isomers identified as being potentially present in wastewater.

In April of 1995, AMSA presented EPA with a proposed list of target compounds that would be likely present in POTW offgases. The proposed list consisted of 26 compounds. The methodology of reducing the 108 compounds to 26 compounds consisted of: (1) compounds sampled for but never detected by POTWs responding to the 1994 National Influent Toxic survey, (2) compounds never sampled for by POTWs and AMSA strongly suspects that they are not present or present in insignificant concentrations and (3) compounds whose mass emission contribution to the total mass emissions from AMSA's model POTW using the 62 compounds detected by POTWs constituted less than 1 percent.

CURRENT STATUS

In May of 1995, based upon EPA's review of AMSA's April submittal and additional modeling of EPA's model plants using Water.8, EPA proposed a new target compound list of 76 compounds. The removal of thirty-two (32) compounds from the 108 compound list was based upon modeled compounds whose Fraction emitted (Fe) was less than 5 percent (0.05). Subsequent discussions between AMSA and EPA concerning further reduction of the list based upon the original criteria presented by AMSA in April resulted in the following actions being taken: (1) AMSA was to review the Toxic Release Inventory (TRIS) database to evaluate whether compounds proposed for elimination based upon "never detected" or "never sampled" were discharged in significant quantities to POTWs, (2) AMSA was to review the number of POTWs involved in, and the total number of samples taken for the compounds that were sampled but never detected, and (3) AMSA was to review whether standard analytical methods were available for compounds that were never sampled by AMSA members.

REVISED AMSA PROPOSAL

AMSA reviewed the latest (1992) TRIS database for industry discharges into POTWs. The results of our review showed that 34 compounds contained on EPA's 76 compound list show

no or insignificant discharges to POTWs. In addition, the TRIS database had no data on six other compounds on EPA's list.

AMSA's review of the 1994 survey showed that many of the 27 compounds proposed to be eliminated based upon never having been detected were highly sampled from many POTWs across the country (as high as 300 to 500 hundred samples taken by as many as 50 POTWs). Some of the compounds were minimally sampled, with as few as 6 samples being taken. However, all but one of the compounds proposed to be eliminated based upon this criteria were reported by the TRIS database as having no or insignificant discharges to POTWs. Therefore, the basis for AMSA's proposed elimination of the compounds is the TRIS database backed up by the fact that the AMSA 1994 survey reported that no POTW ever detected the compound.

AMSA's review of standard analytical methods for the 19 compounds proposed for elimination based upon never being sampled revealed that standard methods were available. The available methods were in many cases, however, unfamiliar to POTWs since they were NIOSH methods. The relevancy of having analytical methods is diminished because all but one of the 19 compounds within this category are being proposed for elimination based upon the TRIS database reporting no or insignificant discharges to POTWs. The one compound is being proposed for elimination based upon a low Fe from AMSA modeling.

Proposed Elimination Criteria

The following criteria are proposed by AMSA to further reduce the 76 compound list proposed by EPA. See attached Table 1 for the list of compounds proposed to be eliminated by each criteria.

AMSA Modeled Low Fe Compounds

After receiving EPA's list of 76 compounds, AMSA modeled the 76 compounds using Toxchem+ to determine Fe's. AMSA's 200 MGD model plant with diffused air activated sludge was used. The results of the modeling indicated that 22 compounds in addition to the 32 compounds eliminated by EPA had Fe's at or below 0.05. Twelve of these 22 compounds were already being proposed for elimination by AMSA based upon no or insignificant discharges being reported in TRIS. Therefore, 10 compounds are being proposed to be solely eliminated based upon this criteria.

TRIS Reported Zero Discharge

Based upon review of the 1992 TRIS database, 27 compounds on the 76 compound list have reported discharges to POTWs of zero. Of these 27 compounds, 6 compounds also had an Fe below 0.05 based on AMSA's modeling. Fifteen of these 27 compounds were reported as

detected on AMSA's 1994 national survey with national average concentrations. However, as can be seen from Table 2, almost all of the compounds had extremely low national average concentrations which supports the conclusion from the TRIS database that industrial discharges of these compounds to POTWs is not occurring.

TRIS Did Not Report The Compounds

Six compounds on the 76 compound list were not reported by TRIS. AMSA's assumption is that these compounds are not discharged to POTWs. In addition, three of these compounds had an Fe below 0.05 based on AMSA's modeling. Two of the six compounds were reported on AMSA's national average concentration list. However, both concentrations were below 1 ppb and are not representative of significant industrial discharge.

TRIS Reported < 5,000 lbs max/yr/POTW

Seven compounds were reported by TRIS as having less than 5,000 lb max/yr/POTW. If 100% of the compound was emitted, this mass would represent 10% of the major source threshold. Since the Fe for these compounds were typically in the range of 0.45 (the exception is vinyl chloride with an Fe of 0.9224; however, this compound's maximum discharge was less than 1,000 lb/yr/POTW), the 5,000 lb/yr level represents 5% of the major source threshold. AMSA proposes this level of TRIS reporting to POTWs insignificant and should be the basis for removal from the list. In addition, one compound had an Fe below 0.05 based on AMSA's modeling. Four of the seven compounds were reported on AMSA's national average concentration list. However, all concentrations were below 1 ppb (with 3 compounds being below 0.1 ppb) and are not significant sources of emissions.

Compounds Highly Sampled and Never Detected

One compound is being proposed for elimination from the 76 compound list based upon AMSA's national survey that reported this compound as sampled for but never detected. The compound was sampled over 50 times during a two-year period with no detects. In addition, this compound had an Fe below 0.05 based upon AMSA's modeling.

CONCLUSION

Based upon EPA's and AMSA's modeling efforts to determine Fe's, AMSA's review of TRIS database and AMSA's 1994 national survey data, AMSA is proposing that 97 of the 126 compounds (including isomers) be eliminated. This would result in a short list of 29 compounds. See attached Table 3 for the list of compounds.

Table 1
AMSA Proposal for Elimination of 97 Compounds from EPA 126 (counting Isomers) Compound List

NOTE: Italicized compounds were reported as detected on AMSA's National Survey. See Attached Table 2.

EPA's Low Fe Compounds (46 total)		TRIS Reported Zero Discharge to POTWs (27 total)	TRIS Reported < 1,000 lbs max/year/POTW (5 total)
1. 2,4 D	29. *Dinitrotoluene (2,4)*	53. Acrolein*†	80. Epichlorohydrin (1-chloro 2,3 epoxypropane*)
2. Acetophenone	30. Dioxane (1,4)	54. Ally chloride	81. *Hexachlorocyclopentadiene*
3. Acetylaminofluorene, 2-	31. Hexachorocyclohexane (gamma isomer)	55. *Bromoform*	82. *Propylene dichloride (1,2-Dichloropropane)*
4. Captan	32. *Isophorone*	56. Carbonyl sulfide	83. *Trichlorethane, 1,1,2-*
5. Carbaryl	33. *Methanol (not a HAP)*	57. *Dibenzofurans**	84. Vinyl Chloride*
6. Chloramben	34. *Methoxychlor*	58. *Dichloropropane, 1,3-*	**TRIS Reported < 6,000 lbs max/year/POTW (2 total)**
7. *Chlordane*	35. *Nitrobenzene*	59. Dimethoxybenzidine, 3,3-	85. *Chlorobenzene*
8. Chlorobenzilate	36. Nitrobiphenyl, 4-	60. Epoxybutane, 1,2-	86. Propylene oxide
Cresols Group	PCB Group	61. *Ethyl chloride*	**Compounds Highly Sampled (- > 50) & Never Detected (1 total)**
9. *Cresol (-m)*	37. *PCB 1016 (monochlorobiphenyl)*		
10. *Cresol (-o)*	38. *PCB 1260 (hexachlorobiphenyl)*		
11. *Cresol (-p)*			
12. *Dibromo-3-chloropropane,1,2*	39. Pentachloronitrobenzene	62. Ethylene dibromide (Dibromoethane*)	87. Benzyl Chloride***
13. *Dichlorobenzidine,3,3-*	40. *Pentachlorophenol*	63. Ethylene Imine (Aziridine)	**AMSA Additional Low Fe Compounds (10 total)**
14. *Dichloroethyl ether*	41. Propylenimine 1,2 (2 methyl aziridine)	64. *Heptachlor**	88. Acetonitrile
Glycol Ether Group	42. Tetrachlorodibenzo-p-dioxin (2,3,7,8)	65. *Hexachlorobenzene*	89. *Acrylonitrile***
15. *Diethylene glycol dimethyl ether*			
16. *Diethylene glycol diethyl ether*	43. Toluidine (-o)	66. *Hexachlorobutadiene*	90. *Biphenyl*
17. *Diethylene glycol monomethyl ether*	44. *Trichlorophenol 2,4,5*	67. *Hexachloroethane*	91. Diethyl aniline, N,N, (N,N-Dimethylaniline)
18. *Diethylene glycol monobutyl ether*	45. *Trichlorophenol 2,4,6*	68. *Methyl bromide (Bromomethane)*	92. Ethyl acrylate
19. *Ethylene glycol monobutyl ether*	46. Trifluralin	69. Methyl Iodide (Lodomethane)	93. Ethylene oxide
20. *Ethylene glycol monopropyl ether*	**Compounds Not Reported by TRIS (6 total)**	70. Nitropropane, 2*-	94. *Methyl methacrylate****
21. *Ethylene glycol monophenyl ether*	47. *DDE**	71. Phosgene	95. *Napthalene***
22. *Ethylene glycol monomethyl ether*	48. Diazomethane*	**PCB Group**	96. Propionaldehyde
		72. *PCB 1221 (monochlorobiphenyl)*	
		73. *PCB 1232 (dichlorobiphenyl)*	
		74. *PCB 1242 (trichlorobiphenyl)*	
		75. *PCB 1248 (quatrochlorobiphenyl)*	
		76. *PCB 1254 (pentachlorobiphenyl)*	
23. *Ethylene glycol monomethyl ether (cello)*	49. *Ethylidene dichloride (1,1-Dichloroethane)*	77. Styrene Oxide*	97. *Tetrachloroethylene, 1,1,2,2-*
24. *Triethylene glycol dimethyl ether*	50. Hexane	78. *Toxaphene (Chlorinated catophene)*	
25. Diethyl sulfate	51. Triethylamine*	79. Vinyl bromide	
26. Dimethyl hydrazine (1,1)	52. Trimethypentane, 2,2,4-		
27. Dimethyl sulfate			
28. *Dinitrophenol 2,4*			

*Over 300 samples taken by AMSA facilities during 1993 & 1994 and never detected.
**Over 100 samples taken by AMSA facilities during 1993 & 1994 and never detected.
***1992 TRIS database reported 12,000 lbs max/POTW/yr and AMSA's National Survey reported this compound being sampled 59 times by 12 different POTWs and never detected.
****These compounds had high TRIS reported values and at least one high concentration reported in AMSA survey.
†These compounds also had Fe's below 0.05 based upon AMSA modeling.

Table 2
Reported Concentrations for Compounds Proposed To Be Eliminated
1994 AMSA National Survey

Compound Removed by EPA Low Fe	EPA Reported Fe	Low	Medium	High
Chlordane		0.0013		
Cresols Group *Cresol (-m)* *Cresol (-o)* *Cresol (-p)*				54.2818
Dibromo-3-chloropropane,1,2			2.2100	
Dichlorobenzidine,3,3-		0.0049		
Dichloroethyl ether		0.0025		
Glycol Ether Group *Diethylene glycol dimethyl ether* *Diethylene glycol diethyl ether* *Diethylene glycol monomethyl ether* *Diethylene glycol monobutyl ether* *Ethylene glycol monobutyl ether* *Ethylene glycol monopropyl ether* *Ethylene glycol monophenyl ether* *Ethylene glycol monomethyl ether* *Ethylene glycol monoethyl ether (cello)* *Triethylene glycol dimethyl ether*				197
Dinitrophenol 2,4		0.0018		
Dinitrotoluene (2,4)			0.5094	
Isophorone			0.7663	
Methanol (not a HAP)			0.3632	
Methoxychlor		0.0151		
Nitrobenzene		0.0062		
PCB Group *PCB 1016 (monochlorobiphenyl)* *PCB 1260 (hexachlorobiphenyl)*		0.0044		
Pentachlorophenol			0.1070	
Trichlorophenol 2,4,5		0.0439		
Trichlorophenol 2,4,6			0.1759	
Not Reported by TRIS				
DDE	0.0551		0.6300	
Ethylidene dichloride (1,1-Dichloroethane)	0.4509		0.1148	

Concentration Assumptions: Low = < 0.1 ppb Medium = $\underline{>}$ 0.1 to 10 ppb High = > 10 ppb

Table 2
Reported Concentrations for Compounds Proposed To Be Eliminated
1994 AMSA National Survey

TRIS Reported Zero	EPA Reported Fe	Low	Medium	High
Bromoform	0.1988		0.2179	
Dibenzofurans		0.0196		
Dichloropropene, 1,3-		0.0154		
Ethyl chloride		0.0091		
Heptachlor		0.0196		
Hexachlorobenzene		0.0009		
Hexachlorobutadiene		0.0791		
Hexachloroethane		0.0728		
Methyl bromide (Bromomethane)		0.0099		
PCB Group *PCB 1221 (monochlorobiphenyl)* *PCB 1232 (dichlorobiphenyl)* *PCB 1242 (trichlorobiphenyl)* *PCB 1248 (quatrochlorobiphenyl)* *PCB 1254 (pentachlorobiphenyl)*		0.0044		
Toxaphene (Chlorinated catophene)		0.0088		
TRIS Reported < 1,000 lbs				
Hexachlorocyclopentadiene		0.0009		
Propylene dichloride (1,2-Dichloropropane)		0.0668		
Trichlorethane, 1,1,2-	0.3902		0.2053	
TRIS Reported < 5,000 lbs				
Chlorobenzene		0.0955		
Compound Removed by AMSA Low Fe				
Acrylonitrile	0.0917		2.0440	
Biphenyl	0.0902		0.1137	
Methyl methacrylate	0.0729			21.460
Napthalene	0.2429		2.2356	
Tetrachloroethylene, 1,1,2,2-		0.0080		

Concentration Assumptions: Low = < 0.1 ppb Medium = $\underline{>}$ 0.1 to 10 ppb High = > 10 ppb

Table 3
AMSA Proposed Target Compound List
(29 Compounds)

	CAS #	
1.	75070	Acetaldehyde
2.	71432	Benzene (including benzene from gasoline)
3.	106990	Butadiene, 1,3-
4.	75150	Carbon disulfide
5.	56235	Carbon tetrachloride
6.	67663	Chloroform
7.	126998	Chloroprene
8.	98828	Cumene
9.	106467	Dichlorobenzene(p), 1,4-
10.	100414	Ethyl benzene
11.	107062	Ethylene dichloride (1,2-Dichloroethane)
12.	110714	Ethylene glycol dimethyl ether
13.	74873	Methyl chloride (Chloromethane)
14.	71556	Methyl chloroform (1,1,1-Trichloroethane)
15.	78933	Methyl ethyl ketone (2-Butanone)
16.	108101	Methyl isobutyl ketone (Hexone)
17.	1634044	Methyl tert butyl ether
18.	75092	Methylene chloride (Dichloromethane)
19.	100425	Styrene
20.	127184	Tetrachloroethylene (Perchloroethylene)
21.	108883	Toluene
22.	120821	Trichlorobenzene, 1,2,4-
23.	79016	Trichloroethylene
24.	108054	Vinyl acetate
25.	75354	Vinylidene chloride (1,1-Dichloroethylene)
26.	1330207	Xylenes (isomers and mixture)
27.	108383	Xylenes (-m)
28.	95476	Xylenes (-o)
29.	106423	Xylenes (-p)

Appendix C

Participants in the Presumptive MACT Process

State, Local, and EPA Regional Office Representatives

Janet Beloin, USEPA Region I, Boston, Massachusetts
Chester Black, Nebraska Air Quality Control Division, Omaha, Nebraska
Renaldo Crooks, California Air Resources Board (CARB), Sacramento, California
Randy Frazier, Bay Area Air Quality Management District, San Francisco, California
Gina Friedman, Rhode Island Division of Air Resources, Providence, Rhode Island
Karen Granata, Toledo Environmental Services, Toledo, Ohio
Mike Haynes, Water Pollution Control, Illinois EPA, Springfield, Illinois
Lisa Kaspar, CARB, Sacramento, California
Hank Naour, Bureau of Air, Illinois EPA, Springfield, Illinois
Alan Newman, Washington State Air Quality Program, Olympia, Washington
Audrey O'Brien, Washington State Air Quality Program, Olympia, Washington
Dan Shea, Department of Natural Resources, Huntsville, Alabama
Royan Teter, USEPA Region VII, Kansas City, Kansas
Geri Weiss, USEPA Region I, Boston, Massachusetts

Industry Representatives

Greg Adams, Los Angeles County Sanitation Districts
Jim Bewley, California Association of Sanitation Agencies
Tom Card, Environmental Management Consultants, Inc.
Sam Hadeed, Association of Metropolitan Sewerage Agencies (AMSA)
Ken Kirk, AMSA
Ed Torres, AMSA, Orange County (California) Sanitation Districts
Dave Zenz, AMSA, Metropolitan Water Resources District of Greater Chicago

Appendix D

Points of contact for wastewater emission estimating models:

WATER8

Can be downloaded from the U.S. EPA's CHIEF Bulletin Board on the U.S. EPA Technology Transfer Network (TTN). Dial (919) 541-5741 for up to a 14,400 baud per second modem. For general TTN information, call the Helpline at (919) 541-5384.

For questions about WATER8, contact Elaine Manning, Emission Standards Division (MD-13), Office of Air Quality Planning and Standards, U.S. EPA, Research Triangle Park, NC 27711, (919) 541-5499.

Appendix E

METHOD 305*

- EPA Method 305 developed specifically to implement rules for air emissions from waste and wastewater

- Heated (75°C) purge used to remove organic HAP of concern from sample of waste suspended in 50/50 solution of polyethylene glycol and water. Gas chromatograph or other type of analytical instrumentation used to separate and quantify organic HAP of concern

- Analyzes for all organic HAP

- Not a measure of air emissions, but indicator of relative potential for air emissions

- Other methods may be used, provided:

  - all HAP of concern (i.e., 108 or fewer) in the wastestream are quantified

  - results are corrected to fractional recovery predicted for Method 305 (fraction measured (F_m) correction factors are available)

** Method 305 can be found in Appendix A to 40 CFR Part 63.*