

**Sierra Club
HECA
Data Requests Set No. 3**

December 20, 2012

**DOCKETED
08-AFC-8A**

TN # 68945

DEC. 20 2012

Background: FOLLOW-UP: SUPPORT FOR FLARE EMISSION ESTIMATES

The Sierra Club has additional questions regarding the information provided by the Applicant for flare emission estimates.

Data Requests:

132. Sierra Club Data Request #38.j was worded incorrectly. Please provide support for the duration and heat input rates (in MMBtu/hr) while flaring natural gas, unshifted syngas, and shifted syngas which appear to be based on "Startup/Shutdown Procedures provided by MHI for the PurGen One Project."
133. Please indicate whether the flare will be equipped with a flare gas recovery system for non-emergency releases, as required by the SJVAPCD's BACT Guidelines for refinery flares.
134. As flares do not lend themselves to routine stack testing, estimating flaring emissions based on emission factors must be reasonable and achievable in practice. Please provide a vendor guarantee for the combination of emission factors and control efficiencies used to calculate flare NO_x, CO, VOC, and PM₁₀ emissions as provided under confidential cover in Response to Sierra Club Data Request #24.

Background: ELIMINATION OF ANHYDROUS AMMONIA SALES

In response to Sierra Club Data Request #85, the Applicant stated it has revised the HECA project to eliminate off-site transport and sale of anhydrous ammonia. In response to an inquiry about any associated changes to the facility design and emissions, the Applicant stated at the November 7, 2012 workshop that the only change would be that the anhydrous ammonia loading facility would not be built and there would no changes in emissions.

Data Requests:

135. Please confirm that the anhydrous ammonia loading facility will not be constructed.
136. The Amended AFC, p. 5.12-9, indicates that the facility was expected to produce a maximum of 500 tons/day of surplus anhydrous ammonia.
 - a. Please quantify how many hours/days of ammonia production at full capacity can be accommodated by the Project's two ammonia storage tanks (total 3.8 million gallons).
 - b. Please discuss whether additional storage tanks will be needed to accommodate the production of surplus anhydrous ammonia that will no longer be transported off-site.
137. Anhydrous ammonia is a precursor product to the production of urea and urea ammonia nitrate ("UAN") at the Project. Please indicate whether the facility would increase production of urea and UAN fertilizer as a consequence of eliminating direct sales of anhydrous ammonia.

Background: FOLLOW-UP: FUGITIVE ENTRAINED ROAD DUST PARTICULATE MATTER EMISSIONS FROM ON-SITE MOBILE SOURCES

Sierra Club Data Request #113 requested that the Applicant include on-site fugitive entrained road dust in the Project's potential to emit ("PTE"), which is provided in the Amended AFC in Table 5.1-14, p. 5.1-83. The Applicant's response refers to the Amended AFC Tables 5.1-20 (Alternative 1) and 5.1-31 (Alternative 2) and supporting appendices (E-3 and E-12, respectively) for fugitive dust emission estimates for on-site mobile sources and states that these emissions were included in the modeling. This response does not address the Sierra Club's request to include the on-site mobile source emissions in Table 5.1-14, which is entitled *HECA Total Combined Annual Criteria Pollutant Emissions*.

The inset table below shows revised Table 5.1-14 from the emission calculation spreadsheets provided under confidential cover by the Applicant in response to Sierra Club Data Request #24.

REDACTED

The red arrows show where fugitive entrained road dust PM2.5 and PM10 emissions should have been included but were not.

The requirement to include fugitive road dust emissions in the Project’s PTE stems from 40 CFR §52.21(b)(1)(iii), which specifies that sources that fall in one of the 28 named industrial source categories listed at 40 CFR. §52.21(b)(1)(i)(a) must take into consideration fugitive emissions when determining whether they reach the 100 ton per year emissions threshold to determine major source status. The Project falls within the source category “Fossil fuel-fired steam electric plant of more than 250 million Btu per hour heat input.”

Data Request:

138. Please update Table 5.1-14 to include on-site entrained road dust particulate matter emissions according to 40 CFR §52.21(b)(1)(iii) and submit the revised table to the SJVAPCD. Please use the appropriate silt loading factor for paved

roads at industrial facilities from U.S. EPA’s Compilation of Air Pollutant Emission Factors (“AP-42”), Section 13.2.1, Paved Roads, to calculate emissions.

Background: MALFUNCTIONING EMISSIONS

In response to Sierra Club Data Request #116, the Applicant states that based on the project design, and the operating experience at the Nakoso plant, no malfunction flare events are expected.

Data Request:

139. Would the Applicant be willing to accept a condition of certification (“CoC”) limiting the number of startups/shutdowns including unplanned startups/shutdowns to two per year on a rolling 12-month average?

Background: MERCURY REMOVAL SYSTEMS

In response to CEC Data Request #A135, the Applicant indicates that the Project would use adsorbent(s) such as activated carbon or alumina as in the Project’s two mercury removal systems.

Data Request:

140. Please provide a discussion of the mercury control technology with alumina that would potentially be used for the Project.

Background: WASTE FROM MERCURY REMOVAL SYSTEMS

The information regarding the waste characterization and disposal of spent adsorbent(s), *i.e.*, activated carbon and/or alumina from the Project’s two mercury removal systems is not adequate.

Data Requests:

141. Please quantify the amount of adsorbent(s) that would be required annually separately for a) the fixed bed adsorber just upstream of the acid gas removal system and b) for the mercury removal system for the feedstock dryer exhaust.

142. The Amended AFC, Table 5.13-3, p. 5.13-10, states that spent mercury removal carbon beds (impregnated activated carbon) would be stabilized and disposed of at a hazardous waste landfill. However, the Land Disposal Restrictions of the 1984 Hazardous and Solid Waste Amendments to the Resource Conservation and Recovery Act require that mercury in wastes with contamination levels at or above 260 parts per million (“ppm”) mercury be recovered by a thermal process, such as retorting, and stabilized using an amalgamation process. The treatment standard for “high mercury inorganic category” wastes, which contain more than 260 mg/kg total mercury, is mercury recovery in a thermal processing unit that volatilizes and subsequently condenses the mercury. These units are commonly referred to as “retorters,” and the recovery process as “retorting.” (40 CFR §268.42, Table 1).
- a. Please specify the mercury content of the spent adsorbents and discuss the required treatment of the waste products.
 - b. The Amended AFC, p. 5.13-5 and Table 5.13-1, identifies two Class I landfills in California, Chemical Waste Management’s Kettleman Hill’s Landfill in Kings County and Clean Harbors’ Buttonwillow facility in Kern County for disposal of hazardous waste. Please discuss whether either of these facilities is equipped to retort mercury waste.

Background: FOLLOW-UP: COMPLIANCE WITH MERCURY AND AIR TOXICS STANDARDS

In response to CEC Data Request #A135, the Applicant provided calculations to demonstrate compliance with the Mercury and Air Toxics Standards (“MATs”). The provided information is not sufficient to evaluate potential impacts on the environment and the provided calculations appear to be based on a number of incorrect and/or not adequately assumptions.

Data Requests:

143. The mercury emission calculation is based on a coal feed rate to the gasifier of 3,900 short tons per day (“stpd”) on a dry basis, which is based on the assumption that the Project would be using 75% coal and 25% petcoke and the assumption that petcoke has a negligible mercury content.
- a. Please provide information about mercury content (typical and range) of petcoke.

- b. Please explain how the coal feed rate of 3,900 stpd on a dry basis was derived, *e.g.* based on equipment specifications or derived from the as-received coal feed rate of 4,950 stpd and a moisture content of 14.8% in typical sub-bituminous coal.
 - c. Would the Applicant be willing to accept a condition of certification (“CoC”) limiting the Project to using at least 25% petcoke on an annual average basis? Alternatively, would the Applicant be willing to accept a CoC limiting the daily coal feed to the gasifier to 3,900 stpd or 1,423,500 short tons per year (“stpy”) on a dry basis? If not, please discuss why not, and discuss any other permit or equipment limitations that would limit the coal feed rate to the gasifier.
 - d. If the answer to the above data request is no, please revise the calculated mercury emission rate to account for the highest potential percentage of coal in the feed rate, *i.e.*, absent any other limitations to 100%.
144. The mercury emission calculation is based on a number of unsupported assumptions including uncontrolled mercury in feedstock dryer exhaust of 0.002 pounds per hour (“lb/hr”) based on “Mitsubishi Heavy Industries estimate;” removal efficiency of 75 percent for feedstock dryer exhaust gas mercury removal system; mercury removal efficiency of 98 percent for fixed bed adsorber bed upstream of acid gas removal system; and split of exhaust from normal operation of the heat recovery steam generator (“HRSG”) into 85 percent to the HRSG stack and 15 percent to coal dryer stack.
- a. Please provide adequate documentation such as a vendor guarantees to support each of these assumptions, if necessary under confidential cover.
 - b. Provide a summary of achieved-in-practice mercury removal efficiency at IGCC plants using the proposed technology and identify a conservative removal efficiency. Please revise your mercury emission estimates accordingly.
 - c. Please discuss and quantify mercury emissions during startup/shutdown.
145. The mercury emission calculation is based on a mercury concentration in the coal feed of 0.09 parts per million by weight (“ppmw”), which is the typical mercury content for a sub-bituminous coal (as presented in the Amended AFC, Table 2-5, p. 2-81.) However, in response to Sierra Club Data Request #17, the Applicant has indicated that it will receive coal from a portfolio of mines but most likely from Peabody’s El Segundo mine, which has a typical mercury content of 0.12 ppmw. Based on a mercury content of

0.12 ppmw and otherwise using the Applicant's assumptions, HECA's mercury emission rate can be calculated at 0.003 pounds per Gigawatt-hour ("lb/GWh") which is equal to the applicable MATS standard for mercury. Please revise the calculated mercury emission rate to account for the typical mercury content in coal from the El Segundo mine of 0.12 ppmw and discuss compliance with the applicable MATS mercury standard of 0.003 lb/GW-h. Please take into account guidance by the U.S. Environmental Protection Agency regarding rounding of significant figures. (See, e.g., <http://www.epa.gov/ttn/emc/rounding.pdf> and [http://yosemite.epa.gov/oaqps/EOGtrain.nsf/fabbfcfe2fc93dac85256afe00483cc4/4939717614a0227e85256f400062252e/\\$FILE/Lesson2.pdf](http://yosemite.epa.gov/oaqps/EOGtrain.nsf/fabbfcfe2fc93dac85256afe00483cc4/4939717614a0227e85256f400062252e/$FILE/Lesson2.pdf).)

146. The Applicant states that it intends to measure filterable particulate matter as a surrogate for metal toxics and relies on an expected emission rate of 14.3 lb/hr to calculate emissions of 0.035 lb/MWh.
 - a. Please demonstrate how the expected emission rate of 14.3 lb/hr filterable particulate matter was derived. Please document your assumptions.
 - b. Please indicate whether the Project would determine filterable particulate matter concentrations in exhaust gas with a continuous emissions monitor or by stack testing.