November 30, 1998

Docket No. A-97-36
Air and Radiation Docket and Information Center (6102)
U.S. Environmental Protection Agency
401 M Street SW
Washington DC 20460

RE: National Emission Standards for Hazardous Air Pollutants: Petroleum Refineries Catalytic Cracking, Catalytic Reforming and Sulfur Recovery Units; Comments on Proposed Rules Published at 63 FR 48890

TO: Docket No. A-97-36

Attached please find the comments of the Sierra Club Great Lakes Program concerning the above named MACT rulemaking proceeding. Please do not hesitate to contact me at (608)257-4994, or to contact our consultant, Alex J. Sagady & Associates at (517) 332-6971, if you have any questions.

Sincerely,

Emily Green, Director
Sierra Club Great Lakes Program

COMMENTS OF THE SIERRA CLUB – GREAT LAKES PROGRAM TO THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY CONCERNING PROPOSED MAXIMUM ACHIEVABLE CONTROL TECHNOLOGY STANDARDS FOR PETROLEUM REFINERY CATALYTIC CRACKER, CATALYTIC REFINING AND SULFUR RECOVERY UNITS PUBLISHED AT 63 FR 48890

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1 INTRODUCTION

This document reflects the comments of the Sierra Club-Great Lakes Program (SC-GLP) concerning the proposed National Emission Standards for Hazardous Air Pollutants applicable to certain petroleum refinery catalytic cracking, catalytic refining and sulfur recovery process units.

SC-GLP is concerned about the human health and environmental impact of emissions of persistent bioaccumulative toxicants and their effects on the Great Lakes. In addition, the SC-GLP is also concerned with emissions of environmental carcinogens and pulmonary toxicants that may have adverse effects on human health. These process units have the potential for emission of airborne toxicants in all three of these categories.

U.S. EPA is a party to the Binational Toxics Strategy for Virtual Elimination of Persistent Bioaccumulative Toxicants in the Great Lakes basin. Any realistic and credible "virtual elimination" strategy would require that U.S. EPA use all of its statutory authorities to the maximum degree available for ensuring control of these dangerous toxic pollutants.

We are disappointed, however, that the current proposal for these emission standards does not fully embrace the maximum stringency that U.S. EPA may, in its discretion, use to control airborne toxicants from this source category. U.S. EPA's determination that uncontrolled mercury emissions constitute the MACT floor is a particularly objectionable finding that constitutes clear legal error and an abuse of agency discretion. We also view as objectionable EPA's failure to consider non-air mercury health and environmental impact issues in the Great Lakes region and in deposition to other surface waters of the United States as one of the serious impacts of uncontrolled mercury emissions allowed by the proposed standards.

U.S. EPA's reliance on out-of-date criteria pollutant emission control strategies and provisions in order to allegedly control hazardous air pollutants from these refinery units is deeply disappointing and represents a further abdication of U.S. EPA's duties in the promulgation of hazardous air pollutant emission standards under Section 112(d) of the

Clean Air Act as outlined below. Our specific comments on the proposed rule follow:

2. EPA's Proposal to Consider Uncontrolled Emissions of Mercury as the MACT Floor for Catalytic Cracker Unit Regenerator Emissions Violates the Clean Air Act

2.1 EPA has Sufficient Emissions Data Under 42 USC §7412(d)(3)(B) to Set Both New and Existing Source MACT Standards for Mercury from Catalytic Cracker Regeneration Units

The technical support document identified a total of 13 test conditions at catalytic cracker regeneration units with quantifiable mercury emissions. Under 42 USC §7412(d)(3)(B), the MACT floor is defined as:

> "(B) the average emission limitation achieved by the best performing 5 sources (for which the Administrator has or could reasonably obtain emissions information) in the category or subcategory for categories or subcategories with fewer than 30 sources."

Congress obviously intended this section to set the MACT floor where there was limited availability of data and that a MACT floor could reasonably be set in such a situation with limited data availability. This intent is further indicated by the inclusion of the phrase "could reasonably obtain emissions information" which was not provided in 42 USC §7412(d)(3)(A) where there is data for 30 or more sources. Congress must have assumed that it would always be reasonable to expect that EPA would obtain data from at least 5 of the facilities in a given source category.

EPA erred by not setting the MACT floor as 2.75 E-2 lbs Hg/mm bbl, which is the actual numerical average of the lowest 5 stack tests indicated in the technical support document. EPA also erred by not setting a new source MACT standard equal to the best performing source in the mercury emissions database, which was 1.00 E-3 lbs Hg/mm bbl. Such standards would reflect the statutory requirement to have the new source emission limitation reflecting the best performing source and the existing source emission limitations reflecting the average of the best 5 performing sources.

2.2 EPA's Summary Dismissal in its Mercury MACT Floor Determination of Mercury Emission Controls and its Silence on Controlling the Mercury Content of Catalytic Cracking Unit Feeds Disregards Technology Transfer and Violates Pollution Prevention Aspects of Clean Air Act Section 112 Authority

In establishing requirements in the Clean Air Act for controlling hazardous air pollutants, Congress clearly contemplated a role for technology transfer and pollution prevention practices. According to the Senate Committee Report:

> "The bill described the standard setting process from a point of departure. First, standards for all sources, both new and existing, are to achieve the "maximum reduction achievable." That may include emissions limitations lower than are being achieved by any other comparable source in practice including a prohibition on emissions.
>
> Second, and with respect to. existing sources, the emission limitations for a category or subcategory is to be as stringent as that applicable to new sources unless the Administrator determines that compliance with such a limitation is infeasible for some sources in the category. Infeasible means that the sources would discontinue operation or be severely damaged as economic entities, if the limitation was imposed. To deny that this should be a consideration or that the variation for the limitation (which can be achieved by new sources) should be capped or constrained arbitrarily by a floor or target, is to deny the role for consideration of cost which is clearly stated in the legislation.
>
> Third, if new source limitations are infeasible, the Administrator is to establish the MACT standard for the existing source category using the "top-down" process for BACT determinations which has recently been adopted by the Agency in the PSD program.....
>
> The "top-down" standard-setting analysis begins with the most stringent level of emission control achieved by any comparable source in practice. That level of control is to be imposed, unless the Administrator can demonstrate that an emissions limitation at such level is infeasible for some sources in the category."[1]

[1] Senate Committee Report, P.L. 101-549, Pages 3554-3555

The consideration of "top down" strategies in setting MACT standards beyond the floor level, which is highly appropriate in cases of emissions of persistent, bioaccumulative toxicants, clearly contemplates technology transfer (which is a component of review in top down PSD decisions as noted in the legislative history).

EPA's proposed standard does not consider technology transfer for mercury control:

> "There are a number of emerging technologies (such as activated carbon injection" but none have been shown to be applicable to CCU catalyst regeneration vents. Therefore, the MACT floor for Hg is determined to be no control for both new and existing units."[2]

EPA's determination cannot dismiss the possibility of using technology transfer to control mercury emissions for CCU regeneration vents merely because no such technology is presently being used on such vents. To do so would fundamentally deny the entire concept of control technology transfer. EPA should have considered technology transfer as part of a beyond the floor emission standard determination relating to mercury emission control. If use of methods derived by technology transfer are technically feasible, then EPA should have considered them in the beyond the floor standard setting methodology. The proposal contains no analysis that would purport to show that application of methods derived by technology transfer for mercury emission control would be technically infeasible.

Use of spray dryer/fabric filter/carbon absorption technologies should be technically feasible to control mercury emissions from CCU regeneration vents. Environmental benefits in the form of more efficacious control of other toxic heavy metals would also likely result from these techniques. In addition, baghouse particulate emission controls would not be subject to "safe off" conditions for ESPs which allow uncontrolled emissions during CCU upset conditions (shutting off the ESP to avoid explosions from sparking). Sodium sulfide injection was not considered as a mercury emission control technique. Pre-combustion mercury removal processes for gas-oil feeds to CCUs were not considered in the rulemaking. All such methods should have been considered and evaluated as part of mercury control technology transfer analysis.

Mercury emissions from catalytic cracking and other refinery units will depend, in

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[2] 63 FR 48901

substantial measure, on mercury contained in refinery crude feed stocks.

The Clean Air Act requires consideration in the development of MACT standards, in part, of measures which:

> "(A) reduce the volume of, or eliminate emissions of, such pollutants through process changes, substitution of materials or other modifications," 42 USC §7412(d)(2)(A)

Nothing in the proposed rule examined the alternative of placing feedrate limitations implicit in mercury in crude restrictions or limitations on the mercury content of CCU feedstocks. Refiners using high mercury feed materials could switch to low mercury feedstocks or consider pre-CCU combustion and/or pre-distillation technique for mercury removal. EPA's utter failure to consider pollution prevention process and feedstock changes as they affect mercury emissions violates EPA's deliberative duties for MACT promulgation required under 42 USC §7412(d)(2)(A).

3. EPA's Failure to Set Specific Hazardous Air Pollutant Metal and Organic Compound Emission Standards Violates the Clean Air Act

3.1 EPA's Purported Scheme to Regulate Metal HAPs by Regulating Particulate Matter at Catalytic Cracker Units Violates Section 112 Requirements

EPA is attempting to use the NSPS part 60, subpart J New Source Performance Standard limit of 1 kg/1,000 kg of coke burnoff as a so-called "surrogate" of metallic hazardous air pollutant emissions. However, nothing in the proposal characterized the proportion of emitted particulate matter that are hazardous metals, non-hazardous metals and unburned carbonaceous materials in the facilities selected for determination of emissions standards.

EPA's selection of the metal HAP standard is indicated in the proposal:

> "The EPA refinery database shows that CCU ESP achieve a PM emission rate that ranges for 0.0002 to 3.6 lb/1,000 lb coke; the 26 values reported have a median of 0.,81 and a mean of 0.86 lb/1,000 lb. The NSPS value is 1.0. Nineteen of the 26 CCU have a catalyst regeneration PM emission rate of less than 1 lb/1,000 lb of coke burn-off. The five CCU that use a venturi scrubber and that have PM data

> show a range of emissions from 0.36 to 0.86 lb/1,000 lb of coke burnoff, which is within the range of performance shown by the ESP. Thus, the NSPS PM emission limitation for the catalyst regeneration vent of 1 lb/1,000 lb of coke burn-off appears to a [be] a reasonable characterization of PM control device performance on a "not-to-be-exceeded" basis, based on the available data. As a result of this analysis, a PM emission limit of 1 lb/1,000 lb of coke burnoff is selected to characterize the MACT floor for catalyst regeneration vents on existing units." 63 FR 48901

Although EPA goes on to calculate an alternate limit assuming that nickel is a surrogate for all other metal HAPs, the agency clearly relied on the above analysis to allow the existing NSPS to be used as a metal HAP MACT floor.

First, EPA's approach of using PM as a surrogate for metal hazardous air pollutant emission limitations is clearly in error. The Clean Air Act requires HAP emission standards:

> "The Administrator shall promulgate regulations establishing emission standards for each category or subcategory of major sources and area sources <u>for hazardous air pollutants listed for regulation pursuant to subsection (c) of this section</u>...." 42 USC §7412(d)(1) (emphasis added)

The definition of "hazardous air pollutant" under 42 USC §7412(a)(6) and the list provided under 42 USC §7412(b)(1) do not include particulate matter as a hazardous air pollutant and its plain exclusion should be regarded as a prohibition that metal hazardous air pollutants can fail to be regulated in favor of a scheme to use particulate matter as a so-called "surrogate" of metal HAP emissions.

EPA's use of particulate matter as a surrogate for multiple metal hazardous air pollutants is particularly egregious in light of EPA's failure to present the metals emission control performance of the PM emissions controls in light of varying metal feed rate parameters.

Even assuming for the sake of argument that use of PM as a surrogate would be acceptable (we hold here it is not), EPA's analysis of CCU regenerator PM emission rates does not clearly indicate nor follow the requirements for analysis presented in 42 USC §7412(d)(3)(A) as to the required MACT floor average of the best performing 12% of units.

There is no clear articulation of the average performance of the top 12 percent of units. EPA instead sets the standard to be the same as the NSPS rate on a "not-to-be-exceeded basis, based on the available data."

EPA should have based set specific metal HAP emission rates based on the average of the best performing five metal emission rates for each metal HAP articulated in the table of emission results in the background information document.

Finally, EPA's refusal to set emission limitations for new catalytic cracker regeneration units at the level of the best performing unit for PM emissions shows that EPA again violates the Clean Air Act's requirement that such a limitation reflect the best performing unit, even assuming the impermissible PM-metal HAP surrogate scheme employed in EPA's analysis.

Finally, EPA attempts to regulate cadmium as a non-volatile metal when the agency clearly considered this metal HAP as a "semi-volatile" metal during its deliberations on emission standards for hazardous waste combustors. The high temperature operations of some catalytic cracking units may, in fact, lead to different emission characteristics for this toxic metal than EPA expects in this rulemaking.

3.2 EPA's Failure to set Specific Organic Hazardous Air Pollutant Emission Standards Violates the Clean Air Act

For the same reasons articulated in the prior section, EPA may not use carbon monoxide emission limitations as a surrogate for controlling organic compound hazardous air pollutants. Even assuming for the sake of argument that EPA could use the impermissible technique of using carbon monoxide as a surrogate for organic hazardous air pollutant emissions, it is clear from the analysis presented that EPA made no attempt to rank carbon monoxide performance tests according to the best performing 12 % of all tests and to articulate the average of these 12% of all tests to be the MACT floor. EPA's proposed notice is nothing less than a rush to judgement to use existing criteria pollutant new source performance standards in a misguided attempt to attempt to regulate airborne toxicants, carcinogens and persistent bioaccumulative toxics.

There is no information presented that ensures that emissions of all listed organic hazardous air pollutants have a monotone, predictable relation to carbon monoxide emissions. In fact, during consideration of EPA's Industrial Combustion Coordinated

Rulemaking, a presentation by EPA's consultants explicitly indicated that carbon monoxide alone could not be directly related to emissions of chlorinated dibenzo-dioxins/furans from combustion sources.

EPA should use the available emission data in the Background Document to set a MACT Floor and a new source limit based on the average of the best performing five sources and the best performing source, respectively, for control of organic hazardous air pollutants.

4. Other Miscellaneous Comments

The comments by the Lonestar Chapter of the Sierra Club (which will be filed by the deadline) on the proposed standards are incorporated by reference. The Lonestar comments will focus in part on the failure of the standard to incorporate a requirement for redundant/backup sulfur recovery units to prevent flaring of unscrubbed, raw refinery fuel gases.

The proposal claims that tail gas treatment at sulfur recovery units is equivalent to a fume incinerator in the level of control (63 FR 48891). This claim defies common sense since carbonyl sulfide and carbon disulfide emissions will be higher from tail gas units that do not have a fume incinerator in-line before discharge.

The proposal requests comment on the issue of whether monitoring averages should include periods of non-operation of emission control devices (63 FR 48896). We comment that non-operation of emission control device periods should be explicitly included in reporting and averaging times. Failure to operate a control device should not be discounted by allowing the source to escape the deterioration of a measured parameter implicit in such a circumstance.

In a related issue, the proposal appears to authorize a source to report malfunction events whose handling and management was in compliance with a malfunction abatement plan. This is highly unacceptable. All malfunction periods should be reported in periodic reports. All serious malfunctions should be reported immediately in addition to being reported on periodic reports. The public should not have to contend with a source's arguments that there were not violations merely because they were in compliance with a malfunction plan. All excess emission events should be considered as potential violations and the proposal to allow one excursion for semi-annual reporting period should not be allowed.

The semi-annual reporting period should be changed to quarterly reporting.

The proposal should require use of continuous emission monitors for compliance with total reduced sulfur emission limitations.

In a number of places in the proposed standard, EPA is countenancing the use of daily averages for combustion parameters, such as combustion temperatures in thermal incinerators or other parameter/emission averaging times. Use of daily averages for combustion unit performance averaging time considerations will allow short term high emission transients associated with combustion upsets. These short term emission events will frustrate the entire purpose of providing a standard for control of organic compound hazardous air pollutant emissions. All averaging times for compliance purposes on both emissions and parameter monitoring should be revised to be no longer than one hour.

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