amsa

Association of
Metropolitan
Sewerage Agencies

July 2, 2001

Michael Ebner
Office of Water
Engineering and Analysis Division
U.S. Environmental Protection Agency
Ariel Rios (4303)
1200 Pennsylvania Ave., NW
Washington, DC 20460

E-mail: mpm.comments@epa.gov

RE: Comments on Effluent Limitations Guidelines, Pretreatment Standards, and New Source Performance Standards for the Metal Products and Machinery Point Source Category; Proposed Rule [66 Fed. Reg. 424 (January 3, 2001) and 66 Fed. Reg. 21,111 (April 27, 2001), Docket W-99-23]

Dear Mr. Ebner:

The Association of Metropolitan Sewerage Agencies (AMSA) is pleased to provide comments on the Environmental Protection Agency's (EPA's) proposed Effluent Limitations Guidelines, Pretreatment Standards, and New Source Performance Standards for the Metal Products and Machinery (MP&M) Point Source Category (66 Fed. Reg. 424). Founded in 1970, AMSA represents the interests of over 260 of the nation's publicly owned wastewater utilities (POTWs). AMSA members serve the majority of the sewered population in the United States and collectively treat and reclaim over 18 billion gallons of wastewater everyday. AMSA's member agencies have worked closely with EPA for over two decades on the federal pretreatment program and are the program's principal implementors.

Over the past 25 years, EPA's development and implementation of effluent limit guidelines (ELGs) for significant industrial categories has contributed greatly to the improved quality of our nation's waterways and is one of the most noteworthy success stories of the Clean Water Act to date. However, AMSA strongly believes that a new ELG for MP&M will not further improve water quality. After careful review and evaluation of this proposal, AMSA has determined that we cannot support any version of the MP&M proposed rule.

1816 Jefferson Place, NW, Washington, DC 20036-2505 • 202.833.2672 • 202.833.4657 FAX
info@amsa-cleanwater.org • http://www.amsa-cleanwater.org

As part of our review of EPA's proposed guidelines, AMSA undertook a re-surveying of EPA's 1996, 150 POTW Survey on MP&M information. AMSA's survey revealed that EPA grossly under-estimated the total administrative cost as well as the number of indirect dischargers requiring permits. In addition, AMSA found that EPA grossly underestimated unit costs for permit applications, inspections, monitoring, enforcement, and re-permitting. The AMSA study concluded that the aggregate cost for implementation of the MP&M rule will be approximately $175,000,000 compared to EPA's estimated cost of $0.1 to $0.9 million annually.

AMSA's further evaluation of the proposed rule focused on the accuracy of the data used to develop the proposed guidelines. We were troubled to find that not a single number in the proposed rule fell within the proper order of magnitude. We also identified several troubling assumptions EPA made concerning implementation of the rule by a pretreatment program. As detailed in our comments, we found:

EPA vastly underestimated the POTW administrative and financial burden to implement the rule. AMSA's assessment of real-world data found few, if any, environmental benefits that will be achieved by the rule (see AMSA Comments, Section 7.0, Critique of MP&M Estimate of POTW Administrative Burden).

EPA's 1996 informational survey of 150 POTWs was poorly designed and prevented EPA from collecting the actual, empirical data needed to properly conduct a POTW benefits analysis (see AMSA Comments, Section 3.0, Key Issues with the MP&M Proposal).

EPA's model projected inhibition benefits to POTWs instead of using real POTW influent data (see AMSA Comments, Section 6.1, Inhibition).

EPA claims that MP&M pollutants impair the quality of POTW biosolids and reduce the use of land application. EPA did not directly survey POTWs to determine if metals concentrations in biosolids exceeded land application standards (see AMSA Comments, Section 6.4, Biosolids).

EPA used the *50 POTW Study* and the *Domestic Sewage Study* as data sources to calculate effluent guidelines, costs, biosolids inhibition, and baseloading for pound equivalents (PEs) and other calculations. These studies are outdated, inaccurate, and do not reflect 2001 POTW environmental performance due to advances made in pretreatment technology (where most pretreatment plants have been updated to meet current categorical standards) and improvements to POTW treatment systems (see AMSA's Iron & Steel Comments,65 Fed. Reg. 81,964, attached).

EPA did not give sufficient credit for the effectiveness of local limits. Pretreatment programs have developed, implemented, and enforced local limits that ensure plants comply with defined environmental criteria (see AMSA Comments, Section 6.5, Local Limits).

It is critical that POTWs have the ability to focus their resources where they will have the greatest beneficial environmental impact. If finalized as written, this regulation will adversely impact our

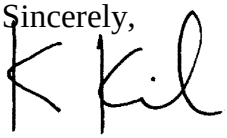
members' ability to provide quality service to the communities they serve by forcing a reallocation of already limited resources to implement the new rule. As with the Industrial Laundry rule (Effluent Limitations Guidelines and Pretreatment Standards for the Industrial Laundries Point Source Category (62 Fed. Reg. 66,181)), we believe the proposed MP&M rule unwarranted based on the fact that most if not all of the facilities proposed for regulation under this rule are already effectively regulated by existing effluent guidelines or water quality based local limits.

To make progress in water quality, it is time to move toward water quality based local limits, watersheds, and TMDLs and away from broad-based technology driven effluent guidelines for industries discharging to POTWs. Although Federal Pretreatment Standards have proven an effective initial strategy for reducing pollutant loadings from the metal finishing industry to POTWs, AMSA recommends that future regulation of the MP&M sector should be through existing Effluent Guidelines for the metal finishers and local limits based on appropriate NPDES permits. Real-world data, contained in our comments, supports this recommendation.

AMSA also recommends that EPA perfect the innovative environmental performance track already established in the National Metal Finishing Strategic Goals Program (SGP) instead of implementing the MP&M guidelines as proposed. The SGP is anchored by an ambitious set of multi-media environmental performance goals for both individual facilities and the Metal Finishing sector as a whole. In exchange for striving for and meeting these goals, industry is offered performance incentives by EPA and its state and local regulatory partners (e.g., reduced self-monitoring requirements imposed by the local POTW for achieving reduced pollutant loadings and water usage). The SGP is a strictly voluntary pollution prevention program that can enhance existing Pretreatment Programs while not forcing additional economic and administrative burdens on industry and POTWs where existing ELGs and local limits already achieve the desired environmental outcomes.

We urge you to consider our comments as you consider next steps for this rule. We look forward to discussing our comments and concerns with you in the near future. As always, please call me at 202/833-4653 or Chris Hornback of my staff at 202/833-9106 should you have any questions.

Sincerely,



Ken Kirk
Executive Director

cc: Guy Aydlett, Hampton Roads Sanitation District, Chair, AMSA Pretreatment & Hazardous Waste Committee
Richard Sustich, Metropolitan Water Reclamation District of Greater Chicago, Vice Chair, AMSA Pretreatment & Hazardous Waste Committee

COMMENTS ON THE POTW BENEFITS CLAIMED BY THE EPA PROPOSED EFFLUENT LIMITATIONS GUIDELINES, PRETREATMENT STANDARDS, AND NEW SOURCE PERFORMANCE STANDARDS FOR THE METAL PRODUCTS & MACHINERY (MP&M) POINT SOURCE CATEGORY

[66 Fed. Reg. 424 (JANUARY 3, 2001) & 66 Fed. Reg. 21,111 (APRIL 27, 2001)]

Association of Metropolitan Sewerage Agencies
1816 Jefferson Place, NW
Washington, DC 20036
202/833-2672 . 202/833-4657 (FAX) . info@amsa-cleanwater.org
www.amsa-cleanwater.org

TABLE OF CONTENTS

LIST OF TABLES

TABLE OF CONTENTS

APPENDICES

1.0 EXECUTIVE SUMMARY

EPA published the proposed Metal Products & Machinery (MP&M) Rule on January 3, 2001 to cover discharges from the manufacturing, rebuilding, and maintenance of metal products (66 Fed. Reg. 424). In developing the proposed MP&M rule, one of the benefits claimed by EPA would be the improved environmental performance of Publicly Owned Treatment Works (POTWs). Specifically, this benefit would reduce episodes of interference with the operations of POTWs and reduce contamination of biosolids, while the projected increase in administrative burden placed on POTWs would not be significant.

EPA estimated that the annual administrative burden to POTWs would range from approximately $100,000 to $900,000 per year for all POTWs combined. EPA also estimated that 515 POTWs had experienced inhibition problems attributable to MP&M facilities and EPA estimated that concentrations of metals in biosolids at 6,953 POTWs currently do not meet land application standards.

EPA justifies the need for new effluent guidelines largely on its estimate of the ability of a selected technology to remove a calculated quantity of pollutants, or toxic pound equivalents (PE). In the case of the MP&M rule, EPA's derivation of POTW benefits is responsible for greatly exaggerated claims of reduced inhibition and reduced contamination of biosolids. These conclusions were not based on actual data obtained from POTWs, but instead, pollutant loadings estimated from the modeling of MP&M industries.

AMSA has several concerns with EPA's approach to conducting the 150 POTW survey used to support the proposal and the methodology used to calculate effluent guidelines, administrative costs, and baseline PEs in developing the proposed MP&M rule. AMSA is concerned that:

- EPA's POTW survey questions were not properly designed;
- EPA's projected inhibition benefits to POTWs were modeled on estimated pollutant data instead of real POTW data;
- EPA's assessment of the number of facilities with impaired biosolids utilization is grossly overstated;
- EPA significantly underestimated the administrative cost to POTWs of implementing the MP&M rule; and,
- EPA used the out-dated *50 POTW Study* and *Domestic Sewage Study* as data sources to calculate effluent guidelines, costs, biosolids inhibition, and baseline PEs and to perform other calculations.

AMSA decided to formulate an independent survey to verify the data from the "EPA Metal Products and Machinery Industrial Phase II Publicly-Owned Treatment Works Survey (EPA 150 POTW Survey)." AMSA's survey sought additional relevant data not collected in EPA's 150 POTW survey.

The AMSA survey results from 70 responding Pretreatment Programs (representing 177 POTWs) revealed the following:

- Only 2 preventable inhibition episodes nationwide were linked to MP&M facilities, both at the same POTW. Upon detection, the POTW effectively mitigated the inhibition through enforcement procedures already established in its approved pretreatment program.
- The survey data also revealed that 97% of the nation's POTWs discharge totally non-toxic (exhibiting neither chronic nor acute toxicity) effluents into the nation's rivers and streams.
- Based on survey responses, AMSA estimates that of the 244,340 lbs-eq /year of total cyanide discharged to POTWs, 172,113 lbs-eq can be adequately removed by POTWs. This leaves only 72,227 lbs-eq /yr available for additional removal due to implementation of the proposed MP&M rule compared to 1,514,000 lbs-eq /yr estimated by EPA.

The AMSA survey provided an analysis of actual biosolids data and has verified serious flaws in EPA's projection of biosolids environmental and economic benefits. All POTWs that responded to the survey reported biosolids metal concentrations well below all land application criteria and in some cases even an order of magnitude less than the low pollutant limits. Only 1.87 % of the total biosolids reported in the AMSA survey exceeded one metal criterion. 100% of the POTWs surveyed met Land Application-Low Limits [Ceiling] standards for metals in biosolids and 95% of the POTWs surveyed [and 98% of the total Dry Metric Tons of sludge produced] had biosolids that met stricter sludge criteria pollutant levels.

The survey revealed that EPA grossly under estimated the total administrative cost. The survey showed that EPA underestimated the number of indirect dischargers requiring permits. EPA expected no increase in the costs of administrating pretreatment program requirements based on facilities that currently hold mass-based limits. EPA assumed that POTWs will conduct the regulatory minimum monitoring for all facilities while vigorously urging POTWs to conduct substantially more than the regulatory minimum monitoring of MP&M facilities. EPA grossly underestimated unit costs for permit applications, inspections, monitoring, enforcement, and re-permitting. The AMSA study concluded that the aggregate cost for implementation of the MP&M rule will be approximately $175,000,000 compared to EPA's estimated cost of $0.1 to $0.9 million annually.

AMSA cannot support this, or any version of, this rule. AMSA could not identify a single number in the proposed rule within the proper order of magnitude. We believe the proposal is inaccurate and misleading. We are highly concerned that well over one million public and private dollars, as well as thousands of hours of public and private staff time, have been spent to comment on a clearly misguided proposal. To make progress in water quality it is time to move toward water quality based local limits, watersheds, and TMDLs and away from broad-based technology driven effluent guidelines for industries discharging to POTWs. Although Federal Pretreatment Standards have proven an effective initial strategy for reducing pollutant loadings from the metal finishing industry to POTWs, AMSA believes that future regulation of the MP&M sector should be through existing Effluent Guidelines for the metal finishers and local limits based on appropriate NPDES permits. Real-world data, contained in this document, supports that belief.

AMSA recommends that, instead of trying to fix this flawed MP&M Proposal, EPA should perfect the innovative environmental performance track already established in the National Metal Finishing Strategic Goals Program (SGP). The SGP is anchored by an ambitious set of multi-media environmental performance goals for both individual facilities and the Metal Finishing sector as a whole. In exchange for striving for and meeting the goals, industry is offered performance incentives by EPA and its state and local regulatory partners (e.g., reduced self-monitoring requirements imposed by the local POTW for achieving reduced pollutant loadings and water usage). The SGP is a strictly *voluntary* pollution prevention program that can enhance existing Pretreatment Programs while not forcing additional economic and administrative burdens on industry and POTWs where existing Effluent Guidelines and local limits already achieve the desired environmental outcomes.

2.0 INTRODUCTION

2.1 Overview of POTW Benefits Claimed by the MP&M Proposal

The EPA MP&M proposal, in the context of over 20 years of federal effluent guideline development, contains some unique, and extremely troubling qualities. The MP&M rule represents the first time EPA has attempted to place such a large, diverse group of industries under a single regulation. Additionally, the MP&M rule is one of the first attempts to place much tighter standards on a large number of industries already subject to existing federal categorical standards, in particular, those facilities governed by Electroplating Regulations (40 CFR 413) and Metal Finishing Regulations (40 CFR 433).

EPA states in the Technical Development Document (TDD) that the Agency reviewed 13 existing metals industry effluent guidelines and ". . . identified a significant number of metals processing facilities discharging wastewater that existing regulations did not cover." EPA proceeded to identify the discharge of a significant amount of pollutants from unregulated sites. From these assertions, the stated purpose of the MP&M proposal was to address what EPA claims are facilities unregulated by the numerous existing regulations that govern industrial wastewater discharges.

Among EPA's justifications for the MP&M proposal are the benefits for POTWs. Specifically, these benefits are:

- Reduced episodes of inhibition of POTW operations. EPA estimated that 515 POTWs had experienced inhibition episodes attributable to MP&M facilities.

- Reduced contamination of biosolids. EPA estimated that concentrations of metals in biosolids at 6,953 POTWs currently do not meet land application standards.

- EPA has asserted that the increased administrative burden to POTWs would not be significant. EPA estimates that the annual administrative burden to POTWs would range from approximately $100,000 to $900,000 per year for all POTWs combined.

The POTW community has worked very hard for over 25 years to implement the federal pretreatment program work. These "benefits" of the rule for the POTW community infer that many of the current regulated industrial metals facilities (metal finishing job shops, electroplaters, printed wiring board facilities, etc.) must be discharging extremely high levels of pollutants to POTWs and, in effect, exceeding federal and local permitted limits. Given the extensive POTW problems that EPA believes exist, many approved pretreatment programs would be largely ineffective. This is simply not the case.

As stated by AMSA representatives in the EPA public meetings, these claimed benefits (in particular the numbers associated with these claims) and the inferences EPA made about the state of pretreatment are unfounded and totally without merit.

2.2 Initial AMSA Review Shows the MP&M Proposal Has Serious Problems

Preliminary analyses justify AMSA's initial concern with the MP&M proposal. As an example, calculation of the credited pound equivalents (PE) removal for cyanide revealed some inherent assumptions that simply do not reflect reality.

EPA justifies the need for new effluent guidelines largely on its estimate of the ability of a selected technology to remove a calculated quantity of pollutants, or toxic PE. The Technical Development Documents (TDDs) show that EPA determined that the MP&M proposal would remove over 1.1 million PE of cyanide alone. At this PE removal level, cyanide represents 63% of the justification for the MP&M proposal for additional regulation of electroplating and metal finishing job shops.

Unraveling the PE approaches EPA uses in the effluent guideline development process is a tedious and painstaking effort, but the dismantling starts with common sense. A quick back-calculation converting the cyanide PE credited to the MP&M sector to approximate discharge concentrations shows that job shops must be discharging on the order of 200 mg/l, or in the neighborhood of 11,000 lb/yr, of cyanide to POTWs. If this were true, the nation's POTWs would be rendered inoperable. While not directed at electroplating and metal finishing job shops, EPA states that 65% of facilities that use cyanide do not employ cyanide treatment. Clearly, EPA is inferring that facilities subject to federal categorical standards, 40 CFR Part 413 and Part 433 effluent standards, are in massive non-compliance. The data reported annually by the nation's POTWs simply do not support EPA's assertions.

2.3 Structure of Report

AMSA discusses the rationale for conducting the resurvey of the original 150 POTWs, the survey results, and compares the results to EPA's findings of MP&M benefits in the following manner:

Section 3.0 - AMSA Issues with the MP&M Proposal. The fundamental concerns AMSA has with EPA's claim of POTW benefits are presented.

Section 4.0 - AMSA Survey. The rationale behind the development of AMSA's survey is presented.

Section 5.0 – EPA's Methodology for Assessing POTW Problems is Fundamentally Flawed. The key factor and supporting data responsible for EPA's overstated POTW benefits are presented.

Section 6.0 – Critique of POTW Benefits Claimed by the MP&M Proposal. AMSA survey results and conclusions relative to the primary POTW benefits claimed by EPA are presented.

Section 7.0 – Critique of MP&M Estimate of POTW Administrative Burden. AMSA survey data on POTW administrative burden and comparison to EPA estimates are presented.

Section 8.0 – Potential Options. AMSA alternatives to the MP&M proposal are suggested to EPA for consideration.

3.0 KEY AMSA ISSUES WITH THE MP&M PROPOSAL

EPA's approach to collecting data to assess MP&M benefits and costs to POTWs does not reflect the use of sound principles where a large base of empirical data exists. Some of the key concerns AMSA has with EPA's approach to conducting the 150 POTW survey and further use or manipulation of the data are listed below.

1. **EPA POTW Survey questions were not properly designed.**

    - In general, there were many instances where obvious and direct questions were not asked, questions were misleading or did not ask for relevant information, or biased the survey outcome.

    - Where questions provided options for answers, an insufficient number of answer options were provided. In fact, many of the most obvious responses were not included as possible choices. These question deficiencies prevented EPA from collecting the actual, empirical data needed to properly conduct a POTW benefits analysis.

    - One of the most glaring deficiencies is that EPA did not ask for *all* POTWs when sending its survey to multi-plant sewer agencies. As a result, the respondent did not provide a complete representation of a Control Authority with multiple POTWs and many industrial users.

    - EPA's survey was conducted five years ago, at a time when the nature of EPA's MP&M proposal was unclear.

2. **EPA projected inhibition benefits to POTWs were modeled instead of using *real* POTW influent data.**

    - EPA modeled inhibition episodes based on modeled MP&M industry pollutant loadings, which are overestimated by one to three orders-of-magnitude.

    - EPA did not directly ask surveyed POTWs if inhibition problems existed but, instead, chose to estimate inhibition episodes using inappropriate assumptions and biased modeling.

    - EPA did not consider the existence of effective pretreatment programs and local limits at many of the POTWs surveyed.

3. **EPA claimed that MP&M pollutants impair the quality of POTW biosolids and reduce the use of land application.**

    - EPA used their modeled MP&M industry loadings, which have been shown to be overestimated by one to three orders of magnitude, as a starting point.

- EPA did not directly ask POTWs if metals concentrations in biosolids exceeded land application standards. POTWs have and are able to provide biosolids data readily.

4. **EPA significantly underestimated the administrative cost to POTWs for implementing the MP&M rule as a result of several inappropriate assumptions, including:**

    - EPA assumed that POTW expenditures for conducting surveys to locate and educate MP&M facilities were "insignificant."

    - EPA expected no increase in the cost of administering pretreatment programs due to the MP&M rule.

    - EPA cost projections assumed that POTWs would conduct the regulatory minimum monitoring of all facilities while EPA at the same time vigorously urges POTWs to conduct substantially more than the regulatory minimum monitoring for protection of POTW facilities.

    - EPA failed to recognize that POTWs incur substantial analytical costs with regard to samples obtained at regulated facilities.

    - EPA did not consider the management oversight costs to POTWs with regard to implementing and maintaining pretreatment programs.

    - EPA failed to take into consideration the number of small POTWs that will incur the expense of implementing a fully approved pretreatment program simply because one or two MP&M facilities are located in their town. Five POTWs, just in one state, already have been identified as falling into this category. EPA also failed to consider the additional burden that will be placed on EPA Regions or Delegated States that will have to approve and oversee these new programs.

5. **EPA used the *50 POTW Study* and the *Domestic Sewage Study* as data sources to calculate effluent guidelines, costs, biosolids inhibition, and baseloading for PEs and other calculations.**

    These studies are outdated, inaccurate, and do not reflect 2001 POTW environmental performance due to the advances made in pretreatment technology (where most pretreatment plants have been updated to meet current categorical standards) and improvements to POTW treatment systems.

6. EPA did not give sufficient credit for the effectiveness of local limits.

Pretreatment programs have developed, implemented, and enforced local limits that ensure plants comply with defined environmental criteria. Future regulation of the MP&M sector should be accomplished through existing Effluent Guidelines for the metal finishers and local limits based on appropriate NPDES permits.

4.0 AMSA SURVEY

Based on the above-stated concerns, AMSA decided that the best way to evaluate and respond to the "EPA Metal Products and Machinery Industrial Phase II Publicly-Owned Treatment Works Survey" conclusions would be to conduct a survey of the same POTWs. As such, AMSA prepared a detailed POTW survey questionnaire and transmitted it to the original 150 POTWs. The survey questionnaire and a list of the POTWs to which the questionnaire was sent are presented in Appendix A and Appendix B, respectively.

There were seventy (70) pretreatment programs that responded to the survey. The 70 surveys represented 177 POTWs. Each POTW respondent did not answer every survey question, so the number of reported survey responses will vary in the discussion of each technical issue.

As can be observed through a review of the survey questionnaire developed, AMSA sought to obtain much of the relevant data that was not requested in the EPA survey. Examples of the types of information requested that AMSA deemed critically important to the determination of inhibition and biosolids quality problems and quantification of the administrative burden are as follows:

- The survey respondent, if a Regional Control Authority, was requested to complete the questionnaire for all POTWs under the jurisdiction of the Control Authority, not just a single POTW.

- Respondents were requested to provide information on compliance with NPDES permits and actual toxicity testing data.

- Detailed estimates were requested of the number industrial users which would become categorical facilities under the MP&M proposal that are already regulated by local POTW pretreatment limits.

- Detailed information was requested on MP&M facilities that use cyanide, including the number of facilities and their compliance history.

- Direct, specific questions were asked of POTWs regarding any instances of inhibition problems.

- Direct, specific questions were asked of POTWs regarding the quality and use of biosolids.

For querying administrative burden, questions were asked of POTWs in cost and administrative areas where EPA simply made erroneous assumptions that, ultimately, lead to an extremely underestimated cost of MP&M implementation to POTWs. For instance, screening of potential MP&M facilities, permitting, significant monitoring costs, and POTW activities performed that exceed minimum regulatory requirements were not adequately addressed by the EPA survey.

5.0 EPA'S METHODOLOGY FOR ASSESSING POTW PROBLEMS IS FUNDAMENTALLY FLAWED

A single fundamental flaw in EPA's derivation of POTW benefits is responsible for the exaggerated claims of reduced inhibition and reduced contamination of biosolids. These conclusions were not based on actual data obtained from POTWs even though EPA's survey appeared to be designed for this approach. Instead, EPA used pollutant loadings estimated from the modeling of MP&M industries. Clearly, this explains the large discrepancy in EPA's claimed benefits and what the POTW community knows to be reality with respect to its industrial users.

AMSA's consultant, URS Corporation (URS), who has performed an in-depth analysis of EPA's pollutant loading (PE) modeling work for preparation of these comments, has shown that the projected baseline and removed PE are greatly exaggerated. Among the major contributing factors to these large PE overestimates are the following issues.

- The review of EPA MP&M industrial surveys demonstrates that EPA improperly used the data from the surveys. The key errors were that facilities were not properly credited for treatment-in-place and excessive flows were used. For example, EPA used samples with 45,000 mg/l of cyanide in calculating rinse discharge concentrations and estimated that baths comprised nearly one-third of the total cyanide discharge flow from a facility. At one facility EPA used an MP&M flow an order-of-magnitude greater than the *total* water usage at the facility. This flow error was responsible for a PE error of approximately 500,000 PE at this facility and represents about 10% of the PE for the entire General Metals Subcategory.

- Unit operation (UP) concentrations derived by EPA from the sampling of industry processes (baths and rinses) were dominated by only a few (sometimes only one) extreme outlier concentration values. URS has determined that improper use of UP data in the calculation of UP average concentrations resulted extreme over-estimates of the average concentrations for 12 parameters for numerous unit operations. Estimated corrections due to UP average concentration errors, alone, resulted in a baseline (current pollutant loading) PE over-estimation of 95% for the Metal Finishing Job Shops Subcategory and 70% for the General Metals Subcategory.

- A comparison of EPA's PE summary data for model facilities with EPA's industry survey data shows that EPA did not give credit for compliance with existing Electroplating and Metal Finishing Categorical Regulations. Well over 90% of the total PE removal credited to the MP&M rule is stated by EPA to result from the regulation of "non-treaters," facilities that EPA has determined do not have treatment-in-place.

Starting with such an inflated level of baseline pollutant loading clearly is the fundamental error made in attempting to "model" POTW inhibition and biosolids contamination. AMSA's survey results demonstrate with real-world data that EPA's conclusions are erroneous. The three key concerns of AMSA, overstated inhibition, biosolids quality benefits, and understated POTW burden for rule implementation are each discussed below in the context of AMSA survey results.

6.0 CRITIQUE OF POTW BENEFITS CLAIMED BY THE MP&M PROPOSAL

6.1 Inhibition

EPA evaluated two productivity measures associated with MP&M pollutants. The first measure was interference at POTWs and the second was the transfer of pollutants into the biosolids.

EPA claimed that pollutants discharged by MP&M facilities may impair POTW treatment effectiveness by inhibiting the biological activity of activated sludge. EPA used removal efficiency rates, inhibition values, and sewage regulatory levels to evaluate POTW operations. EPA estimated inhibition of POTW influent concentrations with available inhibition levels for 89 pollutants. POTW inhibition values came from undated guidance published by EPA and other sources. At baseline discharge levels, EPA estimated that concentrations of 18 pollutants discharged from MP&M facilities exceed biological inhibition criteria at 515 POTWs nationwide. EPA estimated that the proposed regulation would eliminate potential inhibition problems at 306 POTWs and reduce the occurrence of pollutant concentrations in excess of inhibition criteria at 82 POTWs. AMSA's comments are based on actual POTW data, as opposed to estimates, outdated data or models.

AMSA surveyed 177 facilities of all sizes across the nation. The survey revealed that only two facilities (1%) reported any inhibition episodes. Of the 177 facilities surveyed, only one facility under 10 mgd reported inhibition episodes. The Fox Lake Northwest Regional facility (6.1 mgd) in Fox Lake, Illinois reported two inhibition episodes traceable to metal finishing job shop facilities, which resulted in 1999 quarterly biosolids samples exceeding the limit for copper. This was attributed to insufficient pretreatment at two printed circuit board manufacturing facilities. In both cases the control authority initiated enforcement actions under its existing approved pretreatment program and promptly and effectively mitigated the problems. Subsequently, the POTW reported 100% compliance with the Land Application Pollutant Concentration Limits for every pollutant in the year 2000. In other words, the problem has been corrected without MP&M.

In the greater than 50-mgd category, only one facility, North East Ohio Regional Sewer District, Southerly Waste Water Treatment Plant (107 mgd) in Cleveland, Ohio, reported one inhibition episode from a metals facility. They reported, "that the facility discharge was due to the failure of the company's neutralization system and resulted in a hydrochloric acid slug load at an acid pickling operation." This cannot be considered preventable inhibition because it was a spill, and no regulation would have prevented this one-time occurrence.

Clearly, EPA's estimate that the proposed regulation would eliminate potential inhibition problems caused by MP&M facilities at 306 POTWs nationwide is totally unfounded. This proposed rule will have no impact whatsoever on POTW inhibition episodes that do not exist.

6.2 Toxicity Testing (Determination of Pass Through into the Environment)

The AMSA Survey revealed similar results for whole effluent toxicity (WET) Testing. Only 7 out of 77 POTWs that reported Chronic Testing (9 %), failed to achieve 100% passing. To break it down further, 27 of 28 facilities less than 10 mgd reported 100% passing. For the 30 facilities between 10 and 50 mgd, only 4 (13%), failed to achieve 100% passing. Of the 19 facilities over 50 mgd, only 2 (11%), failed to achieve 100% passing.

For the Acute Test, only 3 out of 91 facilities (3%), failed to achieve 100% passing. To break it down further, of the 27 facilities under 10 mgd, only 1 (4%), failed to achieve 100% passing. For the 39 facilities between 10 and 50 mgd, only 1 (3%), failed to achieve 100% passing. For the 25 facilities over 50 mgd, only 1 (4%), failed to achieve 100% passing.

This data, along with the information received from POTWs regarding inhibition, only strengthens AMSA's assertion that existing local limits and existing effluent guidelines are more than adequate to protect the nation's POTWs, biosolids and receiving waters.

This data reveals that 97% of the nation's POTWs discharge completely non-toxic (exhibiting neither chronic nor acute toxicity) effluents into the nation's rivers and streams. Further, none of the episodes in which POTWs failed WET tests could be linked to facilities that would be regulated by the proposed MP&M rule. As with inhibition, there is no measurable environmental benefit to be gained by implementation of this rule.

6.3 Cyanide Pollutant Removals

EPA Significantly Overestimated Current Cyanide Loadings to POTWs and the Cyanide Removals Projected from Implementation of the MP&M Rule

In order to develop the MP&M pretreatment standards for cyanide, EPA collected 4-day samples at 13 sampling locations / processes. EPA used data derived from these sampling episodes and from other existing agency databases to model influent and effluent cyanide concentrations and flows from all identified MP&M operations. Data from the sample population was weighted to reflect the estimated national population of MP&M facilities by subcategory. Modeled concentrations and flows were then used to calculate the baseline loadings for each subcategory. Baseline loadings are calculated as the lb / yr of pollutants discharged to POTWs with current technology-in-place, and prior to implementation of proposed MP&M technology Option 2. The modeled flows and concentrations were also used to calculate the incremental increase in cyanide removals (beyond the baseline) attributed to each technology option.

Calculated MP&M pollutant removals were adjusted to account for pollutant removals by POTWs, using the POTW removal efficiencies of 57.41% for amenable cyanide and 70.44% total cyanide derived from the EPA's 1982 *50 POTW Study*. AMSA previously commented on the inappropriateness of using data from the *50 POTW Study* for determining POTW removal rates for pollutants.[1] AMSA found that cyanide removal rates at well-run secondary treatment facilities are on the order of 96%; thus by EPA's own assessment method, cyanide does not pass-though POTWs and is not worthy of regulation. EPA's calculated pollutant loadings and Option 2 treatment effectiveness concentrations result in the estimates of projected pollutant removals set forth in Table XII.C1 of the preamble and reproduced in Table 6.1 below.

Table 6.1
EPA Projected Pollutant Removals Due to Proposed MP&M Rule

Subcategory (number of facilities)	Selected Option /flow threshold	Priority and nonconventional metals	Priority and nonconventional organics (lb-removed/yr)	Cyanide (lb-removed/yr)
General Metals (3,055)	Option 2 (1 MGY)	28.1 million	7.7 million	284,000
Metal Finishing Job Shops (1,514)	Option 2	2.4 million	47,000	1 million
Printed Wiring Boards (621)	Option 2	2.6 million	14,000	230,000
TOTAL				1,514,000

AMSA performed a back-calculation to see at what concentration the 1,514 existing indirect Metal Finishing Job Shops would have to discharge in order to enable the projected additional removal of 1,000,000 lbs / yr of cyanide.

Using the POTW removal rate of 96% (for cyanide (T)), and assuming a model technology removal rate of 99% (conservative for back-calculating baseline loadings) then the 1,000,000 lbs/year is equivalent to approximately 3% of the baseline loading, so that the 1,514 dischargers would have to discharge a total of approximately 33,333,333 lbs/yr or 91,324 lbs/day after treatment currently-in-place. This works out to 60.32 lbs/day per indirect discharger, which, at an average 25,000-gpd flow for job shops, is equivalent to 289 mg/L. Job shops are currently subject to pretreatment standards under 40 CFR 433 or 413, and must comply with monthly average standards of 0.65 or 1.0 mg/L, respectively. Since not all 1,514 indirect discharging Metal Finishing Job Shops

[1] AMSA's April 25, 2001 letter of comment to George Jett, Office of Water on EPA's proposed Effluent Limitations Guidelines, Pretreatment Standards, and New Source Performance Standards for the Iron and Steel Manufacturing Point Source Category, 65 Fed. Reg. 81,964 (Dec. 27, 2000); 66 Federal Register 10,253 (Feb. 14, 2001)

are currently in massive significant noncompliance, AMSA concludes that the PE removals calculated by EPA are incorrect and highly exaggerated.

In order to perform a real-world check of cyanide loadings to POTWs, AMSA's POTW survey requested the following information on all existing CIUs that use or generate cyanide (including Iron and Steel Manufacturing and Pharmaceutical Manufacturing): average daily flow, average daily loadings discharged to the POTW, treatment-in-place, and compliance with applicable limits by existing CIUs that use or generate cyanide. 60 of the 70 pretreatment programs comprising 131 of the 177 POTWs responded with cyanide discharge information. The 131 treatment plants were separated by flow into three categories, Small, Medium, and Large, to characterize the cyanide-bearing wastestream flow volumes and concentrations received by plant size. Summary findings are presented in Table 6.2, below.

Table 6.2
CYANIDE DISCHARGES BY POTW SIZE

POTW SIZE	# CYANIDE USERS: GENERATORS /PLANT	AVERAGE FLOW / DISCHARGER	AVERAGE LOADING (lbs/day)/ DISCHARGER	% WITH TREATMENT	% FLOW COMPLIANT
Small (<10 MGD)	0.9	0.0253	0.0032	34	97.57
Medium (10 – 50 MGD)	2.82	0.0137	0.03	77	89.14
Large (>50 MGD)	16	0.06	0.14	69	96

The pretreatment programs were also divided into three groups by total flow in order to characterize the average population of POTWs served by the three sizes of program. AMSA then weighted the responses of the sample pretreatment program population to expand the results across the 1,500 pretreatment programs nationwide using the survey weighting factors of 65% pretreatment programs <1MGD, 25% pretreatment programs 10-50 MGD, and 10% pretreatment programs > 50 MGD. The results from the three groups are listed in the table below.

Table 6.3
POTW AND CYANIDE DISCHARGER POPULATION BY FLOW

PRETREATMENT PROGRAM CLASS	# POTWS/ EA PROGRAM	FACTOR * 1,500 PROGRAMS	TOTAL # PROGRAMS THIS SIZE	# POTWS / PROGRAM CLASS	TOTAL # POTWS THIS SIZE
Small (< 1mgd)	S: 1.08	65%	975	S: 1057	1,410
	M: 0			M: 0	
	L : 0			L: 0	
Medium (10 – 50 MGD)	S: 0.7	25%	375	S: 262.5	531
	M: 1.0			M: 375	
	L : 0			L : 0	
Large (>50 MGD)	S: 0.6	10%	150	S: 91.1	225
	M: 1.03			M: 155.4	
	L : 1.5			L : 225	

Using these estimated POTW and cyanide discharger populations and characteristics, AMSA calculated total daily and annual cyanide loadings across all POTWs nationwide. These findings are summarized in Table 6.4 at the end of this section.

Based on survey responses from the 70 pretreatment programs covering POTWs, AMSA estimates that 6,382 CIUs of all point source categories (not just potential MP&M facilities) currently discharge cyanide-bearing wastestreams to the sewer. Of these CIUs, 64%, or nearly 4,088, pretreat their cyanide wastes prior to discharge to their POTWs. 10% of facilities also haul some cyanide wastes off-site, either in lieu of treatment, or to manage concentrated process baths or cyanide wastestreams not amenable to alkaline chlorination. Twenty six percent report no treatment of some cyanide wastestreams. Follow-up calls identified the majority of facilities with no treatment as electroplaters, who are not required to sample immediately after cyanide treatment, but may instead combine cyanide and non-cyanide wastestreams prior to sampling to determine compliance with the cyanide standards set forth at 40 CFR 413. Pretreatment programs report an 86% compliance rate with current applicable pretreatment standards or local limits resulting in 91%, or nearly 232 MGD of cyanide discharges in compliance out of a total cyanide flow of 254 MGD.

Based on knowledge of existing cyanide dischargers, both CIUs and non-CIUs, AMSA expects that < 10 % of EPA's projected 645 "new" CIU facilities will actually discharge cyanide. In the summary chart, existing total CIU cyanide loadings were increased by 10% to include loadings from existing dischargers that are not currently CIUs. Furthermore, because cyanide discharges have the potential to affect public health and safety, and because POTWs must also address issues of public perception, virtually all of the "new" CIUs that actually discharge cyanide are currently covered under existing non-CIU permits and subject to local limits. Of the 85 POTWs reporting CIUs that discharge cyanide to their facilities, 84% also reported that they had developed and implemented a

local limit for cyanide. Of the 46 POTWs that reported no CIU cyanide dischargers, 34, or 74% reported having developed and implemented a local limit for cyanide.

EPA's study exaggerates potential pollutant removals due to implementation of the MP&M rule because the model EPA used to calculate baseline loadings is off by a factor of at least 10.

Based on averages of actual CIU cyanide flows and loadings reported by the POTW pretreatment programs, AMSA estimates that CIUs currently discharge approximately 244,340 lbs-eq/year of cyanide to POTWs nationwide. This estimate is supported by information in EPA's TRI database, which, for 1997, documents transfers of 173,849 lbs. / year of cyanide to POTWs. AMSA's higher calculated loading is expected given that many small cyanide users / generators do not meet the TRI reporting thresholds.

Using the POTW overall removal efficiencies for cyanide(T) (96%) and cyanide(A) (57.41%) found in Table 12-3 of the MP&M Development Document, AMSA calculates that, of the 244,340 lbs-eq / yr of total cyanide discharged to POTWs, 234,566 lbs-eq can be adequately removed by POTWs**, leaving only the remaining 9,774 lbs-eq /yr available for additional removal due to implementation of the proposed MP&M rule! This works out to 1.53 additional pounds per facility per year due to the MP&M rule. The survey results demonstrate that EPA's projected cyanide removals are more than 10 times higher than is possible!**

Based on AMSA's finding that the baseline cyanide loadings estimated using EPA's modeling program are at least 10 times higher than actual cyanide loadings, it is probable that other pollutant loading removals are similarly exaggerated by a factor of at least 10 through a systemic modeling error. It follows that the costs to industry and to POTWs per lb-eq removed are underestimated by a factor of at least 10. AMSA concludes that EPA's study, through a systemic modeling error, highly exaggerated the environmental benefits from implementation of the MP&M rule and greatly underestimated costs per lb-eq pollutant removed. Based on actual loadings at baseline, AMSA further concludes that no rule is required.

Table 6.4
SUMMARY DATA: CYANIDE LOADINGS

Weighted Population

						POTW Removals	
				Percent		Amenable Cyanide	Total Cyanide
Total CN CIU Flow (MGD)	253.93	**# w/ treatment**	4,088	64.05%		57.41%	96%
# CN CIUs	6382	**# that haul**	645	10.10%			
		# no treatment	1,650	25.85%			
		# compliant	5,513	86.39%			
		CN MGD compliant	231.88	91.32%			

Weighted Loadings

Totals to POTWs, based on AVG

	Amenable Cyanide	Total Cyanide
lbs/yr	6,803.34	201,933.64
lb-eq/yr(Based on AMSA's Survey)	7,483.68	222,127.01
lb-eq/yr (+10% (New CIUs from MP&M guidelines)	8,232.04	244,339.71

Totals to POTWs, based on MEDIAN

	Amenable Cyanide	Total Cyanide
lbs/yr	4,248.60	13,399.51
lb-eq/yr(Based on AMSA's Survey)	4,673.46	14,739.46
lb-eq/yr (+10% (New CIUs from MP&M guidelines)	5,140.81	16,213.41

Total Cyanide

Projected Total CN,a + CN,t Discharged to POTWs based on Avg (lb-eq/yr)	252,572	**Total CN,a Removed by POTWs based on Avg (lb-eq/yr)**	4,726.02	**CN,t Removed by POTWs based on Average (lb-eq/yr)**	234,566.12
Projected Total CN,a +CN,t Discharged to POTWs based on Median (lb-eq/yr)	21,354	**lbs-eq/yr CN,a Available for MP&M Removal Benefit**	2,077.33	**lbs-eq/yr CN,t Available for MP&M Removal Benefit**	97,733.59

6.4 Biosolids

EPA Significantly Overestimated the Environmental and Economic Biosolids [Sludge] Benefits of the Proposed MP&M Rule

Treated sewage ludge or biosolids are a result of primary, secondary and advanced wastewater treatment processes of domestic and industrial wastewater. Biosolids contain five classes of components: organic matter, pathogens, nutrients, inorganic chemicals and organic chemicals. The mix and levels of these components determine the human and environmental impact of biosolids disposal. The concentration of inorganic pollutants, such as metals, depends on the volume and character of the wastewater and gray water treated in each POTW.

EPA suggests that a benefit of the proposed MP&M guidelines is "reduced contamination of sewage sludge at POTWs that receive discharges from MP&M facilities." In addition, EPA asserts that the "reduced sludge contamination" will result in more POTWs disposing of their biosolids through land application, thereby reducing paperwork and cost for the disposal of the biosolids.

Based on data submitted in the 2001 AMSA MP&M Survey of 177 POTWs, AMSA believes that EPA significantly overestimated the economic and environmental benefits of the proposed Metal Products and Machinery Rule for the POTW community. The benefits outlined by EPA in its *Economic, Environmental and Benefits Analysis of the Proposed Metals Products and Machinery Rule* document were overestimated due to the following factors:

- EPA developed and utilized baseline discharge level "estimates" to project POTW sludge pollutant concentrations rather than consult actual POTW sludge data that was available in required POTW Annual Sludge Reports.

- EPA concluded, based on estimates that "6,953 POTWs exceed the Land Application-High Pollutant Limits and 4,714 POTWs exceed the Land Application-Low Pollutant Limits.

- EPA published and evidently utilized an incorrect [more stringent] value for Selenium in the Land Application-High Pollutant Limits, which would result in more POTWs being deemed non-compliant with the Selenium Land Application-High Pollutant Limits.

- EPA assumed that the implementation of the MP&M Rule would impact the multitude of POTWs incorrectly labeled as non-compliant with land application metals criteria and that these POTWs would choose a land application disposal option for biosolids once the land application metals criteria could be met.

- The EPA MP&M survey did not include POTWs who treat less than 2 million gallons per day – in the AMSA survey, 11 POTWs with flows of less than 2 million gallons per day were included.

Biosolids Information from the 2001 AMSA MP&M POTW Survey

As part of AMSA's survey of EPA's Original 150 POTWs, respondents were polled on the management of each POTW's biosolids. Specifically, AMSA asked about each POTW's biosolids use and disposal practices including:

- land application (including composting)
- incineration
- surface disposal
- cover for landfill
- landfill disposal
- disposal as a hazardous waste

Each POTW was also asked to identify their reasons for using non-land application techniques if they did not dispose of their biosolids by land application. Most importantly, each POTW was asked to provide their most recent analytical results for the 40 CFR Part 503 Land Application regulated metals (i.e. Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Molybdenum, Nickel, Selenium, and Zinc).

The *Handbook for Estimating Sludge Management Costs* and *Regulatory Impact Analysis of the Part 503 Sludge Regulation*, which EPA used as points of reference for their formulation of the proposed guidelines, are over 15 years out of date. Data compared to aged and fermented documentation shows lack of respect and credit for current technology and indicators available to both the POTW and metal finishing communities. AMSA chose not to compare its survey data to this out of date documentation.

Biosolids Disposal Options

40 CFR 503 sets the general requirements, management practices, operational standards and monitoring and reporting requirements for the final use and disposal of biosolids. Biosolids may be disposed of by landfilling, land application, land or surface disposal (landfill cover), or incineration. AMSA used EPA's 1996 Survey for the definitions of the following sludge disposal practices including:

"Land Application: the spraying or spreading of sewage sludge onto the land surface, the injection of sewage sludge below the land surface, or the incorporation of sewage sludge into the soil so that the sewage sludge can either condition the soil or fertilize crops or vegetation grown in the soil. Bulk sewage sludge can be land applied to different types of land including agricultural land, pasture land, or range land; forest land; reclamation sites; public contact sites; and residential gardens. Sewage sludge for land application can also be distributed in bags or other containers for land application, for example, on

residential lawns and gardens.

Surface Disposal: placing sewage sludge in an area of land on which only sewage sludge is placed for final disposal. Surface disposal includes surface impoundments used for final disposal, sewage sludge monofills, and land on which sewage sludge is placed solely for final disposal. Sewage sludge is placed on an active sewage sludge unit.

Incineration: the combustion of organic and inorganic matter in sewage sludge by high temperatures in an enclosed devise.

Landfill Disposal: a discrete area of land or an excavation that receives household waste and may receive other types of solid waste.

Hazardous Waste: a discrete area of land or an excavation that receives hazardous waste (as determined by the procedures in 40 CFR part 261)."

AMSA's survey asked for the breakdown of techniques each POTW used for the disposal of biosolids and, as part of the beneficial uses, asked specifically for the percentage of biosolids land applied and the percentage composted. During AMSA's analysis of the survey data, the composting and land application categories were combined for a total beneficial use category to reflect EPA's definition of "Land Application".

Table 6.5
POTW Biosolids Use/Disposal [AMSA 2001 Survey of 169 POTWs]

Use/Disposal Sub-Class	Total Dry Metric Tons Produced Per Year	Percent of Total Dry Metric Tons
Total Beneficial Use	829,659	51.19%
Land Application	699,308.5	84.29%
Composting	130,350.5	15.71%
Surface Disposal	46,662.93	2.88%
Landfill Disposal	21,2166.4	13.09%
Incineration	353,829.7	21.83%
Cover for Landfill	178,425.4	11.01%
Hazardous Waste	0	0
Total	**1,620,743**	**100.0%**

Fifty-one percent of the total dry metric tons of biosolids reported by the respondents in the AMSA survey are used in a beneficial manner [land application or composting]. Incineration was the second most frequently used disposal method accounting for 21.83% of all biosolids disposed by the responding POTWs.

Biosolids Pollutant Limits

Pollutant limits referenced in 40 CFR Part 503, designate concentration-based limits for land application. The low limits for land application frame the ability for the biosolids to be land applied. The more stringent high limits for land application, if met, may cause an Agency's biosolids program to be exempt from certain record-keeping requirements. Listed in the table below are the ceiling limits [Land Application-Low Limits] and pollutant concentration limits [Land Application-High Limits] for the metals used to qualify sludge for land application and the number of POTW respondents who met the limits.

Table 6.6
Land Application Limits for Metals Directly Effected by Proposed MP&M Guidelines

Pollutants	Low Limits (mg/kg dry weight basis)	POTWs Meeting Low Limits	High Limits (mg/kg dry weight basis)	POTWs Meeting High Limits
Arsenic	75	159 out of 159	41	158 out of 159
Cadmium	85	159 out of 159	39	159 out of 159
Copper	4,300	159 out of 159	1,500	156 out of 159
Lead	840	159 out of 159	300	157 out of 159
Mercury	57	159 out of 159	17	159 out of 159
Molybdenum	75	159 out of 159	-	Not Applicable
Nickel	420	159 out of 159	420	159 out of 159
Selenium	100	159 out of 159	100**	159 out of 159
Zinc	7,500	159 out of 159	2,800	157 out of 159

**EPA reported this value as 36 mg/kg in Table 16.3 of the *Economic, Environmental and Benefits Analysis of the Proposed Metal Products and Machinery Rule.* [EPA changed the limit from 36 mg/kg to 100 mg/kg on October 25, 1995] Using the 36 mg/kg value in any high limits compliance assessment of POTW biosolids is incorrect and would significantly overestimate the number of POTWs exceeding high limits for land application.

EPA contends that more stringent regulations on the Metal Products and Machinery community will result in better quality biosolids that can be land applied. As shown in the analysis of AMSA's survey data, **all POTWs surveyed, regardless of size, met the metals Ceiling limits [Low Limits],** which would allow their biosolids to be land applied. Only 5.03% [8 out of 159] of the POTWs surveyed did not meet the High Limit cut off for an administrative reduction in paperwork based on higher quality biosolids. The proposed MP&M rule will do nothing to increase the quality of biosolids. POTWs will be required to regulate MP&M facilities to decrease metals which, in most cases, are already far below even the highest limit required for high quality biosolids suitable for land application.

Reasons for Not Land-Applying Qualifying Biosolids

As previously demonstrated, 100% of the POTWs surveyed met Land Application-Low Limits [Ceiling] standards for metals in biosolids. However, only 51.19% of the total biosolids generated by the respondents were land applied. The remaining 48.01% of the biosolids generated were disposed of by other methods such as incineration or landfill. AMSA's survey data includes the following reasons for not land applying qualifying biosolids:

- Land was not available for application of sewage biosolids (21.6% of the total DMT)
- Other biosolids use/disposal practices were less expensive than land application (61.6% of the total DMT)
- Pathogen/vector reduction requirements could not be met at an acceptable cost (3.33% of the total DMT)
- Local regulations or opposition to land application (13.3% of the total DMT)

The most common reason for not land applying qualified biosolids was due to the availablility of a more cost-effective option. As noted by the Detroit Michigan Water and Sewage Department, an AMSA member, "Our plants are located in an urban area and we would not be able to land-apply fast enough, nor could we store enough biosolids to make this a viable option for us."

It should be noted that in EPA's *Economic and Environmental Benefits Analysis of the Metal Products and Machinery Effluent Guidelines,* composting was not included in the land application definition for this section of the analysis. However in the definition given to the participants of the 1996 survey, composting was included in the land application definition. AMSA chose to include composting of biosolids as part of the land application description and it has been added to the analysis of the POTW surveys received. Therefore, the total dry metric tons that were composted were added to the total dry metric tons that were being land applied.

Of the 48.81% of the total dry metric tons of sludge not land applied, the most common alternative option was incineration followed by landfill disposal. Many agencies noted on their survey that transportation was an issue and that incineration was cost-effective due to on-site incinerators. EPA states, "The choice of use/disposal method is restricted by the quality of the sludge generated by the POTW". Although from a regulatory perspective this is true, AMSA's survey did not find even one POTW whose sludge disposal choice was based on exceedence of surface disposal or land application metals criteria. Once again, there is nothing to be gained, with regard to biosolids quality, through implementation of the MP& M proposed rule.

Overview of Improved Sludge Quality Benefits

EPA estimates that the "reduction in pollutants will provide many POTWs with greater flexibility in the disposal of their sludge, and for some the opportunity to use less expensive methods of sludge disposal." AMSA questions the MP&M guideline's

economic benefit since all POTWs surveyed met land application-Low Limits criteria and POTWs who did not land apply all of their biosolids opted for a more cost-effective alternative.

Below, AMSA has provided a point-counter-point on EPA's economic benefits for cleaner biosolids.

Point 1: "Methods involving stricter criteria pollutants are generally less expensive than the alternatives. In particular, land application usually costs substantially less than incineration or landfilling."

95% of the POTWs surveyed [and 98% of the total Dry Metric Tons of sludge produced] had biosolids that met stricter sludge criteria pollutant levels. Many of the POTWs surveyed replied that land application would not be feasible due to the lack of land available for biosolids application, and the transportation to a land application site may prove to be more costly than other options. In addition, in some parts of the country, land may be available to apply biosolids, but the weather may prove to be the limiting factor for land application. Cold, wet winters, and frozen ground does not provide optimum conditions for land application and would give many agencies pause as to how to dispose of the large amounts of biosolids produced.

Point 2: "Some sludge currently meeting only Land Application – Low Concentration limits and pollutant loading rate limits would meet the more stringent Land Application-High Concentration limits. Users applying sludge meeting Land Application-High pollutant limits would be exempt from meeting pollutant loading rate limits. They would have fewer record-keeping requirements than users of sludge meeting only Land Application-Low concentration limits."

Again, 95% of the POTWs who responded to AMSA's survey had biosolids that met the high limits for land application. However, only 51.19% of the total dry metric tons of biosolids were disposed of through land application. The federal administrative burden for a POTW, although reduced because of the better quality of biosolids, would require the POTW to calculate and draft much of the same data for the administrative needs on both the state and local levels. Each land application site requires a site permit, landowner's agreement, site survey, topographic map, soil samples, and soil to organic material ratios, which must be set up and maintained on a monthly and yearly basis. Administrative work for a land application site just on a state and local level can take anywhere from 10-20 hours per site every 2 months. The reduction in paperwork will still only remove a few minutes to an hour per site.

Point 3: "By land-applying sludge, POTWs may avoid costly siting negotiations for more contentious sewage sludge use or disposal practices such as incineration."

Again, most POTWs that do not land apply their biosolids have chosen a more cost-effective option. In addition, with many POTWs being located in an urban setting, many of the treatment plants lack land available for the amount of biosolids produced by the

wastewater treatment process. Agencies like the Narragansett Bay Commission, RI, an AMSA member, have an incinerator on site that allows the POTW to save on transportation costs to dispose of biosolids.

Point 4: "Land application of sludge satisfies an apparent public preference for this practice of sludge disposal, apart from consideration of costs and risk."

EPA wrongly assumes that land application of biosolids is a practice readily accepted by the public. As most POTWs with a biosolids land application program can verify, biosolids land application was not easily accepted. The debate continues as evidenced by two recent events. The first event is a proposed Congressional amendment to the Food, Drug and Cosmetics Act to specifically label all food grown in biosolids enriched soil. The second event is a ban which has been proposed on biosolids land application in Riverside County, California. Partnerships like the National Biosolids Partnership, in which both AMSA and EPA are involved, are working to change this type of sentiment.

Biosolids Use/ Disposal Cost and Practices

As previously discussed, all of the POTWs who responded to AMSA's survey produce biosolids which qualify for land application. However, not all of the POTWs use land application as a means to dispose of their biosolids due to many factors, including lack of land, more cost effective options, and local and federal politics. EPA's *Environmental and Economic Benefit Analysis* of the proposed rule listed incineration as one of the most costly options for biosolids disposal. AMSA's survey found that this biosolids disposal option was second only to land application in its popularity. Given that municipal agencies get little or no federal funding and that municipal budgets are very small, AMSA assumes that each POTW employs the most cost-effective option possible for the disposal of biosolids. Switching from an alternative method to land application would not be cost effective, and as stated previously, many of the survey respondents did not land apply because of the lack of land, a more cost effective option, or political pressure. While it may cost more to operate an incinerator or a landfill, it may not be the most cost-effective option for biosolids disposal once other factors are taken into consideration.

An additional part of EPA's assumptions of benefits was to assume that the cost of land application to forest, public contact sites or land reclamation sites was similar to the cost of agricultural application. This is simply incorrect. Depending on the location of the forest, public contact or land reclamation sites, various types of analysis of the site have to take place before and after application. Therefore, each location requires different kinds of documentation to secure the site for biosolids application. *Neither reduced metal content for biosolids which already meet land application criteria or a few minutes of paperwork reduction will change the way POTWs dispose of their biosolids.* Agencies on a tight budget will look for the most cost effective and available method to dispose of their biosolids.

Quantifying Biosolids Benefits

AMSA is concerned that EPA used convoluted mathematical calculations to derive the POTW baseline and POTW post-compliance sludge [biosolids] quality metals concentrations when actual biosolids metals data is available to EPA in POTW Annual Sludge Reports. EPA requires each POTW to submit an Annual Sludge Report, which includes site-specific metals data as outlined in the 40 CFR Part 503 reporting requirements. AMSA's survey requested actual biosolids data from each POTW respondent. It is inexplicable that EPA would vaguely estimate metals biosolids values when actual biosolids metals values were available.

EPA used their baseline discharge level "estimates" to conclude that "6,953 POTWs exceed the Land Application-High Pollutant Limits and 4,714 POTWs exceed the Land Application-Low Pollutant Limits". There are approximately 15,000 POTWs in the United States. EPA would have us believe that over 31% of the nation's POTWs do not meet land application-low pollutant limits and over 46% of the country's POTWs do not meet the land application-high pollutant limits. EPA has *grossly overestimated* the number of POTWs exceeding Land Application Pollutant Limits based on actual POTW sludge data compiled as part of the 2001 AMSA MP&M Survey. Of the 177 POTWs represented in the survey, biosolids metals data was submitted for 159 POTWs. The data confirms that the combination of existing Federal Categorical Pretreatment standards and implementation of local limits is more than sufficient to assure the protection and beneficial use of POTW biosolids.

Table 6.7
Summary of AMSA Surveys, Biosolids Metal Concentration Averages

POLLUTANT [values in mg/kg dry weight basis]	2001 AMSA Survey Average of 151 POTWs	Ceiling Concentration [Low Pollutant Limit]	Pollutant Concentration [High Pollutant Limit]
Arsenic	7.1	75	41
Cadmium	4.74	85	39
Chromium	73.2975.3	-	-
Copper	563.49544.2	4300	1500
Lead	85.8	840	300
Mercury	1.91	57	17
Molybdenum	13.74	75	-
Nickel	40.86	420	420
Selenium	6.36	100	100
Zinc	852.29	7500	2800

An examination of the average POTW biosolids metals concentrations from the 2001 AMSA MP&M Survey further demonstrates that EPA has significantly overestimated pollutant loadings to POTWs. Thus, EPA has also significantly overestimated the

environmental and economic benefit of the MP&M rule. All POTW biosolids metal averages are well below all land application criteria and in some cases are even an order of magnitude less than the low pollutant limits.

A review of the number of POTWs in compliance with the land application criteria is instructive. For the low limits, none of the 159 POTWs exceeded metal criteria, resulting in 0% of the POTWs not meeting the low pollutant limits…far from the 31% estimated by EPA. A review of the high limits reveals that 8 POTWs out of the 159 reporting exceed one metal criteria, resulting in 5% of the POTWs in the AMSA survey not meeting high limits, once again, dramatically less than the 46% estimated by EPA.

EPA Region V conducted a study to determine the reduction of industrial toxic pollutants discharged to POTWs, and subsequently to the land, though application of biosolids. A review of the 1997 Annual POTW Sludge Reports for 769 POTWs indicated that 95% [734 POTWs] of the POTWs met all ceiling limit [Low Pollutant Limit] concentrations for the nine regulated metals.[2]

Table 6.8
Summary of POTWs in Compliance with EPA's Land Application Criteria

POLLUTANT [values in mg/kg dry weight basis]	Ceiling Concentration [Low Pollutant Limit]	Number of POTWs Exceeding Low Pollutant Limits	Total Dry Metric Tons of Sludge Exceeding Low Pollutant Limits
Arsenic	75	0/159 = 0%	0
Cadmium	85	0/159 = 0%	0
Copper	4,300	0/159 = 0%	0
Lead	840	0/159 = 0%	0
Mercury	57	0/159 = 0%	0
Molybdenum	75	0/159 = 0%	0
Nickel	420	0/159 = 0%	0
Selenium	100	0/159 = 0%	0
Zinc	7,500	0/159 = 0%	0

A simplistic assessment of the number of POTWs exceeding land application criteria can be misleading, because it does not address the total number of dry metric tons involved. In order to truly assess the non-compliant percentage for land application of biosolids, and assess the potential environmental and economic benefits to the POTW biosolids program, the total number of dry metric tons must be evaluated.

[2]"Trends in Reduction of Toxic Pollutants, A. Sajjad, M. Gluckman, J. Barney, E. Chaiken, United States Environmental Protection Agency, Region V and R. Sustich, P. Tata, C. Lue-Hing, Metropolitan Water Reclamation District of Greater Chicago, 1999.

For the low limits, all of the total 1,620,743 Dry Metric Tons reported in the AMSA survey met all of the metals criteria. For the high limits, a total of 30,315 Dry Metric Tons [from 8 POTWs] out of the 1,620,743 total Dry Metric Tons reported in the AMSA survey did not achieve the high pollutant concentrations. Thus, 1.87% of the total biosolids reported in the AMSA survey exceeded one metal criterion. No matter how the evaluation of the actual biosolids data is conducted, EPA's published estimates are unfounded.

Table 6.9
Summary of POTW Surveys – Total Biosolids Reported in Dry Metric Tons

POLLUTANT [values in mg/kg dry weight basis]	Pollutant Concentrations [High Pollutant Limit]	Number of POTWs Exceeding High Pollutant Limits	Total Dry Metric Tons of Sludge Exceeding High Pollutant Limits
Arsenic	41	1/159 = 0.6%	728
Cadmium	39	0/159 = 0%	0
Copper	1,500	3/159 = 1.9%	1,694
Lead	300	2/159 = 1.3%	23,007
Mercury	17	0/159 = 0%	0
Molybdenum	-		
Nickel	420	0/159 = 0%	0
Selenium	100	0/159 = 0	0
Zinc	2,800	2/159 = 1.3%	4,886

In Table 16.8 and 16.9 from the *Economic, Environmental, and Benefits Analysis of the Proposed Metal Products and Machinery Rule,* EPA projects a $61 million benefit to POTWs from sludge/use disposal option shifts. These beneficial "shifts" assume that 6,953 POTWs exceed the High limits. AMSA's survey projects that only 780 POTWs exceed the high limits [using actual POTW biosolids data, 15,000 as the total number of POTWs in the country, 5.2% as the percentage of POTWs exceeding one high metal criteria]. AMSA's data proves that existing regulations have made it possible for all POTWs to land apply their biosolids.

As discussed previously, *not one single POTW identified land application metals criteria exceedence as the reason they do not land apply biosolids*. The shift to Land Application that is the basis of EPA's biosolids economic benefit projection *will not* occur. Thus, the economic benefit *will not* occur. Most importantly, any POTW wishing to reduce biosolids metal concentrations can do so through the development and implementation of local limits for the offending parameter. Therefore, the MP& M rule will not serve to enhance biosolids quality.

Methodology Limitations and Summary

EPA lists several methodology limitations in deriving the biosolids information. However, the most egregious flaw in the estimates and assumptions made by EPA concerning the biosolids economic and environmental benefit to POTWs was the decision to totally ignore *actual* data contained in POTW Annual Sludge Reports required by EPA's own biosolids regulations. Although other methodologies may have had limitations of their own [i.e. "mixed" biosolids disposal practices, baseline MP&M facility loadings, number of MP&M facilities estimated per POTW], real world biosolids data could only have vastly improved the final product. The AMSA survey has provided an analysis of actual biosolids data from 159 POTWs and has verified the serious flaws in and the gross misdirection of biosolids environmental and economic benefits assessment by EPA.

6.5 Local Limits

EPA did not give sufficient credit to the effectiveness of local limits.

POTWs are required to develop and implement POTW-specific, environmentally based Local Limits that enable the POTW to meet all applicable environmental criteria. NPDES permits for most POTWs with significant industrial contributory flows contain daily average or monthly maximum limits for metals of concern. Most also require compliance with either Chronic or Acute Toxicity limits. AMSA believes local limits developed to meet these environmental criteria can effectively protect the environment, while minimizing the administrative burden on POTWs and the economic and operational burdens and legal liability imposed on industry.

AMSA's survey requested information about current local limits and Non-CIU facilities subject to the proposed MP&M rule that are currently regulated by POTWs, as well as POTW NPDES limits and compliance rates with those limits.

AMSA found that 63 plants, or 46% of the 137 treatment plants responding, reported having general metals facilities that would fall under the new rule in their jurisdictions, with responses ranging from nearly 60% of the medium and large plants to 26% of the small plants. Of these plants with General Metals facilities, 64% reported that they regulate some or all of the facilities with permits containing local limits, covering an average of 72% of the identified flows.

AMSA also looked at the current regulatory status of facilities that generate wastes subject to the MP&M Oily Wastes Subcategory. 37 of the 137 treatment plants responding reported facilities in their jurisdiction that would fall under the pretreatment standards for the Oily Waste Subcategory in proposed rule. Of these 37 plants, 76% reported that they regulated some or all of these facilities with permits containing local limits or Best Management Practices or both. 79% of the pretreatment programs responding had developed and implemented a local limit for Copper. Limits ranged from 0.01 – 15 ppm, with a median of 2.2 ppm. 79% of the pretreatment programs had also

developed and implemented a local limit for Total Cyanide. Limits ranged from 0.03 – 15 ppm, with a median of 0.82 ppm.

44 of the 67 POTWs having IUs subject to the proposed rule reported that they regulate 100% of the flows subject to proposed pretreatment standards for the MP&M Point Source Category. The survey did not break down the regulated flows by subcategory.

In order to characterize the effectiveness of current pretreatment standards and local limits, AMSA looked at the frequency of NPDES permit limits for copper and cyanide reported in survey responses, and the compliance rates with those limits. The 70 pretreatment programs responding to the survey reported a limit for copper in 58 NPDES permits. 50 of these 58 treatment plants, or 86%, reported a compliance rate of 95% or better with the copper limit. Similarly, 31 treatment plants were subject to a limit for total cyanide, and 28 plants, or 90%, reported a compliance rate of 95% or greater.

Many NPDES permits contain requirements for chronic or acute WET tests as a means of evaluating the overall quality of treatment plant effluent. For Chronic WET tests, the median required sampling frequency is 4 times per year, with frequencies ranging from 4 – 12 times per year. POTWs reported an average compliance rate of 93%, with 63 of the 71 facilities reporting 100% compliance. For Acute WET tests, the median required sampling frequency is 2 times per year, with frequencies ranging from 0.2 to 24 times per year. Of the 91 facilities performing the Acute WET test, the average compliance rate was 89%, with 96% of the facilities reporting 100% compliance.

In summary, survey responses show that pretreatment programs have developed and implemented local limits that ensure treatment plants can comply with applicable environmental criteria. Initial pretreatment standards were developed because environmental criteria were not being met. Pretreatment standards are technically based rather than environmentally based. AMSA questions why additional regulation is necessary if environmental criteria imposed on POTWs are currently being met? One could argue that the environmental criteria are not sufficient in all NPDES permits. AMSA believes that the solution is to develop correct, protective NPDES permits, based on the specific receiving body. Although Federal Pretreatment Standards have proven an effective initial strategy for reducing pollutant loadings from the metal finishing industry to POTWs, AMSA believes that future regulation of the MP&M sector should be through existing Effluent Guidelines for the metal finishers and local limits based on appropriate NPDES permits.

7.0 CRITIQUE OF MP&M ESTIMATE OF POTW ADMINISTRATIVE BURDEN

EPA Significantly Underestimated the Administrative Cost to POTWs for Implementing the MP&M Rule

In the proposed MP&M rule, EPA asserted that, "Total estimated government administrative costs therefore range from $0.1 to $0.9 million ($1999) annually. EPA expects that this increase in costs will be partially offset by reduction in government administrative costs for facilities that are already permitted under local limits and that will be re-permitted under this rule." [3]

Based on its review of EPA's methodology and AMSA 's own POTW survey, AMSA believes that EPA significantly underestimated the administrative costs to POTWs for implementing the MP&M rule. EPA's administrative cost estimates are understated for a number of reasons:

- EPA assumed that POTW expenditures for conducting surveys to identify facilities potentially subject to the MP&M rule are "insignificant."

- EPA expected no increase in the costs of administering pretreatment program requirements due to the MP&M rule for facilities that currently hold permits with mass-based limits.

- While EPA recognized that POTWs must conduct sampling to assess the compliance status of facilities subject to categorical pretreatment standards (including the MP&M rule), EPA alternately assumed that POTWs would conduct the regulatory minimum monitoring for all facilities while at the same time EPA vigorously urges POTWs to conduct substantially more than the regulatory minimum monitoring for protection of POTW facilities.

- EPA failed to recognize that POTWs incur substantial analytical costs with regard to samples obtained at regulated facilities.

- EPA did not consider the management oversight costs to POTWs with regard to implementing and maintaining Pretreatment Programs, particularly for POTWs that may be required to develop new Pretreatment Programs as a result of the MP&M rule.

EPA's Cost Estimate Methodology

EPA expects 9,839 facilities to be regulated under the currently proposed MP&M rule, including 4,653 direct dischargers and 5,186 indirect dischargers to POTWs. EPA's description of the MP&M community is depicted in the following table.

[3] "Economic, Environmental and Benefits Analysis of the Proposed Metal Products and Machinery Rule," United States Environmental Protection Agency, Office of Water, EPA-821-B-00-008, Washington, D.C., December 2000.

TABLE 7.1 NUMBER OF MP&M FACILITIES REGULATED AND SUBJECT TO REQUIREMENTS UNDER THE PROPOSED RULES				
	All Water-Discharging MP&M Facilities	**Operating in the Baseline**	**Regulated Under the Proposed Rule**	**Percent of Facilities Operating in the Baseline that are Regulated**
Direct dischargers	4,804	4,653	4,653	100%
Indirect dischargers	57,948	54,333	5,186	10%
Total	62,752	58,986	9,839	17%

In deriving its administrative cost estimate, EPA established unit costs for various permitting activities, based on a survey of 150 POTWs. EPA then applied these unit costs to the population of 5,186 MP&M facilities that EPA expects to be regulated under the proposed MP&M rule, applying the following criteria:

- Mass-based permits would need to be reissued to all facilities in the Steel Forming & Finishing Category that become regulated under the MP&M category.

- One-third of permits issued or reissued to existing facilities in categories other than Steel Forming & Finishing would be mass-based.

- For activities that are not performed at all MP&M facilities, EPA used POTW survey data to estimate the percentage of facilities at which a particular activity will be performed (e.g., 38.5% of facilities were expected to submit at least one non-compliance report).

- Based on its POTW survey, EPA assumed an average hourly labor rate of $36.98 (1999). EPA further assumed that this labor rate was a fully loaded cost, including salaries and fringe benefits.

Unit Costs of Permitting Activities

EPA estimated unit costs for the following five permitting-related functions:

- Permit application and issuance
- Inspection
- Monitoring
- Enforcement
- Re-permitting

EPA's estimated unit costs for each of these functions are depicted in the following table:

TABLE 7.2
EPA ESTIMATED UNIT COSTS FOR PERMITTING RELATED ACTIVITIES

		Typical Costs		
Administrative Activity	**Frequency of Activity**	**Low**	**Median**	**High**
Issue concentration-based permit to previously unpermitted facility	One-time	3.7 hours; $137	9.7 hours; $359	30.7 hours; $1,134
Issue mass-based permit to previously unpermitted facility	One-time	4.0 hours; $148	12.0 hours; $444	40.0 hours; $1,479
Issue mass-based permit to facility holding concentration-based permit	One-time	2.0 hours; $74	8.0 hours; $296	21.0 hours; $777
Technical guidance on concentration-based permit	One-time	1.0 hour; $37	3.3 hours; $122	10.7 hours; $396
Technical guidance on mass-based permit	One-time	2.0 hours; $74	3.7 hours; $137	12.0 hours; $481
Conduct public or evidentiary hearing	One-time	2.3 hours; $85	8.0 hours; $296	33.3 hours; $1,231
Inspect for permit development	One-time	2.3 hours; $85	4.7 hours; $174	12.0 hours; $444
Inspect for compliance assessment	Annual	1.8 hours; $67	3.7 hours; $137	10.0 hours; $370
Sample and analyze discharge	Annual	1.0 hour; $37	3.0 hours; $111	14.0 hours; $518
Review and enter data from self-monitoring reports	Annual	0.5 hours; $18	1.0 hour; $37	3.5 hours; $129
Receive, process and act on non-compliance report—38.5% of all permitted facilities	5 times per year	1.0 hour; $37	2.0 hours; $74	5.7 hours; $211
Review compliance schedule—17.0% of permitted facilities	2 reports per year	0.5 hours; $18	1.0 hours; $37	3.0 hours; $111
Minor enforcement action (e.g., administrative order) 7% of MP&M facilities	Annual	1.0 hour; $37	3.7 hours; $137	13.3 hours; $492
Minor enforcement action (e.g., administrative fine) 7% of MP&M facilities	Annual	1.0 hour; $37	5.3 hours; $196	24.7 hours' $913
Re-permit	Every 5 years	1.0 hour; $37	4.0 hours; $148	17.0 hours; $629

For the proposed MP&M Rule, EPA assumed the permitting burden depicted in the following table:

TABLE 7.3 NUMBER OF FACILITIES OPERATING POST-REGULATION REQUIRING A PERMIT	
w/ existing concentration-based permits	629
w/ existing mass-based permits	3,667
w/o permits	645
w/ concentration-based permits to be converted to mass-based permits	223
Needing new concentration-based permits	432
Needing new mass-based permits	216
Number of permitted facilities closing	143
W/ existing concentration-based permits	12
W/ existing mass-based permits	131
Total	4,944

Based on the above, EPA estimated the total administrative cost over a 15-year period, calculated the present value of the total costs using a seven percent discount rate, and then annualized the present value using the same discount rate.

TABLE 7.4 EPA ESTIMATED TOTAL ADMINISTRATIVE COST OVER 15-YEAR PERIOD			
	Low	**Medium**	**High**
Net Present Value	$1,047,744	$2,483,585	$8,310,860
Maximum One-Year Hours	5,038	12,879	43,466
Maximum One-Year Costs	$186,316	$476,248	$1,607,388
Annualized Cost	$115,037	$272,684	$912,488

EPA substantially underestimated the number of indirect dischargers requiring permits under the MP&M rule

As indicated above, EPA estimated that 4,944 industrial facilities operating post-regulation would require permits. Based on its survey of 70 Pretreatment Programs covering 181 of the nation's 15,000 POTWs, AMSA believes that EPA has substantially underestimated the number of indirect dischargers requiring permits under the MP&M rule. The 70 respondents to AMSA's survey themselves estimated that they would need to issue permits to 8,470 industrial users under the MP&M rule. To extrapolate the survey results to the 15,000 POTWs nationwide, AMSA divided the survey respondents into large, medium and small Pretreatment Programs using the following criteria:

TABLE 7.5 DIVISION OF AMSA POTWS BASED ON FLOW		
Total POTW flow (million gallons per day)[1]	**Number of Pretreatment Programs**	**Class**
Less than 10	975	Small
Between 10 and 50	375	Medium
Greater than 50	150	Large

[1]Total flow for all POTWs covered by a Pretreatment Program

AMSA estimated the number of industrial users subject to regulation under the MP&M rule currently discharging to POTWs with Pretreatment Programs by applying the average number of MP&M facilities per POTW in each POTW class to the number of POTWs in the class. To estimate the number of industrial users subject to regulation under the MP&M rule currently discharging to POTWs *without* Pretreatment Programs, AMSA assumed that, *on average*, each POTW serves one MP&M facility.

TABLE 7.6 AMSA ESTIMATED NUMBER OF IUS SUBJECT TO MP&M RULE			
Pretreatment Program Class	**Number of Pretreatment Programs in Class**	**Average Number of MP&M Facilities per Pretreatment Program**	**Total Number of MP&M Facilities Discharging to Pretreatment Programs in Class**
Small	975	11	10,725
Medium	375	13	4,875
Large	150	76	11,400
No Pretreatment Program	11,500	1[1]	11,500[2]
		Total	38,500

[1]Average number per POTW
[2]Number discharging to POTWs in class

EPA's assertion that Industrial User Survey costs are "insignificant" is clearly erroneous

As indicated previously, there are presently approximately 1,500 approved Pretreatment Programs operated by Control Authorities in the United States. These 1,500 Pretreatment Programs regulate industrial discharges into approximately 3,500 of the 15,000 POTWs nationwide. Discharges to the remaining 11,500 POTWs are not currently regulated under approved Pretreatment Programs because the would-be Control Authorities are not required to develop Pretreatment Programs under the General Pretreatment Regulations (40 CFR 403).

EPA estimated that 89,000 industrial facilities perform operations that are potentially regulated under the MP&M Rule and that 57,948 of those facilities discharge process wastewater to POTWs.

One of the core requirements of POTW Pretreatment Programs is the Industrial User Survey (Survey). The Survey allows the POTW to identify industrial users who may be subject to regulation as Significant Industrial Users (SIU) because of their potential to impact POTW operations or because they are subject to categorical pretreatment standards. The Survey also allows the POTW to identify industrial users who may be subject to regulation under local discharge limits or who may be regulated under various POTW programs. POTWs will conduct Surveys either on a continuous basis as is done at most large POTWs, or on a one-time basis to meet the demand of new regulations. To ensure that the MP&M categorical pretreatment standards are equitably enforced, the nation's Control Authorities will need to identify and evaluate each of the 57,948 indirect dischargers for potential regulation under the MP&M Rule. Contrary to EPA's assertion, these identification and evaluation activities are not "insignificant." Further, while POTWs operating under established Pretreatment Programs may be able to achieve some degree of economy by using past or ongoing industrial survey data to identify facilities that are potentially regulated under the MP&M rule, the 11,500 POTWs that are not currently operating under approved Pretreatment Programs will be ill-equipped to conduct the necessary industrial surveys. A group of North Carolina POTW Pretreatment coordinators derived the following estimated costs of conducting industrial surveys at POTWs with Pretreatment Programs.

TABLE 7.7
AMSA ESTIMATED COST OF CONDUCTING INDUSTRIAL SURVEYS AT POTWS

Number of POTWs needing to perform Industrial Survey	11,500
Average number of non-residential entities in POTW service area to be evaluated	99
Per facility unit time for evaluation (hours)	1.2
Average time required to perform Industrial Survey (99 site x 1.2 hours/site)	118.8
Total Industrial Survey hours nationwide[1] (118.8 hours x 11,500 POTWs)	1,366,200
Fully-loaded labor costs (from EPA data) (1999 dollars)	$36.98
Total Industrial Survey costs nationwide[1]	$50,522,076

[1]For POTW facilities not currently covered by a Pretreatment Program

The Survey costs estimated above are for POTWs not currently operating under Pretreatment Programs and do not include any Survey costs that may be incurred by the existing 1,500 Pretreatment Programs across the country.

EPA expected no increase in the costs of administering pretreatment program requirements due to the MP&M rule for facilities that currently hold mass-based limits

In its POTW burden assessment, EPA concluded, "EPA does not expect the costs of administering the pretreatment program to increase due to the MP&M regulation for facilities that already hold a permit specifying the allowable mass of pollutant discharge to water."

EPA assumed that no mass-based permits would need to be revised as a result of the MP&M rule. EPA further assumed that 3,667 of the 5,186 facilities (71 percent) that EPA assumed would be regulated under the MP&M rule were already operating under mass-based permits.

These assumptions are completely invalid even if the mass-based discharge limits applicable to an industrial user would remain unchanged as a result of the rule, a highly unlikely scenario in itself. Discharge permits or other individual control mechanisms are enforceable instruments that must be legally correct on their face. As such, they must, at all times, accurately reflect the correct enabling statute or regulation. Any change in the categorical pretreatment standards applicable to an industrial user instantaneously requires the POTW to issue a revised discharge permit, even if the applicable mass discharge limits in the permit remain unchanged. If the POTW failed to properly revise an industrial user's discharge permit in a timely manner, the industrial user may have sufficient cause to challenge an enforcement action brought under the permit. Additionally, the POTW may be subject to enforcement action from the relevant Approval Authority for failure to conform to its approved Pretreatment Program.

While EPA recognized that POTWs must conduct sampling to assess the compliance status of facilities subject to categorical pretreatment standards (including the MP&M rule), EPA alternately assumed that POTWs will conduct the regulatory minimum monitoring for all facilities, yet at the same time EPA vigorously urged POTWs to conduct substantially more than the regulatory minimum monitoring for protection of POTW facilities.

Most POTWs conduct inspection and sampling of industrial users beyond the minimum oversight required under the 40 CFR 403. Unless EPA is officially reversing its encouragement that POTWs conduct this additional oversight, the estimated administrative costs to POTWs should reflect these additional activities. In its POTW survey, AMSA requested respondents to identify labor resources committed to actual oversight levels rather than assuming that all POTWs would conduct only the minimum oversight required by regulation. The additional administrative costs associated with these activities are reflected in the cost analysis below.

EPA apparently failed to recognize that POTWs incur substantial analytical costs with regard to samples obtained at regulated facilities

In its unit cost analysis, EPA reported the following unit costs for sampling and analyzing industrial user effluent discharges:

TABLE 7.8
EPA ESTIMATED TYPICAL COSTS FOR SAMPLING AND ANALYZING IUS EFFLUENTS

		Typical Costs		
Facilities requiring activity	Frequency of Activity	Low	Median	High
100% of MP&M Facilities	Annual	1.0 hour; $37	3.0 hours; $111	14.0 hours; $518

These data do not appear to reflect the administrative cost to POTWs for analyzing the samples thus obtained. AMSA requested its survey respondents to identify the costs incurred for analyzing samples obtained at MP&M facilities during compliance verification sampling of their Pretreatment Programs. The analytical costs are reflected in the cost analysis below.

EPA did not consider the management oversight costs to POTWs with regard to implementing and maintaining Pretreatment Programs, particularly for POTWs that may be required to develop new Pretreatment Programs as a result of the MP&M rule.

POTW Pretreatment Programs do not operate in a vacuum. In conducting its unit cost analysis, EPA did not include management oversight costs incurred by POTWs to maintain their Pretreatment Programs. AMSA requested survey respondents to identify management resources committed to oversight of their Pretreatment Programs. The additional administrative costs associated with management oversight are reflected in the cost analysis below.

Estimated implementation year and subsequent year permitting and oversight costs with regard to MP&M facilities.

Based upon its POTW survey, AMSA determined the following average costs to POTWs for issuing permits and oversight of industrial users.

TABLE 7.9
AMSA ESTIMATED AVERAGE COSTS TO POTWS FOR ISSUING PERMITS AND OVERSIGHT OF IUS

Pretreatment Class	Average Implementation Year Permitting Cost	Average Subsequent Year Permitting Cost	Average Implementation Year Oversight Cost[1]	Average Subsequent Year Oversight Cost[1]
Small	$649.32	$377.82	$2,712.52	$2,002.80
Medium	$974.60	$524.58	$3,104.95	$2,503.37
Large	$1,634.17	$969.62	$4,357.70	$3,218.96
No Pretreatment Program	$649.42[2]	$377.82[2]	$2,712.52[2]	$2,002.80[2]

[1]Includes permitting costs identified in previous columns
[2]Estimate based on costs to Small Pretreatment Program class

Following the extrapolated MP&M facility population derived previously, AMSA estimated that the following administrative costs would be incurred by POTWs for permitting of MP&M facilities.

TABLE 7.10
AMSA ESTIMATED ADMINISTRATIVE COSTS

Pretreatment Program Class	Number of MP&M Facilities in Class	Total Implementation Year Permitting Cost	Total Subsequent Year Permitting Cost	Total Implementation Year Oversight Cost	Total Subsequent Year Oversight Cost
Small	10,527	$6,835,392	$3,977,311	$28,554,698	$21,083,476
Medium	4,875	$4,751,175	$2,557,327	$15,136,631	$12,203,929
Large	11,400	$18,629,538	$11,053,668	$49,677,780	$36,696,144
No Pretreatment Program	11,500	$7,468,330	$4,344,930	$31,193,980	$23,032,200
Total Cost		$37,702,435	$21,933,236	$124,563,089	$93,015,749

Based on the analysis above, AMSA estimates the following aggregate costs for implementation of the proposed MP&M rule:

TABLE 7.11
AMSA ESTIMATED AGGREGATE COSTS FOR IMPLEMENTATION OF MP&M RULE

Pretreatment Program Activity	First Year Cost	Subsequent Year Cost
Industrial User Survey	$50,533,076	$0
MP&M Facility Permitting	$37,702,435	$21,933,236
MP&M Facility Oversight (less permitting)	$86,860,654	$71,082,513
Total Cost	**$175,096,165**	**$93,015,749**

8.0 CONCLUSION

AMSA is extremely concerned about the environmental and economic benefits projected by EPA under the MP&M rule and more importantly, the administrative burden that the proposed rule places on the POTW community. EPA's approach to collecting data to assess the benefits of the MP&M rule and the costs to POTWs did not reflect the use of sound engineering principles, nor did it even consider the extensive empirical data that already exists regarding both the environmental impacts of MP&M facilities and the environmental performance of POTWs. To the contrary, the entire MP&M proposal appears to be grounded on contrived assumptions based on data collected by EPA as far back as the 1970s. Based on its own survey conducted in 2001, AMSA now believes that the economic and environmental benefits of the MP&M Effluent Guidelines are even less than the Industrial Laundries Effluent Guidelines (62 Fed. Reg. 66,181, December 17, 1997). The lack of benefits gained from the Laundry Rule resulted in the rule being withdrawn. As discussed earlier, the "benefits" of the MP&M rule for POTWs, estimated by EPA, simply disappear when exposed to the light of the real world. Quite simply, AMSA believes that the MP&M rule will waste the resources of POTW agencies that already provide outstanding, cost-effective environmental protection clearly responsive to the needs of their communities.

AMSA recommends that, instead of trying to fix this flawed MP&M Proposal, EPA should perfect the innovative environmental performance track already established in the National Metal Finishing Strategic Goals Program (SGP). The SGP is anchored by an ambitious set of multi-media environmental performance goals for both individual facilities and the Metal Finishing sector as a whole. In exchange for striving for and meeting the goals, industry is offered performance incentives by EPA and its State and local regulatory partners (e.g., reduced self-monitoring requirements imposed by the local POTW for achieving reduced pollutant loadings and water usage). The SGP is a strictly *voluntary* pollution prevention program that can clearly enhance existing Pretreatment Programs while not forcing economic and administrative burdens on industry and POTWs where existing Effluent Guidelines and local limits already achieve the desired environmental outcomes.

The POTW community has worked hand-in-hand with EPA to ensure the success of the Effluent Guidelines and Pretreatment Programs for over 25 years. We look forward to working with EPA in the future.

Appendix A

AMSA SURVEY OF "MP&M 150 POTWS"
MAY 2001

1. Sewer Authority Identification

A. NAME OF MUNICIPALITY OR SEWER AUTHORITY RESPONSIBLE FOR COMPLETING THIS SURVEY _____

_____

B. PERSON TO CONTACT REGARDING THIS SURVEY:

Name: _____

Phone Number: _____

2. Sewer Authority Information

A. Please indicate the number of individual treatment facilities with NPDES permits under the jurisdiction of the POTW, municipality, or sewer authority completing this questionnaire_____

B. In the original EPA MP&M survey of POTWs, did this sewer authority complete the questionnaire for this facility, or for all facilities under the jurisdiction of the sewer authority completing the questionnaire?

One ☐ All ☐

Please circle the POTWs in Part C, below, for which a 1996 EPA survey was completed.

C. **General Information.**

Please provide the following information for each current POTW. Note: For simplicity, please use the number below corresponding to the POTW in later references to the POTW. Please attach additional sheets if more than 10 POTWs.

POTW No.	POTW Name	Permitted Capacity (mgd)	Average Daily Flow (mgd)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

3. *Current* NPDES Limits

For each POTW listed in 2A, above, please provide current NPDES limits for the below-listed pollutants; all POTWs may not have NPDES limits for all of the listed parameters. Please copy the chart as necessary for multiple POTWs. For each pollutant, indicate in the last column whether the POTW was (Y) or was not (N) in compliance with the limit >95% of the time during calendar year 2000.

PLEASE COPY THIS PAGE AS NECESSARY TO PROVIDE INFORMATION ON ALL POTWS

POTW Number (or Name):

	CURRENT NPDES Permit Limits				
Pollutant mg/l	**Daily Maximum**	**Weekly Average**	**Monthly Average**	**Quarterly Average**	**>95% Compliant? Y or N**
Cadmium					
Chromium					
Copper					
Nickel					
Lead					
Selenium					
Mercury					
Cyanide					
Fluoride					
Zinc					
NH3-N					
NH3-N (Summer)					
NH3-N (Winter)					
Total Phosphorus					
Total Nitrogen					
BOD					
BOD (Summer)					
BOD (Winter)					
CBOD					
CBOD (Summer)					
CBOD (Winter)					
TSS					

4. Whole Effluent Toxicity (WET)

Please provide the information requested in the table below for each POTW regarding the NPDES WET Limit, if applicable.

	Chronic Test			Acute Test		
POTW Number	**% Effluent**	**No. Tests/yr**	**% Passed per yr**	**% Effluent**	**No. Tests/yr**	**% Passed per yr**

5. MP&M Industries Which Discharge to POTWs

At the time of the original EPA POTW survey, EPA was evaluating the "universe of MP&M industries" according to 16 industry sectors. Since that time EPA settled on a different regulatory and implementation approach which includes the following key regulatory subcategories for all industrial users:

Proposed Subcategory	**Brief Description of Subcategory**	**Proposed Flow Cut-off gpd-5 day/ gpd-7 day**
General Metals	Very broadly defined as a "catch all" category; may include facilities from 17 of 18 MP&M industrial sectors.	4000/2740
Metal Finishing Job Shops	Performs one or more of 6 operations (electroplating, electroless plating, anodizing, coating, etching/milling, and printed circuit board manufacturing) and owns not more than 50% of materials being finished. These facilities are currently covered by Metal Finishing and Electroplating regulations.	0
Printed Wiring Boards	Facilities that manufacture, maintain, or repair printed circuit boards, not including job shops (only includes captive shops). These facilities currently covered by Metal Finishing and Electroplating regulations.	0
Oily Waste	Similar to the General Metals Subcategory as a "catch all" subcategory for MP&M facilities discharging only oil-bearing wastewater, and DO NOT fit in another MP&M subcategory. Oily Waste facilities must discharge wastewater ONLY from EPA specified MP&M operations (e.g., alkaline cleaning, aqueous degreasing, floor cleaning, grinding, etc). Oily waste facilities are typically machine shops or maintenance and repair shops.	8000/5480

A. Industrial Users (IUs) to be Affected by the Proposed MP&M Rule

In the chart below, please provide information on the Industrial Users (IUs) for each POTW in the Sewer Authority. The abbreviated column heading identified by letters in the chart correspond to the description provided below. Please use the EPA flow cut offs shown in the above table.

(a) POTW No.	(b) No. of IUs	(c) Categorical General Metals Facilities (>1MGY)		(d) No. of Non-Categorical General Metals Facilities		(e) No. of Electroplating/ Metal Finishing Job Shops (Part 413/433)	(f) No. of Non-Categorical Oily Waste Facilities (>2MGY)	
		c.1 Part 433	c.2 All other Categoricals	d.1 Regulated	d.2 Unregulated		f.1 Regulated	f.2 Unregulated

(a) Please provide the number (from question 3) of the POTW of the Sewer Authority for which information is being provided.

(b) Please provide an estimate of the total number of Industrial Users (IUs) for each POTW in this column.

(c) For each POTW, please indicate the estimated number of IUs which would fall into the proposed MP&M General Metals Subcategory which (c.1) are Metal Finishing (40CFR Part 433) facilities currently regulated by federal categorical regulations and (c.2) all other facilities currently regulated by a federal categorical pretreatment regulation (e.g., appliance manufacturing).

(d) For each POTW, please indicate the estimated number of IUs which would fall into the proposed MP&M General Metals Subcategory which (d.1) are currently regulated by local POTW limits and (d.2) not currently regulated by local POTW limits.

(e) Please indicate the number of electroplating facilities (40 CFR 413) and metal finishing facilities that discharge to the appropriate POTW.

(f) For each POTW, please indicate the estimated number of IUs which would fall into the proposed MP&M Oily waste Subcategory which (f.1) are currently regulated by local POTW limits and (f.2) not currently regulated by local POTW limits

B. Information on Cyanide Discharges from Existing Categorical Industrial Users (CIUs)

Please provide the information requested in the chart below on electroplating/metal finishing facilities. The abbreviated column headings identified in the chart by letters correspond to the descriptions presented below.

(a) POTW No.	(b) No. CIUs With cyanide processes*	(c) Est. flow From CIUs With cyanide	(d) lbs Amenable CN Discharge To POTW	(e) lbs Total CN Discharge to POTW	(f) No. CIUs with on-site CN Treatment	(g) % CN facilities in compliance per year	(h) % CN facility flow in compliance	(i) No. of Facilities Dispose CN off site

* CIU includes electroplaters, metal finishers, all others

(a) Please provide the corresponding number of each POTW (from question 2) for which information is being provided.

(b) For each POTW, please indicate the number (or estimate) of categorical industrial users (CIUs) which use cyanide served by the POTW.

(c) Please indicate the estimated flow from ALL CIUs using cyanide; this includes electroplating, metal finishing, and all other CIUs using cyanide.

(d) Please estimate the lbs of amenable cyanide discharged from categorical industrial users (CIUs) to each POTW.

(e) Please estimate the lbs of total cyanide discharged from categorical industrial users (CIUs) to each POTW.

(f) Please indicate the number of CIUs which use cyanide and treat cyanide on-site prior to discharge to the POTW.

(g) Please indicate the number of cyanide facilities that are CIUs which are currently in compliance with categorical pretreatment limits.

(h) Please indicate the total flow from all CIUs who use cyanide which are currently in compliance with categorical pretreatment limits.

(i) Please indicate the number of CIUs using CN which dispose of cyanide off-site (e.g., use service of a Centralized Waste Treatment facility) and do not discharge cyanide to the POTW.

C. Projected Compliance of All Affected IUs with Proposed MP&M Limits

(1) The existing Metal Finishing (40 CFR 433) and Electroplating (40 CFR 413) standards are presented in the table on Page 8. For each parameter, please provide the POTW local limit in the second column, if applicable.

PLEASE PROVIDE POTW LOCAL CONCENTRATION LIMITS IN SECOND COLUMN
(OR CONCENTRATION RANGE FOR SEWER AUTHORITIES WITH MULTIPLE POTWS)

Comparison of Existing Metal Finishing and Electroplating Standards With Proposed MP&M Effluent Discharge Limits													
						Proposed 40 CFR 438 MP&M Limits by Subcategory (PSES)							
Regulated Parameters	POTW Local Limits	Metal Finishing (40 CFR 433)		Electroplating (40 CFR 413)		General Metals		Metal Finishing Job Shops		Printed Wiring Boards		Oily Wastes	
Lead		0.69	0.43	0.6	0.4	0.04	0.03	0.12	0.09	0.04	0.03	-	-
Manganese		-	-	-	-	0.13	0.09	0.25	0.1	1.3	0.64	-	-
Molybdenum		-	-	-	-	0.79	0.49	0.79	0.49	-	-	-	-
Nickel		3.98	2.38	4.1	2.6	0.5	0.31	1.5	0.64	0.30	0.14	-	-
Silver		0.43	0.24	-	-	0.22	0.09	0.15	0.06	-	-	-	-
Sulfide		-	-	-	-	31	13	31	13	31	13	31	13
Tin		-	-	-	-	1.4	0.67	1.8	1.4	0.31	0.14	-	-
Zinc		2.61	1.48	4.2	2.6	0.38	0.22	0.35	0.17	0.38	0.22	-	-
TSS		-	-	-	-	-	-	-	-	-	-	-	-
O&G (HEM)		-	-	-	-	-	-	-	-	-	-	-	-

*** SEE ATTACHED LIST**

List of MP&M Total Organic Pollutant (TOP) Parameters

1. Acrolein
2. Benzoic acid
3. Carbon disulfide
4. Dibenzofuran
5. Dibenzothiophene
6. Isophorone
7. n-Hexadecane
8. n-Tetradecane
9. Aniline
10. Chloroform (trichloromethane)
11. Methylene chloride (dichloromethane)
12. Chloroethane (ethyl chloride)
13. 1,1-Dichloroethane
14. 1,1,1-Trichloroethane (methylchloroform)
15. Tetrachloroethene
16. 1,1-Dichloroethylene (vinylidene chloride)
17. Trichloroethylene
18. Biphenyl
19. p-Cymene
20. Ethylbenzene
21. Toluene
22. N-Nitrosodimethylamine
23. N-Nitrosodiphenylamine
24. Chlorobenzene
25. 2,6-Dinitrotoluene
26. Phenol
27. 4-Chloro-m-cresol (parachlorometacresol or 4-chloro-3-methylphenol)
28. 2,4-Dinitrophenol
29. 2,4-Dimethyphenol
30. 2-Nitrophenol (o-nitrophenol)
31. 4-Nitrophenol (p-nitrophenol)
32. Acenaphthene
33. Anthracene
34. 3,6-Dimethylphenanthrene
35. Fluorene
36. Fluoranthene
37. 2-Isopropylnaphthalene
38. 1-Methylfluorene
39. 2-Methylnaphthalene
40. 1-Methylphenanthrene
41. Naphthalene
42. Phenanthrene
43. Pyrene
44. Benzyl butyl phthalate
45. Dimethyl phthalate
46. Di-n-butyl phthalate
47. Di-n-octyl phthalate
48. Bis(2-ethylhexyl) phthalate

(2) By comparing existing effluent standards (whether categorical or local limits) to the proposed MP&M standards shown in the table on page 8, estimate the number of currently regulated SIUs that will be unable to meet the proposed MP&M standards for each proposed MP&M subcategory listed below. For each subcategory, please indicate the estimated number of SIUs believed to have Best Available Technology (BAT), or equivalent, as defined below for each subcategory.

MP&M Subcategory	**Est. No. of Compliant SIUs**	**Est. No. of Non Compliant SIUs**	**Total SIUs**	**Est. No. of Non-Compliant SIUs With BAT In Place**	
				No. w/BAT or Equivalent	No. that exceed BAT
General Metals:					
IUs					
CIUs					
Metal Finishing Job Shops					
Printed Wiring Boards					
Oily Wastes					

Definition of BAT for MP&M Subcategories

(a) General Metals, Metal Finishing Job Shops, and Printed Wiring Board Facilities. EPA selected "Option 2" as BAT, defined as follows.

Appropriate Segregation and Pretreatment of Wastestreams.

- **Oil-Bearing Wastewater.** Alkaline cleaning wastewater and water-based metal-working fluids (e.g., machining and grinding coolants) typically contain significant amounts of oil and grease. Chemical emulsion breaking followed by gravity separation of oil and water (oil/water separator or gravity flotation) effectively removes these pollutants.

- **Cyanide-Bearing Wastewater.** This wastewater requires preliminary treatment to destroy the cyanide, and can be accomplished by a variety of technologies including source control, in-line treatment, dead rinse, and alkaline chlorination.

- **Hexavalent Chromium-Bearing Wastewater**. Wastewater containing hexavalent chromium is generated by acid treatment, anodizing, conversion coating, and electroplating. This wastewater requires chemical reduction of the hexavalent chromium to trivalent chromium to allow further treatment chemical precipitation and sedimentation.

- **Chelated Metal-Bearing Wastewater**. Electroless plating and some cleaning operations generated water that contains significant amounts of chelated metals. This wastewater requires chemical reduction to break the metal-chelate bond or reduce the metal-chelate complex to an isoluble state so that it can be removed during chemical precipitation.

- **Organic Solvent-Bearing Wastewater**. Segregation and treatment of solvent degreasing wastewater is necessary. Treatment is most often accomplished by off-site facilities.

Pollution Prevention, Recycling, and Water Conservation. Typical technologies include:

- Countercurrent cascade rinsing for flowing rinses
- Centrifugation and recycling of painting water curtains
- Centrifugation and pasteurization to extend the life of water-soluble machining coolants

Chemical Precipitation. This technology includes pH adjustment of wastewater with treatment chemicals to produce insoluble metal precipitates.

Gravity Settling. This technology involves the use of a clarifier for gravity settling of flocculated Metal precipitates.

(b) Oily Waste Subcategory. EPA selected Option 6 for BAT, as defined below.

Flow Control and Pollution Prevention. Technologies for the recovery/reuse of materials and water conservation, such as the following, must be implemented.

End-of-Pipe Chemical Emulsion Breaking. This technology includes the addition of chemicals such as acid, alum, and polymer to break the chemical emulsion.

Oil/Water Separation. Technologies must be employed for the effective separation of oil and water such as a gravity oil/water separator.

- Countercurrent cascade rinsing for all flowing rinses;
- Centrifugation and recycling of painting water curtains/ and
- Centrifugation and pasteurization to extend the life of water-soluble machining coolants.

NOTE: Any industrial facility which has additional <u>end-of-pipe</u> treatment in place beyond what is described above (e.g., sand filtration, ion exchange, etc) is considered to have <u>greater than</u> EPA BAT treatment.

D. Please indicate the estimated number of NON-CATEGORICAL facilities subject to the proposed rule that are currently regulated by permits containing local pretreatment limits. Please note, the number of the non-categorical facilities was previously determined in Section 5A of this questionnaire.

	General Metals			Oily Waste		
POTW Number	**No. of Non Categorical General Metals Facilities**	**% Regulated by local POTW limits**	**% flow Regulated by local POTW limits**	**No. of Non Categorical Oily Waste Facilities**	**% Regulated by local POTW limits**	**% flow Regulated by local POTW limits**

6. POTW INHIBITION

If inhibition occurred at any of your POTWs with in the last 5 years, indicate to which type of "MP&M facility" it is attributed. If a single incident is due to multiple wastestreams, please indicate the percentage of responsibility for the inhibition attributed to each wastestream.

Electroplating Facilities/Metal Finishing Facility _____
General Metals Facility –Categorical _____
General Metals Facility – Non-Categorical _____
Oily Waste Facility _____

Please give a brief explanation of the problem and type of industrial discharge involved. [Attach additional sheets if necessary.]

_____
_____
_____
_____
_____
_____

7. Biosolids Management

A. Please complete the chart below to indicate how biosolids are managed at each POTW. The biosolids management techniques listed in the chart are described below. If more than one biosolids management technique applies, indicate the percentage of biosolids managed for each option.

Sewer Authority Biosolids Management Summary (Total of all categories for each POTW must add to 100%)

POTW Number*	Total Dry Tons per Year Produced	(i) LA %	(ii) Incin. %	(iii) SD %	(iv) LC %	(v) LD %	(vi) Comp. %	(vii) HW %	(viii) Other %	(ix) Other %	(x) Other %

* Include biosolids contribution from other non-NPDES facilities such as Water Reclamation Facilities

i - Land Application (LA): **The spraying or spreading of sewage biosolids onto the land surface, the injection of sewage biosolids below the land surface or the incorporation of sewage biosolids into the soil so that the sewage biosolids can either condition the soil or fertilize crops or vegetation grown in the soil.**

ii - Incineration (Incin.) **The combustion of organic and inorganic matter in sewage biosolids by high temperatures in an enclosed device.**

iii - Surface Disposal (SD) **Placing sewage biosolids in an area of land on which only sewage biosolids is placed for final disposal. Surface disposal includes surface impoundments (lagoons) used for final disposal, sewerage biosolids monofills (i.e. biosolids only landfills) and land on which sewage biosolids is placed solely for final disposal.**

iv - Cover for Landfill (LC)

v - Landfill Disposal (LD)

vi - Composting (Comp.) **– Mixing of biosolids with bulking agent to produce organic soil conditioner.**

vii - Hazardous Waste (HW)

viii - Other – (e.g. road fill) List type in the chart.

B. Why did this POTW choose not to "land apply" sewage biosolids? [Check all that apply.]

___ Land was not available for application of sewage biosolids

___ Other biosolids use/disposal practices were less expensive than land application

___ Sewage biosolids from this POTW did not meet one or more of the national land application sewage biosolids ceiling limits [from 40 CFR part 503] and cannot be land applied [Which one(s) did not meet?] _____

___ Pathogen/vector reduction requirements could not be met at an acceptable cost.

____ Local regulations or opposition to land application

___ OTHER

C. Biosolids Characterization

(1) What percentage of your biosolids met the Land Application Pollutant Concentration Limits for every pollutant, and could be land applied without being subject to cumulative pollutant loading rates? _____

(2) What percentage of your biosolids is under the Land Application Ceiling Limits, but over the Pollutant Concentration Limits for at least one parameter, and is therefore subject to cumulative pollutant loading rates? _____

(3) Please provide the most recent analytical results for the Part 503 Metals for each POTW in the flow chart and indicate the year data obtained. Please include additional sheets if necessary.

Part 503 Metal	Part 503 Limit	POTW No. 1	POTW No. 2	POTW No. 3	POTW No. 4	POTW No. 5
Arsenic	75					
Cadmium	85					
Chromium	-					
Copper	4300					
Lead	840					
Mercury	57					
Molybdenum	75					
Nickel	420					
Selenium	100					
Zinc	7500					

Part 503 Metal	Part 503 Limit	POTW No. 6	POTW No. 7	POTW No. 8	POTW No. 9	POTW No. 10
Arsenic	75					
Cadmium	85					
Chromium	-					
Copper	4300					
Lead	840					
Mercury	57					
Molybdenum	75					
Nickel	420					
Selenium	100					
Zinc	7500					

8. Information to Project POTW Costs of MP&M Rule Implementation

A. Estimate of MP&M Implementation and Successive Year Labor.

Please indicate in the following table of implementation activities the estimate of labor hours for both 1) implementing the MP&M rule and 2) annual or successive year labor hours following rule implementation. For sewer authorities with multiple POTWs, please provide the total labor hours for each activity for ALL POTWs.

	Estimated Labor Hours	
Permitting Activity	**Implementation**	**Each Successive Year**
Screening of Possible MP&M Facilities		
Guidance to Each Previous Unpermitted Facility		
Guidance to Each Currently Permitted Facility		
Issue Concentration-Based Permit		
Issue Mass-Based Permit for Unpermitted Facility		
Issue Mass-Based Permit at Facility Holding Concentration-Based Permit		
Conducting of All Public Hearings Required for New Permit Activity		
Inspect Each Facility for New Permit Development		
Compliance Related Activity Including Management of Self-Monitoring Data		
All Enforcement Related Activity		
Other Items		

	Estimated Costs	
Cost Items	**Implementation**	**Each Successive Year**
Analytical Costs		
Sampling Costs		
Other Administrative Oversight Costs		

(1) Please indicate the average hourly raw labor rate for staff (non-management personnel); do not include indirect costs. _____

(2) Please indicate the average hourly raw labor rate for All management personnel involved in industrial permitting and enforcement activity; do not include indirect costs. _____

(3) Please indicate the mark-up factor on raw labor to account for all indirect costs, including overhead and benefits. _____

(4) Please indicate the total estimated management labor hours for MP&M Rule:

(5) Implementation _____ Successive Year _____

B. Some POTWs or sewer authorities may have difficulty in providing estimates for the above activities. While we strongly prefer an estimate of labor hours for the tabulated activities, we offer the alternative exercise of providing information on the most recent POTW industrial waste survey (IWS). Please provide the IWS information requested below.

How many hours did you spend on initial industrial waste survey activities during your last IWS? [Initial survey activities include: compiling master list (including names, addresses, phone numbers), retrieving water and sewer account numbers for all facilities on master list, reviewing water billing records, xeroxing IWS short form or IWS long form, mailing surveys, conducting telephone survey/initial screening, reviewing short/long forms]

(1) _____HOURS

PLEASE DO NOT INCLUDE FOLLOW-UP SITE INSPECTIONS

(2) How many facilities were on your initial master list? _____

(3) How many new permits resulted from your last IWS? _____

C. POTW Program Activities Beyond the Legally Mandated Minimum

EPA assumed in their assessment of POTW administrative burden that POTWs perform only the minimum mandated requirements in their pretreatment programs. In reality, many, if not all, POTW Pretreatment perform many activities at a greater frequency than legally mandated in order to effectively demonstrate compliance.

Included below is a list of those activities which are important to quantify pretreatment program effort beyond the federally mandated minimum. Please answer to the best of your knowledge and include any other cost items that have not been requested.

	Annual Frequency
Industry Sampling	_____
Sample Analytical	_____
Reports	_____
Inspection	_____
Enforcement	_____
Training	_____
Other	_____

Thank you for completing this survey. Please forward your completed survey to :

Mr. Gary W. Martin
URS Corporation
263 Seaboard Lane, Suite 200
Franklin, TN 37067
Phone (615) 771-2480 Fax (615) 771-2459
e-mail gary_martin@urscorp.com

Surveys must be submitted by May 23, 2001.

Appendix B: "Original 150" POTW Mailing List

William Holzman
City of Brockton
303 Oakhill Way
Brockton, MA 02301

Carolyn Fiore
Massachusetts Water Resources Authority
100 First Avenue
Charlestown Navy Yard
Boston, MA 02129

Charlene Shea
Northampton Publicly Owned Treatment Works
33 Hockanum Road
Northampton, MA 01060

John V. Martin
Baltimore County PWD
Bureau of Utilities
8201 Eastern Boulevard
Baltimore, MD 21224

Kisha Bounds
Cambridge Wastewater
1010 Roslyn Ave.
Cambridge, MD 21613

Robert T. Hastings, Sr.
City of Ocean City
Wastewater Department
6405 Seabay Drive
Ocean City, MD 21842

Mark Lavoie
Town of Hampton
Public Works Department
136 Winnaounnet Road
Hampton, NH 03842

Robert Adamski
Gannett Fleming, Inc.
480 Forest Avenue
P.O. Box 707
Locust Valley, NY 11560-0707

Harry Reiter
Monroe County Department of Pure Waters
350 East Henrietta Road
Iola Building
Rochester, NY 14620

Ron Taylor
Borough of Huntingdon
530 Washington Street
Huntingdon, PA 16652

William Horst
City of Lancaster
1220 New Danville Pike
Lancaster, PA 17603

Joe Picard
City of Norristown
235 East Airy Street
Norristown, PA 19401

Dennis Perry
Greater Uniontown Joint Sewage Plant Authority
90 Romeo Lane
Uniontown, PA 15401

Lonnie Goldiner
Philadelphia Water Department
1101 Market Street, 4th Floor
Philadelphia, PA 19107-2994

William Jones
Swatara Township Authority
8675 Paxton Street
Hummlestown, PA 17036

George LeBlanc
City of Bennington
Sewerage Treatment Plant
205 South Street
Bennington, VT 05201

Theresa Pfeifer
Metro Wastewater Reclamation District
6450 York Street
Denver, CO 80229-7499

Matthew Isles
City of Danbury WPCP
155 Deer Hill Avenue
Danbury, CT 06810

Richard Branigan
Town of North Haven
18 Church Street
North Haven, CT 06473

Mr. Greg Wedman
Waterbury Waste Disposal
210 Municipal Road
Waterbury, CT 06708

John P. O'Neil
Johnson County Wastewater
4800 Nall Avenue
Mission, KS 66202

Tim Hunter
Missoula Wastewater Division
435 Ryman Street
Missoula, MT 59802

Dennis W. Palmer
Landis Sewerage Authority
1776 South Mill Road
Vineland, NJ 08360

Chris Manak
Madison-Chatham Joint Meeting
North Passaic Avenue
Chatham, NJ 07928

Kevin T. Aiello
Middlesex County Utilities Authority
P.O. Box 159
Main Street Extension
Sayreville, NJ 08872

Edward J. Roan
Somerset Raritan Valley Sewerage Authority
P.O. Box 6400
Bridgewater, NJ 08807

Timothy S. Murphy
Albany County Sewer District
P.O. Box 4187
Albany, NY 12204

Gordon Eddington
City of Geneva
47 Castle Street
City Hall
Geneva, NY 14456

Albert Zaepfel
City of Niagra Falls
1200 Buffalo Ave.
P.O. Box 69
Niagra Falls, NY 14302-0069

Thomas Lauro
Westchester County
Department of Environmental Facilities
270 North Ave.
5th Floor
New Rochelle, NY 10801

Thomas P. Uva
Narragansett Bay Commission
459 Promenade Street
Providence, RI 02908

Christian Bratina
Water Pollution Control Facility
City of Cranston
140 Pettaconsett Ave.
Cranston, RI 02920

Ricky Brinkman
City of Bay City
1217 Avenue J
Bay City, TX 77414

Tracy A. Hillick
City of Atlanta
Bureau of Pollution Control
2440 Bolton Road, NW
Atlanta, GA 30318

Lee Smith
Douglasville-Douglas County Water
and Sewer Authority
P.O. Box 1157
Douglasville, GA 30133

Mark Wyzalek
Macon Water Authority
P.O. Box 108
Macon, GA 31202-0108

Silvia Jeter
Anson County
Waste Water Treatment
State Road 1121
P.O. Box 553
Wadesboro, NC 28170

Burrell C. Brock, III
City of Raleigh
P.O. Box 590
Raleigh, NC 27602

Robert Dodson
Durham Water Reclamation District
6605 Fairington Road
Chapel Hill, NC 27514

Dan Tracy
Greenville Utilities
PO Box 1847
200 West Fifth Street
Greenville, NC 27835

Gregg Camp
Roanoke Rapids Sanitary District
135 Aqueduct Rd.
Weldon, NC 27890

Gary Grant
Atlantic County Utilities
1701 Absecon Boulevard
Atlantic City, NJ 08401

Stephen Dowhan
Joint Meeting of Essex
and Union Counties
500 South First Street
Elizabeth, NJ 07202

Douglas Hooks
City of Dillon
Water & Sewer
1700 East Main Street
P.O. Drawer 431
Dillon, SC 29536

Kelly Singer
N. Charleston Sewer District
1000 Elgin Street
Charleston, SC 29405

Josefino Dakita
DC Water & Sewer Authority
5000 Overlook Avenue, SW
Washington, DC 20032

Terry Karda
Broward County
Environmental Operations Division
2555 West Copans Road
Pompano Beach, FL 33069

Rob Powers/ Doreen Sparo
City of Clearwater
1650 C North
Arcturas Ave.
Clearwater, FL 33765

Charles Turner
City of Sanford, FL
1201 Seminole Blvd.
Sanford, FL 32771

Matt Hixson
City of Titusville Water Reclamation District
4800 Deep Marsh Road
Titusville, FL 32780

Victor M. Hernandez
Hillsborough County
Public Utilities Department
925 East Twiggs Street
Tampa, FL 33602

Robert J. Hagel
South Central Regional Wastewater
Treatment Board
1801 N. Congress Avenue
Delray Beach, FL 33445

Mark Smith
City of Jamestown
P.O. Box 700
Jamestown, NY 14702-0700

Frank Nerone
Niagara County Sanitation District
7346 Liberty Drive
Niagra Falls, NY 14304

Leslie Lipton
New York City Department of
Environmental Protection
96-05 Horace Harding Expressway
Corona, NY 11368

Angelo Klouisiadis
City of Mansfield
30 N. Diamond
Mansfield, OH 44902

Randy Fabrizio
City of Niles
34 West Station Street
Niles, OH 44446

Beverly B. Head
Metropolitan Sewer District
of Greater Cincinnati
1600 Gest Street
Cincinnati, OH 45204

Don Calvert
City of Akron - Public Utilities Bureau
146 South High Street
P.O. Box 3665
Akron, OH 44309-3665

Tom Schommer
City of Dayton
2800 Guthrie Road
Dayton, OH 45418

John Grove
Prasa Arecibo
HWY 861 Kilometer 2
Isleote #2
Arecibo, PR 00612

Rollin Sieveke
Lead-Deadwood Sanitary District
P.O. Box 413
24 Crescent Drive
Deadwood, SD 57732-0413

William Stangler
Mason City Sewage Treatment Plant
10 First Street, NW
Mason City, IA 50401

Penny Bouchard
North Shore Sanitary District
P.O. Box 750 - Russell Road
Gurnee, IL 60031

Kathy Cooper
Rochelle Municipal Utilities
333 Lincoln Highway
P.O. Box 456
Rochelle, IL 61068

Dan Duncan
City of Lafayette
20 N. 6th Street
Lafayette, IN 47901

Chris Maines
New Castle Wastewater Treatment Facility
10 Midway Drive
New Castle, IN 47362

Kevin Markovich
Albion Wastewater Treatment Plant
112 W. Cass Street
Albion, MI 49224

Michael Andrews
City of Battle Creek
2000 W. River Road
Battle Creek, MI 49015

Firooz Fath - Azam
Wayne County Utilities
797 Central
Wyandotte, MI 48192

Jerry Lawson
Marshall Municipal Utilities
75 E. Morgan
Marshall, MO 65340

James W. Schmid
Metropolitan St. Louis Sewer District
2000 Hampton Avenue
St. Louis, MO 63139

Darla S. Crum
City of Hamilton - Public Utilities
345 High Street
Hamilton, OH 45011

Nora Erlandson
Racine Water & Wastewater Utilities
800 Center Street, Room 227
Racine, WI 53403

Jerry Bryant
Jasper Waterworks & Sewer Board
P.O. Box 1348
Jasper, AL 35502

C. Wayne Hughes
Jefferson County Barton Laboratory
1290 Oak Grove Road
Birmingham, AL 35209

Jeff Davis
City of Little Rock, Wastewater Utility
221 East Capitol
Little Rock, AR 72202

Duyen Tran
Fayetteville Waste Water Treatment Plant
1500 N. Fox Hunter Road
Fayetteville, AR 727011

Buzz Van Marion
Waste Water Utility
P.O. Box 438
Morrilton, AR 72210

Mike Kendall
Sanitation District No. 1
2999 Amsterdam Road
Villa Hills, KY 41017

Earl McCall
Wastewater Treatment Plant
P.O. Box 1839
Ashland, KY 41101

Miles Briley
City of Opelousas
900 Cypress Street
Opelousas, LA 70570

Gordon C. Austin
Sewerage & Water Board of
New Orleans
2900 Peoples Avenue
New Orleans, LA 70122

Archie McGurie
Terrebone Parish
Division of Pollution Control
P.O. Box 6097
Houma, LA 70361

Danny Smith
Mississippi Gulf Coast Regional
Wastewater Authority
3103 Frederic Street
Pascagoula, MS 39567

David Tucker
Department of Water and Sewerage
Services Nashville & Davidson Co.
1600 Second Avenue North
Nashville, TN 37208

Ray Shell
Greenville Water Commission
P.O. Box 368
Greenville, TN 37744-0368

William Coles
City of Dunbar
2802 Charles Ave.
Dunbar, WV 25064

Jeff Mabie
Golden Heart Utilities
4247 Peger Rd.
Fairbanks, AK 99709

Stephen J Tencza
Nogales International Wastewater Treatment Plant
865 Rio Rico Industrial Park
Rio Rico, AZ 85648

Jim Wybenga
County Sanitation Districts of
Orange County
10844 Ellis Avenue
Fountain Valley, CA 92708

Lee A. Doty
Delta Diablo Sanitation District
2500 Pittsburg-Antioch Highway
Antioch, CA 94509

Ralph Palomares
El Toro Water District
P.O. Box 4000
Laguna Hills, CA 92654

J.G. Gillick
Kern County Waste Management Department
2700 "M" Street
Suite 500
Bakersfield, CA 93301

Willy Mejia
LA County Sanitation Districts
1955 Workman Mill Road
P.O. Box 4998
Whittier, CA 90607

Chris Smith
South San Francisco
Waste Water Control Plant
195 Belle Air Road
South San Francisco, CA 94080

Richard Stiffler
Stockton Regional Wastewater Control Facility
2500 Navy Drive
Stockton, CA 95206

Mr. Gail Hammond
Regional Water Reclamation Facility
1100 Kirtland Road
Central Point, OR 97502

Lance Wood
Central Weber Sewer Improvement District
2618 West Pioneer Road
Ogden, UT 84404

Clint Read
Lower Midway Sewer District
P.O. Box 3487
Kent, WA 98032

John Watson
City of Phoenix Water Services Department
Pollution Control Div.
2303 West Durango Street
Phoenix, AZ 85009

Shawn Perumean
Chino Basin Municipal Water District
P.O. Box 697
Rancho Cucamonga, CA 91729

City & County of San Francisco
Public Utilities Commission
750 Phelps Street
San Francisco, CA 94124

Mary Ellen Dick
City of San Jose
Environmental Services Department
42452 Zanker Road
San Jose, CA 95134

Roger Lee
City of Sanger
Public Works Department
1700 7th Street
Sanger, CA 93657

Lorrie Gervin
City of Sunnyvale
Water Pollution Control Plant
1444 Borregas Ave.
Sunnyvale, CA 94088

Jacqueline McCall
City of Vacaville
P.O. Box 220
Elmira, CA 95625

Marc Armes
City of Ewa Beach
9-100 Geiger Road
Ewa Beach, HI 96706

Darren Selby
Carson City Environmental Control
Authority
3300 Butti Way, Suite 7
Carson City, NV 89701

Stephen Behrndt
City of Portland
Bureau of Environmental Services
5001 North Columbia Boulevard
Portland, OR 97203

Ron Roberts
Central Valley Water
Reclamation Facility
800 West Central Valley Road
Salt Lake City, UT 84119

Kirk A. Zempel
City of Tacoma Sewer Utility
2201 Portland Avenue
Tacoma, WA 98421-2711

Scott Ellsworth
Summit County Wastewater Authority
2525 North Main Street
Cuyahoga Falls, OH 44720

Gregory F. Worcester
Wastewater Pollution Control
City of Elyria
1194 Gulf Road
Elyria, OH 44035

Gary W. Kasner
City of Bryan
P.O. Box 1000
Bryan, TX 77805

Daniel R. Burke
City of Corpus Christi
Department of Public Utilities
5352 Ayers - P.O. Box 9277
Corpus Christi, TX 78469-9277

Rudy Paclik
City of Gainesville
200 South Rusk
Gainsville, TX 76240

Bobby D. Hunt
City of Houston
Department of Public Works
10,500 Bellaire Boulevard
Houston, TX 77072

Craig Vaughn
City of Sulfur Springs
125 South Davis Street
Sulphur Springs, TX 75842

Barbara Kerr
City of Weatherford
917 East Eureka Street
Weatherford, TX 76086

Alan M. Aulenbach
Dallas Water Utilities
500 S. Ervay, Suite 600B
Dallas, TX 75201

Steve Clouse
San Antonio Water System
3225 Valley Road
San Antonio, TX 78221

Michael Vaught
Blacksburg-VPI Sanitation Authority
PO Box 52
Blacksburg, VA 24063

Bernie Strohmeyer
Hampton Roads Sanitation District
P.O. Box 5902
Virginia Beach, VA 23471-0902

Joe Marucco
City of Taylorville
115 North Main
Taylorville, IL 62568

Steve Della
Fox Lake Northwest Regional
Water Reclamation Facility
200 Industrial Ave.
Fox Lake, IL 60020

Rick Manner
Fox River Water Reclamation District
P.O. Box 328
Raymond St. & Purify Drive
Elgin, IL 60121-0328

Carl T. Blomgren
Hinsdale Sanitary District
P.O. Box 179
Hinsdale, IL 60521

Lou Kollias
Metropolitan Water Reclamation District
of Greater Chicago
100 East Erie Street
Chicago, IL 60611-2803

Carl Washburn
Elwood Municipal Waste Water Treatment Plant
1601 Main Street
Elwood, IN 46036

Michael T. Unger
Sanitary District of Hammond
5143 Columbia Avenue
Hammond, IN 46327

Richard Farnham
White River Environmental Partnership
2700 South Belmont
Indianapolis, IN 46221

Keith Richards
City of Adrian
100 East Church Street
Adrian, MI 49221

Ricardo Rodriquez
City of Warren
32360 Warkop
Warren, MI 48093

Leo H. Hermes
Metropolitan Council
Environmental Services
230 East 5th Street
St. Paul, MN 55101

Steve Olwine
City of Greenville
100 Public Square
Greenville, OH 45311

Joseph R. Grinker
Milwaukee Metropolitan Sewerage District
260 W. Seeboth Street
Milwaukee, WI 53204-1446

Duane DeBoer
South Milwaukee Wastewater Treatment Plant
2424 15th Avenue
South Milwaukee, WI 53172

CITED MATERIALS

amsa

Association of
Metropolitan
Sewerage Agencies

April 25, 2001

George M. Jett
Office of Water
Engineering and Analysis Division (4303)
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460

Re: Comments on Effluent Limitations Guidelines, Pretreatment Standards, and New Source Performance Standards for the Iron and Steel Manufacturing Point Source Category, 65 Fed. Reg. 81,964 (Dec. 27, 2000); 66 Federal Register 10,253 (Feb. 14, 2001)

Dear Mr. Jett:

The Association of Metropolitan Sewerage Agencies (AMSA) is pleased to provide the following comments to the U.S. Environmental Protection Agency (EPA) regarding the proposed Effluent Limitations, Guidelines, Pretreatment Standards, and New Source Performance Standards (ELG) for the Iron and Steel (I&S) Manufacturing Point Source Category. AMSA has represented the interests of the nation's publicly-owned wastewater treatment agencies (POTWs) for over 30 years. AMSA's member agencies are the principal implementors of the pretreatment program and together, AMSA's more than 250 members serve the majority of the sewered population in the United States and treat and reclaim more than 18 billion gallons of wastewater every day.

Over the past 25 years, EPA's development and implementation of ELGs for significant industrial categories has contributed greatly to the improved quality of our nation's waterways and is one of the most noteworthy success stories of the Clean Water Act to date. However, AMSA believes that a new ELG for I&S will not substantially further improvements in water quality. In addition, AMSA is concerned about the accuracy of the data used to develop the ELGs and the validity of the resulting proposed guidelines. Our comments and concerns regarding the proposed rule are discussed below.

1816 Jefferson Place, NW, Washington, DC 20036-2505 • 202.833.2672 • 202.833.4657 FAX
info@amsa-cleanwater.org • http://www.amsa-cleanwater.org

I. A New ELG For I&S Will Not Further Protect Water Quality

I&S currently operates under an effective regulatory scheme consisting of water quality-based effluent discharge limits and technology-based categorical discharge standards. EPA first promulgated I&S limit regulations in June 1974. Following a number of challenges to the proposed standards, EPA promulgated the ELG presently applicable to I&S in May 1982. AMSA believes the present ELG is effective, and that a new ELG for this industrial category will not increase water quality protection. As total maximum daily load allocations for impaired water bodies advance the development of water quality based discharge limits, technology-based categorical discharge standards will lessen as drivers for environmental improvement. Given these factors, AMSA recommends that EPA instead devote resources toward developing watershed and other approaches that will have measurable impacts on water quality.

II. The 20 Year Old POTW Data for the Pollutant Pass-Through Analysis Does Not Reflect Pretreatment Advances

When determining which pollutants to regulate under Pretreatment Standards for Existing Sources (PSES) and Pretreatment Standards for New Sources (PSNS), EPA conducts a pass-through analysis of pollutants discharged by the regulated industry. In the pass-through analysis, EPA compares the pollutant removal rates achieved by the Best Available Control Technology (BAT) for the regulated industry with removal rates reported for POTWs. As with other ELGs, EPA's I&S proposal uses data from the study 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." Data reported in the 50-POTW Study were collected over the period from July 1978 to November 1980, more than 20 years ago. As shown below, data from one of AMSA's member agencies demonstrates that removal rates have improved significantly of the last 20 years, rendering the 50-POTW Study out of date.

In the Development Document supporting the proposed I&S ELG, EPA reported the following pollutant removal rates for POTWS:

Pollutant	Subcategory[1]	Percent Removal	Data Source[2]
Ammonia as N	A,B,F	39%	50-POTW Study
Benzo(a)pyrene	A	95%	NRMRL
Chromium	D,E,F	80%	50-POTW Study
Fluoride	F	54%	NRMRL
Hexavalent chromium	F	6%	NRMRL
Lead	B,C,D,E,F	77%	50-POTW Study

Pollutant	Subcategory[1]	Percent Removal	Data Source[2]
Mercury	A	90%	50-POTW Study
Naphthalene	A	90%	50-POTW Study
Nickel	D,E,F	51%	50-POTW Study
Phenol	A,B	95%	50-POTW Study
Selenium	A	34%	NRMRL (domestic wastewater)
2,3,7,8-tetrachloro-dibenzofuran	B	83%	Transfer from 1,2,3,4,6,7,8-heptachloro-dibenzofuran (NRMRL)
Thiocyanate	A	70%	Transfer from cyanide (Source not specified)
Total cyanide	A,B	70%	50-POTW Study
Zinc	B,C,D,E,F	79%	50-POTW Study

[1]Iron and Steel Subcategories
- A – Cokemaking
- B – Ironmaking
- C – Integrated Steelmaking
- D – Integrated and Stand-Along Hot Forming
- E – Non-Integrated Steelmaking and Hot Forming
- F – Steel Finishing

[2]Data Sources
- A – "Fate of Priority Pollutants in Publicly Owned Treatment Works" (EPA 440/1-82/303, September 1982).
- B – National Risk Management Research Laboratory Treatability Database Version 5.0 (EPA, 1994).

EPA used the data reported above in conducting the following pass-through analysis for selecting pollutants for regulation under the I&S ELG:

Pollutant	BAT% Removal	POTW% Removal	BAT% removal > POTW% removal?	Pass-Through?
Ammonia as N	>99.9%	39% [A]	Yes	Yes
Total cyanide	96%	70% [A]	Yes	Yes
Thiocyanate	96%	70% [C]	Yes	Yes
Mercury	83%	90% [A]	No	No
Selenium	73%	34% [B]	Yes	Yes
Benzo(a)pyrene	>88%	95% [B]	No	No
Naphthalene	>99.9%	95% [A]	Yes	Yes
Phenol	>99.9%	95% [A]	Yes	Yes
Lead	99.8%	77% [A]	Yes	Yes
Zinc	99.8%	79% [A]	Yes	Yes
2,3,7,8-tetrachlorodibenzofuran	>94%	83% [B]	Yes	Yes
Fluoride	81%	54% [B]	Yes	Yes

A – "Fate of Priority Pollutants in Publicly Owned Treatment Works" (EPA 440/1-82/303, September 1982).
B – National Risk Management Research Laboratory Treatability Database Version 5.0 (EPA, 1994).
C – No data available. EPA assumed thiocyanate removal mechanisms and removal rates identical to cyanide.

The Metropolitan Water Reclamation District of Greater Chicago (District), an AMSA member agency, operates seven water reclamation plants (WRP) that receive domestic and industrial wastewaters from a variety of sources. The District's Calumet WRP, with an average daily flow of 325 million gallons per day, provides secondary treatment using the activated sludge process, and receives industrial wastewater from a number of facilities in the I&S Point Source Category. For calendar year 1999, the District reported the following influent and effluent pollutant concentrations and pollutant removal rates for the I&S ELG regulated pollutants:

Pollutant	Average Influent Concentration	Average Effluent Concentration	Percent Removal	Number of Observations
Ammonia as N	10.78 mg/L	0.28 mg/L	97.4%	365
Benzo(a)pyrene	<.002 mg/L	<0.002 mg/L	Not determined	1
Chromium	0.00 mg/L	0.00 mg/L	Not determined	365
Fluoride	Not analyzed	Not analyzed	Not determined	0
Hexavalent chromium	0.00 mg/L	0.0 mg/L	Not determined	52
Lead	0.00 mg/L	0.00 mg/L	Not determined	365
Mercury	0.06 mg/L	0.00 mg/L	100%	207
Naphthalene	0.003 mg/L	<0.002 mg/L	Not determined	1
Nickel	0.00 mg/L	0.00 mg/L	Not determined	365
Phenol	0.353 mg/L	0.003 mg/L	99.2%	365
Selenium	0.00 mg/L	0.00 mg/L	Not determined	365
2,3,7,8-tetrachloro-dibenzofuran	Not analyzed	Not analyzed	Not determined	0
Thiocyanate	Not analyzed	Not analyzed	Not determined	0
Total cyanide	0.184 mg/L	0.014 mg/L	92.4%	365
Zinc	0.247 mg/L	0.057 mg/L	76.9%	365

Pollutant	BAT% Removal	Calumet WRP% Removal	BAT% removal > Calumet WRP% removal?	Pass-Through?
Ammonia as N	>99.9%	97.4%	Equivalent	Not Demonstrated
Total cyanide	96%	92.4%	Equivalent	Not Demonstrated
Thiocyanate	96%	Not analyzed	Not determined	Not determined
Mercury	83%	100%	No	No
Selenium	73%	Not detected	Not determined	Not determined
Benzo(a)pyrene	>88%	Not detected	Not determined	Not determined
Naphthalene	>99.9%	95%	Equivalent	Not Demonstrated
Phenol	>99.9%	99.2%	Equivalent	Not Demonstrated
Lead	99.8%	Not detected	Not determined	Not determined
Zinc	99.8%	76.9%	Yes	Yes
2,3,7,8-tetrachlorodibenzofuran	>94%	Not analyzed	Not determined	Not determined
Fluoride	81%	Not analyzed	Not determined	Not determined

From this data, several conclusions can be made. First, many of the pollutants for which EPA determined POTW removal rates in 1982 are not detectable in the influent and effluent at the District's Calumet WRP, despite improved analytical methods. This is due to the effectiveness of the District's pretreatment program. Similar reductions in influent and effluent pollutant concentrations have been reported nationally, and can be attributed to implementation of pretreatment programs nationwide.

Second, for pollutants that were detected in the influent and effluent at the District's Calumet WRP, a majority of the demonstrated pollutant removal rates are substantially greater than those reported by EPA in 1982. This suggests that decisions made today based on the 20-year old "50-POTW Study" will be flawed. This is particularly important regarding cyanide and phenol, where the District's data

suggest that POTW removal rates are effectively equivalent to BAT and that pass-through essentially does not occur.

AMSA recommends that EPA set aside the "50-POTW Study" as no longer valid, and collect current and accurate data on POTW performance before promulgating this or any other ELG. AMSA proposed such a project at the *AMSA/EPA 2000 National Pretreatment Coordinator's Workshop* in Tucson, Arizona, and is willing to work with EPA on such an effort.

III. Pretreatment Standards For Existing Sources and Pretreatment Standards for New Sources Should Not Be More Stringent Than New Source Performance Standards For Direct Dischargers

EPA has proposed two options for pretreatment standards for existing sources (PSES) for the By-Product Cokemaking Subcategory based on physical-chemical treatment and physical-chemical plus biological treatment. EPA also has proposed pretreatment standards for new sources (PSNS) based on physical-chemical plus biological treatment. The proposed maximum daily discharge standards for cyanide for each option are summarized below.

Regulated Parameter	BAT-NSPS (lbs./ton)	PSES Option 1 (lbs./ton)	PSES Option 2 (lbs./ton)	PSNS (lbs./ton)
Cyanide	0.0104	0.0244	0.00616	0.00616

As shown above, based on current pollutant removal data for the District's Calumet WRP, EPA's assumption that cyanide passes through POTWs is flawed. Cyanide is effectively treated in acclimated secondary activated sludge WRPs. Therefore, EPA does not need to promulgate technology-based categorical pretreatment standards for the discharge of cyanide from indirect dischargers to POTWs.

EPA also has proposed categorical pretreatment standards (PSES Option 2 and PSNS) that require indirect dischargers to meet substantially more stringent discharge limits than those imposed on new direct dischargers (NSPS) employing BAT. AMSA is unaware of technology that may be used by indirect dischargers that would achieve better removal rates than BAT.

IV. Lack of Scientific Basis for Including Thiocyanate as a Pollutant Regulated Under PSES and PSNS

EPA included discharge limitations for thiocyanate for the Cokemaking Subcategory PSES (40 CFR 420.16) and PSNS (40 CFR 420.17). In reviewing the Development Document for the I&S ELG, AMSA could not find a basis for including thiocyanate as a regulated pollutant. Thiocyanate is not a toxic pollutant identified in Committee Print No. 95-30 of the House Committee on Public Works and Transportation, and EPA has never identified thiocyanate as a priority pollutant to be regulated under any ELG. Consequently, AMSA is not aware of any analytical data collected by POTWs regarding the fate of thiocyanate in biological treatment processes. In fact, without any data or technical justification, EPA assigned to thiocyanate the POTW pollutant removal rate that it established 20 years ago for cyanide.

In a report entitled "Toxicity to Fish of Cyanides and Related Compounds, A Review" (EPA-600/3-76-038, April 1976), EPA itself recognized that, "The thiocyanate, CNS^-, ion itself is somewhat toxic, but not nearly as toxic as free cyanide or cyanogen chloride."

Newman[1] (1975) surveyed research into the biological decomposition of thiocyanate and observed that thiocyanate is effectively decomposed in the activated sludge process:

> "The possibility of biological decomposition of thiocyanate is well established even in the presence of other contaminants such as cyanide, phenols and sulfide which interfere in certain cases with the biological digestion of the thiocyanates. However, it is possible to obtain substantially complete biological destruction of thiocyanates at a cost lower than by chemical oxidation or other means of removal. For a successful biological operation, it is necessary to avoid wide swings in solution composition and to provide aeration. In certain cases it may be necessary to add nutrients and to add bacteria culturally developed to digest thiocyanates."

Review of the literature on this subject revealed the following:

> "Karnowski[2] (1961) discusses the general subject of industrial wastes in public sewage with specific examples of effluents with methods for their treatment. Putilina[3] (1961) reports that bacteria decomposing thiocyanate is closely related to

---

[1] Newman, A.A. Chemistry and Biochemistry of Thiocyanic Acid and its Derivatives. Academic Press Inc., London, England, 1975.

[2] Karnowski, F. (1961). *Gas-Wasserfach*, 102, 989-93.

[3] Putilina, N.T. (1961). *Mikrobiologiya* 30, 294-8.

Pseudomonas eisenberg , and can be isolated and grown in cultures.

"Page[4] (1961) found in treating a phenolic waste from coal carbonization that, after phenols were digested, the thiocyanates could be removed with activated sludge. Ludzack and Schaffer[5] (1962) found that activated sludge needs 2 to 3 weeks for acclimatization in treating cyanide, cyanate, thiocyanate wastes. Jenkins *et al.*[6] (1963) reported that gas works liquor (contains thiocyanate) can be added in amounts up to 0.4% to a normal sewage plant liquor without adversely affecting the effluent. Jones and Miller[7] (1964) worked with waste liquors from a coke plant with 1,000 – 1,500 ppm phenol, and 270 – 400 SCN^- with 24 – 226 hours biological treatment, 20 - 25°C, no pH adjustment, calgon added for a source of P. Effluent had 10 – 25 ppm phenol and less than 5 ppm thiocyanate. Kostovetskii and Yurovskaya[8] (1964) used mechanical clarification, two aeration tanks and a biofilter for a liquor with 423 ppm dichromate oxidizability, phenol 2,236 ppm, thiocyanate 8,228 ppm, BOD 3,825 and total ammonia of 423 ppm. Analyses of the effluent after the first and second aeration tanks, and after the biofilter were as follows:"

	COD ppm	Phenol ppm	Thiocyanate ppm	BOD ppm
After 1st aeration tank	681	0.3	237	492
After 2nd aeration tank	237	16.7	0	52
After biofilter	101	0.06	0	20

Without evidence that thiocyanate passes through POTWs or that it causes or contributes to interference with the operation of biological treatment systems, EPA's decision to regulate thiocyanate under the I&S ELG is unwarranted. This erroneous decision would have a debilitating impact on cokemaking operations within the I&S Sector, since the technology options selected by

---

4 Page, H.A. (1961). (Coal Industry Patents Ltd.). British patent 876,664.

5 Lutzack, F.J. and Schaffer, R.B. (1962). (Robert A. Taft Sanitary Engineering Center, Cincinnati, Ohio). *J. Water Pollution Control Federation.* 34, 320-41.

6 Jenkins, S.H., Slim, T.A., Cook, G.W., Neale, A.B., Wheeler, J.D., Shaw, V.I. and Pickett, K. (1963) . Inst. Sewage Purification, *J. Proc. Pt.* **5**, 469-74. Birmingham Tame Rea. Dist. Drainage Board.

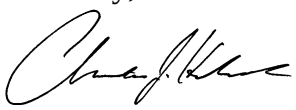
7 Jones, G.I., and Miller, J.M. (1964). *Bergbautekhnik*, 14, 544 (Ger.).

8 Kostavetskii, Y.A. and Yurovskaya, E.M. (1964). Vop. Gigi. Naselennykh Mest. (Kiev). Sb 5, 97-100.

> EPA for cokemaking would require cokemaking facilities to install activated sludge biological treatment, including nitrification. Thus, EPA expects I&S indirect dischargers to install the same degree of biological treatment as is currently provided by POTWs receiving wastestreams from indirect dischargers, which already effectively treats the thiocyanate discharged from these facilities.

AMSA appreciates the opportunity to provide comments on this important issue. In conclusion, while ELGs have contributed significantly to the improved quality of our nation's waterways, a new ELG for I&S will not further protect water quality beyond the existing regulatory scheme. AMSA believes EPA's use of outdated data, coupled with the questions surrounding the cyanide limits and the inclusion of thiocynate, undermine the validity of the proposed guidelines. We are available to assist the Agency in further review of this proposed action. If you have any questions regarding our comments, please contact me at 202/833-9106, *chornback@amsa-cleanwater.org*.

Sincerely,



Christopher Hornback
Manager, Government Affairs

TRENDS IN REDUCTION OF TOXIC POLLUTANTS

A. Sajjad, M. Gluckman, J. Barney, E. Chaiken
United States Environmental Protection Agency, Region 5
77 West Jackson (WN-16J)
Chicago, Illinois 60604

And

R. Sustich, P. Tata, and C. Lue-Hing
Metropolitan Water Reclamation District of Greater Chicago
100 East Erie Street, Chicago, Illinois 60611

ABSTRACT

In 1993, the 103rd United States Congress legislated the Government Performance and Results Act (GPRA) which requires the United States Environmental Protection Agency (USEPA) to measure performance of its various programs, and report accomplishments annually to the President and the Congress. In the spirit of GPRA, a study was conducted to determine the reduction of industrial toxic pollutants discharged to publicly owned treatment works (POTWs), and subsequently to land through application of biosolids.

This paper presents a snapshot of national, regional, and local trends in the mass transfer of toxic pollutants to POTWs, the metals quality of biosolids generated by POTWs, describes the limitations of data obtained from Toxic Release Inventory (TRI), Region 5 (PCS), and from three different POTWs.

The results show that the national, regional, local trends in the transfer of toxic pollutants to POTWs exhibit a continuous and consistent reduction. The reduction in TRI metals, cyanide, and regulated TTOs transferred to POTWs is about 80%. The region 5 TRI trend for other non-regulated organics transferred to POTWs was 24%. This value is relatively lower than the national TRI value. In terms of metals quality of biosolids, Part 503 regulated metals show significant reduction in land applied biosolids. The reduction in emissions of volatile organic compounds (VOCs) from six of the seven water reclamation plants (WRPs) of the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC) varied between 10 and 75%. The actual annual emissions were in the range of 0.05 to 6.58 tons/year in1997, indicating that none of the WRPs is a "major source" of VOC emissions.

KEY WORDS

United States Environmental Protection Agency, Region 5, Toxic Release Inventory, Toxic Pollutants, Total Toxic Organics, Metals, Hazardous Air Pollutants, Emissions, Trends, Case Studies.

INTRODUCTION

One important objective of the Government Performance Results Act (GPRA, 1997) is to improve pubic confidence in the performance of federal agencies by requiring departments and agencies to establish measurable performance goals relative to their various programs and activities, and regularly report their achievements to the President and the Congress. An additional benefit to federal agencies from this self-assessment exercise is that they can gainfully use the information internally to identify gaps, modify and refine existing goals or set new goals, and judge program effectiveness for continuous improvement. The GPRA requires agencies to measure performance at each organizational level with emphasis on true performance outcomes.

The EPA Region 5 is one of the largest regions in the country in terms of industrial activity and production. The region leads the country in biosolids production generating 1.7 million dry metric tons per year (Bastian, 1997),

and is home to one of the world's largest POTWs owned and operated by the MWRDGC.

In the spirit of GPRA, Region 5's Technical Assistance Branch located in the Water Division in cooperation with the MWRDGC undertook a study to chart the progress made to date in the reduction of industrial toxic pollutants transferred to POTWs, and regulated under the Federal Water Pollution Control Act (FWPCA) and its amendments. Although other Federal statutes such as the Resource Conservation and Reduction Act (RCRA), Pollution Prevention Act, Toxic Substance Control Act, and Clean Air Act provide regulatory incentives for industry to reduce the discharge of toxic pollutants to the environment, this study focuses on assessing trends in toxic pollutant loading to POTWs within the domain of the FWPCA. In addition, the trend in the emission of VOCs from the seven water WRPs of the MWRDGC was also examined, which is related to the input of these compounds to the WRPs.

The trends in pollutant loading to POTWs serve as a common indicator of the effectiveness of the FWPCA's national pretreatment program and the quality of the biosolids generated at POTWs (Apogee Research, 1997). Heavy metal removal in wastewater treatment processes results in the production of contaminated biosolids (Steritt, 1984). It is also well known that because heavy metals and many toxic organic chemicals accumulate in biosolids, the pretreatment of industrial wastes enhances the POTWs' ability to beneficially use biosolids (Outwater, 1997). The metal concentration trends of biosolids are compared in this study with the ceiling limits for nine metals specified for land application in the Standards for the Use and Disposal of Sewage Sludge (Part 503 rules-Federal Register, February 19, 1993) as all biosolids should meet the ceiling metals criteria prior to land application.

This paper highlights the national, regional, and local trends in mass transfer of thousands of pounds of toxic pollutants (metals, cyanide, regulated TTOs, and other unregulated organics) to POTWs, concentration of regulated metals in biosolids, and emission of VOCs from the seven WRPs of the MWRDGC. Data used in determining these trends were the data collected through the national TRI and permit compliance system (PCS), local surveys, and case studies.

BACKGROUND

EPA Region 5's, Technical Assistance Branch is located within the Water Division manages several important FWPCA programs such as the National Pollutant Discharge Elimination System (NPDES) permits, pretreatment, biosolids program, on site and community assistance, biosolids, and several other programs legislated by the Congress to meet the "fishable and swimmable" goals of the FWPCA and its amendments. The following discussion focuses on key federal regulations that influence trends of pollutant loading, control, and monitoring to protect the environment.

Government Performance Results Act (GPRA)

A key federal mandate coming out of the 103rd US Congress in 1993 was GPRA. GPRA requires the EPA to set goals, assess the environment, measure performance of its various programs and activities, report accomplishments annually to the President and the Congress. An important objective of the GPRA is to improve congressional decision making by giving Congress information helpful in assessing whether Federal programs are fulfilling their statutory intent. An added benefit to the agency from this self-assessment exercise is that it can gainfully use the information internally to identify gaps, modify and refine existing goals or set new goals, judge program effectiveness for continuous improvement. The GPRA requires measuring performance at each organizational level with emphasis on what outcomes each level is trying to achieve.

In the spirit of the GPRA, data from several sources was collected to measure performance by charting a baseline trend data, which would show the organization's progress over time, and which would give a historical perspective with which to compare future performance, and set new goals.

Toxic Release Inventory (TRI)

In 1986, the U.S. Congress passed the Emergency Planning and Community Right-to-Know Act (EPCRA) to provide information to the public about the release or presence of toxic chemicals in their communities to plan for chemical emergencies, and to serve as a valuable tool for risk identification. EPCRA established the TRI

program to collect, analyze, and report toxic chemical releases and chemical transfer information from both private and public manufacturing facilities throughout the United States. The first TRI data were collected for calendar year 1987-1988. Following the passage of the Pollution Prevention Act of 1990, the list of reportable chemicals under TRI increased. The 1997 TRI included 286 new chemicals for a total of 643 chemicals. Many of these chemicals are high production volume chemicals and highly toxic substances (USEPA, 1999).

The TRI data reflect releases, transfers, and other waste management activities of chemicals, not exposures of the public to these chemicals. TRI reports transfers by media type, and defines releases as a discharge of toxic chemicals to the environment, and transfers as releases off-site for further waste management. Discharges to POTWs are considered as off-site transfers rather than releases to the environment.

National Pretreatment Program

Under the FWPCA and its amendments, all industries and POTWs that discharge directly to surface waters must apply for and obtain a NPDES permit, issued by either the EPA or a delegated state (33 U.S.C. 1311). In municipalities where local pretreatment programs are not mandated, the EPA (or delegated state) directly enforces the General Pretreatment Regulations. Sections 301 and 303 of the FWPCA and its amendments require POTWs to meet technology and water quality-based standards for conventional and toxic pollutants. The CWA also requires the USEPA to establish standards for the disposal of biosolids dependant on the POTWs chosen disposal or management practice (33 U.S.C. 1345 et seq.).

Since POTWs are generally not designed to treat toxic pollutants, the FWPCA and its amendments provide for control of toxicity through POTW pretreatment programs and compliance by Industrial Users (IU) with Pretreatment Standards. The National Pretreatment Program, as reflected in the General Pretreatment Regulations (40 CFR 403) which were first published in 1978 and has been amended several times. The General Pretreatment Regulations (40 CFR 403) include specific prohibitions against the discharge of pollutants that cause pass-through or interference with POTW operations (e.g., flammable, explosive, or corrosive materials or those that cause obstruction in sewerage systems), and require POTWs to establish local discharge limits to address specific water quality issues and other concerns at their facilities. 40 CFR 403 also requires POTWs to enforce national technology-based categorical pretreatment standards applicable to specific industrial categories, established by the EPA. Region 5 of EPA remains the Approval Authority in Illinois and Indiana. Since the implementation of the National Pretreatment Program in 1983, it has made great strides in reducing the discharge of toxic pollutants to sewer systems, and hence, to waters of the U.S. and municipal biosolids, which are often land applied on croplands under the federal Part 503 sludge rules.

Standards for the Disposaland Utilization of Sewage Sludge (Part 503 Rules)

EPA, under authority of Sections 405 (d) and (e) of the FWPCA (33 U.S.C. 1345 et seq.), promulgated the risk-based Part 503 rules (Federal Register, February 19, 1993) for the use and disposal of biosolids when they are applied to fertilize crops or condition the soil, incinerated, placed on a surface disposal site. For each regulated use of biosolids, the Part 503 rule sets general requirements, management practices, operational standards, pollutant limits, and monitoring and reporting requirements. The Part 503 rules governing biosolids recycling by land application limit the concentration of nine heavy metals: arsenic, cadmium, copper, lead, mercury, molybdenum, nickel, selenium, and zinc. Land application rates of the above nine metals must meet the risk-based ceiling limits specified in 40 CFR 503.13. Hence, it is important for POTWs to produce biosolids that have metal concentrations below the ceiling limits for land application of their biosolids. The ultimate metal concentrations resulting in the final biosolids product from a POTW is dependent upon the efficiency of metals removal in the industrial pretreatment program.

Unless industry prevents or reduces the discharge of metal-laden industrial wastewater to POTWs by pollution prevention and treatment, increased mass loading of metals to POTWs results in biosolids that contain metals exceeding the ceiling concentrations. Thus, the quality of biosolids and efficiency of metals removal during pretreatment are interdependent. The quality of biosolids therefore indicates the efficiency of industrial pretreatment and vice versa.

Clean Air Act (CAA)

The EPA estimated some POTWs are likely to be "major sources" of one or more of the 188 hazardous air pollutants (HAPs), of which many are VOCs. The VOCs emitted by POTWs originate in the wastewater streams discharged by IUs, they can degrade, volatilize to the air, adhere to biosolids or pass through to receiving streams.

As required by the Clean Air Act Amendments of 1990, USEPA published a list of industrial categories, including POTWs, on July 16, 1992 that were considered "major sources" of VOC emissions. EPA is also required to develop Maximum Achievable Control Technology (MACT) standards for these "major sources." The POTW proposed MACT rule was published in the Federal Register on December 1, 1998.

DATA COLLECTION AND EVALUATION

This section describes the data collected, time line of data, methods of collection, and limitation of data. The parameters of data parameters examined in this study are total metals, regulated TTOs, and non-regulated organics transferred to POTWs and reported under TRI. These data are needed to evaluate the efficiency of the industrial pretreatment program. The total metals parameters include the metals regulated under the national pretreatment and the metals having ceiling concentration for application on land for growing agricultural crops in Part 503 rules. However, sludge metal concentrations of biosolids are compared in this study with the ceiling limits for metals specified in Part 503 for land application of biosolids and codified under 40 CFR 503.13.

Data were collected from national TRI, Region 5 PCS database, and three municipalities located in Region 5 to evaluate the following.

- National and Region 5 TRI, and local trends in the transfer of metals and cyanide to POTWs.
- National and Region 5 TRI trends in the transfer of regulated TTOs, and other unregulated organics to POTWs.
- Region 5 Permit Compliance System (PCS) trends in the Part 503 metals concentration in biosolids.
- Case studies: Metals quality of biosolids from three Region 5 POTWs.
- Case study: VOC air emissions from the WRPs of the MWRDGC.

Historical, quantitative, and verifiable data are needed to chart and assess the trends in mass pollutant loading by industry discharging wastewater to POTWs for treatment because this trend reflects the efficiency of industrial pretreatment. The methodology of TRI data collection and its limitations are discussed below.

For the national TRI as well as the region 5 TRI study, software on the USEPA TRI CD-ROM was used to extract the desired fields, year by year, selecting all records that had non-zero transfers to POTWs. TRI software was used to generate eight dBase tables. For 1996 and 1997, the “data off-load” routine in the TRISONLN system was used to generate batch retrievals of the desired fields from the USEPA mainframe TRIS database, year by year, selecting all records in region 5. Although TRI is successful in capturing information on a significant portion of toxic chemicals being used by covered industry sectors, it does not cover all toxic chemicals or all industry sectors, nor it will do so after facility expansion takes effect.

The Region 5 biosolids quality data covers a period of only three years (1995 to 1997) and these data were collected from annual reports submitted by 769 POTWs. Region 5 enters these data into the PCS computerized database. The PCS data are limited in that they do not address either small POTWs that beneficially use their biosolids or those that are not required to report to the USEPA.

The data for case studies to assess the metals content of biosolids were collected from three different POTWs located within Region 5, and represents different flow capacities, treatment regimes, and influent characteristics. These three case studies included POTWs located in Jackson, Michigan, Winona, Minnesota, and Stickney, Illinois.

The time line for the Jackson data covers a period of twenty years (1978-1997), the Winona data sixteen years (1982-1997), data for Stickney, MWRDGC covers a period of five years (1992-1997).

Data on VOC emissions were collected by MWRDGC, and the time line for the VOC air emission study covers a period of eleven years, from 1987 to 1997. Wastewater influent samples at each of its seven WRPs were collected and analyzed once per month for 107 USEPA-listed VOCs. The MWRDGC estimated the annual emission rates of VOCs from each of its seven WRPs using the Bay Area Sewage Toxics Emission (BASTE) model in conjunction with influent VOC concentrations. The annual VOC emission rates are shown in. A comparison of the BASTE estimates with other models such as the EPA's Water 7/8 and TOXCHEM+ were also used for estimating annual VOC emissions, and reported elsewhere (Tata et. al., 1998).

RESULTS AND DISCUSSION

This section describes the results of data obtained from national and Region 5 TRI, Region 5 PCS, and POTW case studies. The discussion of results of TRI national alternates with TRI Region 5 to facilitate comparison between the national and regional data sets.

Figure 1 illustrates a downward trend in TRI national mass transfer of metals and cyanide to POTWs. Analysis of metals data analyzed for three intervals, 1988-1991, 1991-1995, and 1995-1997, shows reductions of 54%, 40%, and 17%, respectively. **(See Figure 1, " TRI Transfers to POTWs - US (All States) Metals and Cyanide")** During the ten years, from 1988 to 1997, metals and cyanide transferred to POTWs show a reduction of 80%, and 90%, respectively.

Figure 2. represents the TRI Region 5 trends in the mass (lbs/year$X10^3$) transfer of metals and cyanide to POTWs from 1988 to 1997. **(See Figure 2, "TRI Transfers to POTWs - Region 5 (IL, IN, MN, OH, WI) Metals and Cyanide")** The Region 5 TRI trend indicates a continuous and impressive annual reduction achieved by the Pretreatment Program. For the ten years, from 1988 to 1997, the metals data show a reduction of 80% (2080 X 10^3 lbs/year). Similarly, the TRI data for cyanide shows a reduction of 95% or 775 X 10^3 lbs/year during the ten years from 1988 to 1997.

Figure 3. illustrates the TRI national trends in the transfer of regulated TTOs and other unregulated organics to POTWs. **(See Figure 3, "TRI Transfers to POTWs - US (All States) Regulated and Non-regulated Organics")** The results for the regulated TTOs during three intervals: 1988-1991, 1991-1995, and 1995-1997, show reductions of 50%, 40%, and 24%, respectively. The national regulated TTO reductions during the 1988-1997 reporting period were 77%.

Figure 4. data indicate 81% and 24% reduction in TTOs and other non-regulated organics, respectively, for the ten-year (1988-1997) TRI reporting period. (**See Figure 4 - "TRI Transfers - Region 5 (IL, IN, MI, MN, OH, WI")** These data parallel the TRI national data in that the reductions in regulated TTOs exceed those of other non-regulated organics.

In summary, the national and regional trends in the transfer of metals, TTOs, and other non-regulated organics examined in Figures 1 through 4 exhibit a continuous and consistent reduction. The reduction in TRI metals, cyanide, and regulated TTOs are in the range of 77-80%.

The following discussion shifts the focus from mass transfer of toxic pollutants to POTWs to the metals quality of biosolids generated at Region 5 POTWs during 1995-1997.

Table 1. shows an increasing trend in POTWs reporting metal concentrations less than the Part 503 land application ceiling limits for metals (40 CFR 513.13). **(See Table 1, " Region 5 PCS Biosolids Quality Data")** Of the 769 facilities reporting region-wide in 1997, 35, or 5%, had at least one reported value above the applicable ceiling limit concentration. In contrast, 13% of the facilities had at least one reported value higher than the Part 503 rules ceiling limits of metals in 1995. In a recently completed survey conducted by the Association of Metropolitan Sewerage Agencies, biosolids metal concentrations reported by many POTWs were significantly lower in 1996 than in 1987, indicating that metal concentrations in sludges have progressively declined nationally (Lue-Hing et al., 1998). The average percent reduction in the regulated metals from 1987 to 1996 under the pretreatment program was 59.4 according to this survey.

The following discussion presents case studies at a local level in Region 5 to confirm these trends. Table 2, Table 3, and Table 4, present case studies of metals quality from Jackson, Michigan, Winona, Minnesota, Stickney, Illinois, respectively. (**See Table 2, "Trends in Annual Mean Concentrations of Selected Metals at Jackson, Michigan Wastewater Treatment Plant," Table 3, "Trends in Mean Concentrations of Selected Metals at Winona, Minnesota," and Table 4, "Trends in Mean Concentrations of Selected Metals in MWRDGC's Stickney WRP Digester Biosolids."**) The Jackson data (Table 2) represents twenty years of historical biosolids quality for five (cadmium, copper, lead, nickel, and zinc) of the nine metals regulated under Part 503, and shows reductions in the range of 75%-100%. Similarly, the Winona data (Table 4) shows reduction in the range of 62% to 97%, and the Stickney data (Table 4) shows reductions in the range of 32%-83% with the two facilities at Jackson and Stickney showing large reductions of 99.9% and 83%, respectively, in the concentration of cadmium in biosolids.

The following discussion describes the results of reduction of VOC emissions from the POTWs operated and managed by the MWRDGC. Table 5 presents annual VOC emissions data from 1987 to 1997 from the seven WRPs owned and operated by the MWRDGC. **(See Table 5, " Emissions of Volatile Organic Compounds from the Water Reclamation Plants (WRPs) of the Metropolitan Water Reclamation District of Greater Chicago")** These data show the percent reduction VOC emissions ranged between 10 to 75 using 1987 as the base year, with the exception of the John E. Egan WRP, where a slight increase in the emissions were noted in 1997 when compared with those in 1987. However, it should be noted that the annual VOC emission rate was far below the limits set for "major sources," which is 10 tons/year for a single VOC or 25 tons/year for all VOCs emitted (range of emissions is 0.05 to 6.58 tons/year for all WRPs).

Discussion

This study focused on toxic pollutants transferred by industry to POTWs and the metals quality of biosolids generated by POTWs through limited examples. However, the results obtained from this study indicate that the TRI national trends confirm the downward trends in TRI Region 5 data. These data independently and collectively exhibited downward trends that signify reduction in mass transfers of metals, cyanide, regulated TTOs, and other non-regulated organics to POTWs. It should also be noted that these reductions are not solely attributable to the FWPCA national pretreatment or biosolids program because not all of the TRI chemicals, rather a subset of pollutants, evaluated in this study are regulated by these programs. One of the areas of examination not addressed by this study is the reductions of toxic pollutants attributable to programs such as RCRA, FIFRA, TSCA, and other FWPCA programs regulating underground injection, drinking water, non-point source pollution, wetlands, etc. A holistic assessment of toxic reductions under various programs is not the objective and is beyond the scope of this study.

Results of TRI transfer of other non-regulated organics indicate a relatively lower reduction (24%) than that reported for the regulated TTOs (77%). The reasons for the difference in the percent reduction of these two types of organics needs further examination. For metals data, it was hypothesized that the higher metals reductions reported regionally and nationally through TRI would also be reflected at the local level. Indeed the examination of biosolids metals data form very large to small size wastewater treatment facilities paralleled the national and regional trends. These data confirm the effectiveness of the National Pretreatment Programs, and allow low metal content of biosolids to be beneficially used in Region 5 under the umbrella of the Part 503 Sludge Rules**.** The low levels of metals in biosolids (Table 2) compared to the Part 503 metal ceiling limits for land application of sludge are attributed to the effectiveness of the pretreatment program and the motivation for POTWs to apply their biosolids for beneficial utilization. The data presented in this paper reflects the importance of controls on IU discharges in smaller communities, either directly by POTWs, or through regional or state efforts through enforcement activities.

Finally, the authors believe that the reduction in VOC emissions from POTWs represents a secondary benefit of the pretreatment program, and indicates that voluntary source reduction programs can achieve such benefits.

CONCLUSIONS

The national, regional, local trends in the transfer of metals, cyanides, regulated TTOs, and other non-regulated organics examined in this study exhibit a continuous, consistent, and commendable reduction in the transfer of toxic pollutants to POTWs. The reduction in TRI metals, cyanide, and TTOs transferred to POTWs are in the range of 77%-80%. In contrast to these higher reductions, the Region 5 TRI trend for other non-regulated organics transferred to POTWs was 24. The reasons for the difference needs further investigation. From the limited data assessed in this project, the downward trends in transfer of toxic pollutants to POTWs confirm that efficient pretreatment has significantly reduced the concentration metals in biosolids below the ceiling concentrations specified in Part 503 Sludge Rules. Future work that would help in GPRA related assessment of the Pretreatment and Biosolids programs includes detailed collection and estimation of reductions of regulated and unregulated organics, pathogen quality of biosolids, and conformance with vector attraction reduction requirements of Part 503.

ACKNOWLEDGMENT

Co-authors of this paper, R. Sustich, P. Tata and C. Lue-Hing are Industrial Waste Enforcement Supervisor, Research and Technical Services Manager, and Director of the Research and Development Department, MWRDGC.

The authors are indebted to James Herbert, Industrial Pretreatment Coordinator, Winona, MN, and to the staff of the Michigan Department of Environmental Quality for providing data for the case studies described in this paper.

The authors express their sincere appreciation to Ms. Sreedevi Yedavalli for providing assistance in the preparation of tables and graphs for this project.

DISCLAIMER

All viewpoints, concepts, processes, performance data, and recommendations described or referenced in this paper do not constitute USEPA and MWRDGC acceptance or endorsement.

REFERENCES

Apogee Research Inc. and Woolpert. (1997) “Measuring Progress - Case Studies in the Application of Performance for POTW Pretreatment Program”.

Bastian, R. (1997) “ The Biosolids (sludge) Treatment, Beneficial Use, and Disposal Situation in the USA”, European Water Pollution Control Journal”, March, 1997.

Federal Register. (1999) Vol. 64, Number 688.

Federal Register. (1998) Vol. 63, Number 230. “Proposed Rules, 40 CFR Part 63”, pp.66093.

Federal Register. (1993) Vol. 58, No.32, pp.9392.

GPRA. (1997). Government Performance Results Act. IN: EPA Reinvention Fact Sheets, Internet: www.epa.gov/ooaujeag/notebook/gpranew.html

Lue-Hing, C., P. Tata, T. Granato, R. Sustich, R. Johnson, and R. I. Pietz. (1998) Sewage Sludge Survey, Association of Metropolitan Sewerage Agencies, Washington, D.C.

Outwater, A. B. (1994) “Reuse of Sludge and Minor Wastewater Residuals”, Bacon Raton, Fla.: Lewis Publishing.

Stearitt, R.M. and J.N. Lester. (1984) “Mechanisms of Heavy Metals Concentration in Sewage Sludge”, IN: Processing and Use of Sewage Sludge.

Tata, P. and D.T. Lordi, S. Soczynski, R. Zenz, and C. Lue-Hing. (1998) “Emission of Volatile Organic Compounds From The water reclamation District Of Greater Chicago”. IN: Research and Development Report No. 98-30.

USEPA (1997). EPA 745-R-97-005, April 1997.

USEPA (1999). EPA 745-R-99-003, April 1999.

Varner, Bruce. (1999). USEPA Region 5, Air Division, Personal Communication.

40CFR 403 (19---), 40 Code of Federal Rules, Part 403.General Pretreatment Regulations.