

**EIP Comments on EPA’s Refineries Air Toxics Rule
U.S. EPA, Science Advisory Board – June 5, 2013 Meeting**

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We are asking the Board to provide guidance to EPA on the Refineries Air Toxics rule – in light of the underreporting of emissions due to the use of inaccurate emission factors to estimate toxic releases from refineries.

EPA Needs Scientific Guidance Because:

- 1) EPA cannot have an effective rulemaking without accounting for the documented uncertainty of emission factors.**
- 2) EPA has known about the fact that emission factors significantly underestimate emissions for over a decade**
- 3) EPA does not have a plan or scientifically valid method to deal with the uncertainty created by inaccurate emission factors.**

1) EPA’s Residual Risk Assessment and Technology Review Depends on Accurate Data

EPA’s mandate is to establish rules that are based on risk exposure and the cost-effectiveness of emissions control technology. Without accurate emission data, EPA cannot carry out its duty effectively.

Inaccurate emission factors underestimate actual emissions. This hides true toxic exposure levels in refinery communities and unfairly tips the cost-benefits towards requiring less emission controls.

EPA’s risk assessment approach does not account at all for short-term emission increases. Emission factors do not account for emission spikes that occur during flaring or other types of malfunctions and violations. EPA needs scientific guidance from the Board on how to account for short-term increases in emissions from flaring and other malfunctions.

2) The Inaccuracy of Emission Factors is well documented and EPA has known about this problem for over a decade

Emissions of hazardous air pollutants from refineries are significantly underestimated because inaccurate factors are used to quantify emissions from various process units including flares, cooling towers, waste water treatment systems, and liquid storage tanks.

EPA has several studies documenting the fact that emission factors underestimate toxic releases from refineries:

- i. EPA's own 2008 review of DIAL test data from the BP Texas City Petroleum Refinery¹ found that:
 - Emissions from liquid storage tanks were on average 3-7 higher than estimated
 - Emissions from ultracracker flares were 6 times higher than the average hourly emission rate in the 2007 emission inventory report.

- ii. The 2011 Shell Deer Park Study conducted by the City of Houston² found:
 - Emissions from tanks were between 4 and 132 times higher than estimated

¹ David Randall & Jeff Coburn, EPA, Critical Review of DIAL Emission Test Data for BP Petroleum Refinery in Texas City, Texas, EPA 453/R-10-002, ES-2, Table 1 (Nov. 2010), *available at* http://www.epa.gov/ttn/atw/bp_dial_review_report_12-3-10.pdf (The National Physical Laboratory conducted a DIAL test at the BP Texas City Petroleum Refinery in 2008. EPA issued a review of the data and found emissions from several units exceeded estimated emissions calculated using emission factors.).

² Loren Raun and Dan Hoyt, City of Houston, Bureau of Pollution Control and Prevention, Measurement and Analysis of Benzene and VOC Emissions in the Houston Ship Channel Area and Select Major Stationary Sources Using DIAL (Differential Absorption Light Detection and Ranging) Technology to Support Ambient HAP Concentrations Reductions in the Community (DIAL Project), 92-93, Table 4.4(a) (Jul. 2011), *available at* <http://www.greenhoustontx.gov/dial20110720.pdf> (The City of Houston conducted a comprehensive survey project of emissions from a combined petroleum refinery and chemical plant complex in the Houston Ship Channel area. The study grouped emissions by individual process area, finding that measured emissions from tanks and wastewater treatment systems far exceeded emission factor estimates for benzene and VOCs.).

- Emissions from wastewater treatment systems were between 7 and 108 times higher than estimated

Furthermore, EPA has known of this problem for quite some time, as demonstrated by:

- 2008 Data Quality Act Petition from the City of Houston³
- 3 EPA Inspector General Reports – 1996⁴, 2006⁵, 2007⁶ – calling for improvements in the quality of emission factors

3) EPA Needs scientific Guidance on how to account for the uncertainty created from the use of inaccurate emission factors

Despite all of the available data, EPA does not have a good handle on how to address the problem of inaccurate emission factors in this rule making. Pursuant to this rulemaking, EPA collected new emissions data from refineries in 2011. However, a significant percent of this data is unreliable.

For example, EPA's 2011 petroleum refinery information collection request required stack testing for toxic emissions from Fluid Catalytic Cracking Units. Through this testing, EPA discovered that hydrogen cyanide emissions from FCCUs are several orders of magnitude higher than any estimate previously provided by industry.

While EPA addressed this problem by making appropriate adjustments in the emission inventory data, the Agency has not addressed inaccurate emission factors for other pollutants or process units.

³ Letter from Bill White, Mayor, City of Houston, Tex., to Information Quality Guidelines Staff, EPA, Request for Correction of Information under the Data Quality Act and EPA's Information Quality Guidelines (July 9, 2008), *available at* www.greenhoustontx.gov/reports/epaletter20080709.pdf.

⁴ Office of Inspector General, EPA, No. 6100306, Emission Factor Development (1996), *available at* www.epa.gov/oig/reports/1996/emisrept.pdf

⁵ Office of Inspector General, EPA, 2006-P-00017, EPA Can Improve Emissions Factors Development and Management (2006), *available at* www.epa.gov/oig/reports/2006/20060322-2006-P-00017.pdf

⁶ Office of Inspector General, EPA, No 08-P-0020, Improvements in Air Toxics Emissions Data Needed to Conduct Residual Risk Assessments (2007), *available at* <http://www.epa.gov/oig/reports/2008/20071031-08-P-0020.pdf>

For example, flares are much less effective at controlling pollution than the 98% destruction efficiency assumed by emission factors – sometimes achieving flare efficiency as low as 50%. Nevertheless, EPA’s emission inventory for this rulemaking is based on emission reporting that assumes 98% to 99% combustion efficiency.

Another example is fugitive emissions from tanks, cooling towers, and wastewater treatment systems. Emission factors used to report releases assume perfect conditions that do not take into account leaks and other malfunctions. Therefore, EPA does not have an accurate picture of the amount of toxics being released by the petroleum refining sector.

SAB guidance could help EPA review the existing studies and provide a path forward on how to handle the uncertainty created by inaccurate emission factors.

Conclusion:

Board review of emissions data and emission factors would help EPA take the necessary scientific steps to identify inaccurate emission factors and provide guidance on how to resolve any uncertainty. Without accurate emission data, EPA’s entire rule will be flawed and fail to protect public health