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.

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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 *Pseudomonas eisenbergū*, and can be isolated and grown in cultures.

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[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.

> "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 EPA for cokemaking would require cokemaking facilities to install activated sludge biological

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.

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 thiocyanate, 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