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EARTHJUSTICE ~ ENVIRONMENTAL INTEGRITY PROJECT ~ LOUISIANA BUCKET BRIGADE  
TEXAS ENVIRONMENTAL JUSTICE ADVOCACY SERVICES

March 22, 2013

Dr. David Allen, Chair and Board Members, [sab@epa.gov](mailto:sab@epa.gov)  
Dr. Angela Nugent, Designated Federal Officer, [nugent.angela@epa.gov](mailto:nugent.angela@epa.gov)  
Scientific Advisory Board  
U.S. Environmental Protection Agency

Dear Dr. Allen, Dr. Nugent, and Members of the Science Advisory Board,

This letter addresses the Science Advisory Board's request for more information on EPA's air toxics rule for Petroleum Refineries, as discussed at the March 8, 2013 meeting. As community organizations representing and working with people who live near refineries and face the impact of refineries' air pollution daily, we are writing to provide information on some key ways that EPA's rule would benefit from SAB review and guidance.

This rule is still at the pre-proposal stage. It would be most useful for the SAB to offer input before EPA publishes a proposed rule. Although no rulemaking schedule has been set, the SAB should move quickly to begin its review and provide input as soon as possible. At whatever point the SAB provides input, including between the time of proposal and final action, the SAB's perspective would strengthen the scientific components of the final rule.

EPA's air toxics rule for refineries merits SAB review to provide scientific expertise on at least the following five cutting-edge scientific issues.

1. **Children's health and risk.** EPA needs specific scientific recommendations from the SAB to ensure that this rule follows the current science on children's health. These should include advising EPA to follow steps taken by California EPA's Office of Health Hazard Assessment ("OEHHA") and the recommendations of the National Academy of Sciences 2009 Silver Book.

Specifically: (1) EPA should update the approach in its 2005 guidance and use age-dependent adjustment factors to assess cancer risk from all emitted carcinogens (not just those it knows are mutagenic);<sup>1</sup> (2) EPA should add an additional 10X default factor in its cancer risk assessment to account for prenatal/in utero exposure

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<sup>1</sup> EPA, Guidelines for Carcinogen Risk Assessment, EPA/630/P-03/001F, at 1-19 to 1-20 (Mar. 2005), <http://www.epa.gov/cancerguidelines>; EPA, Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens, EPA/630/R-03/003F (2005).

and protect children's health; (3) EPA should evaluate the child-specific reference doses and benchmarks created by OEHHA (including for lead) and use those available to assess non-cancer health risk. (4) Where those are not available, in its non-cancer risk assessment EPA also should use a 10X default factor to account for the additional risk to children.

2. **Cumulative impacts and risk for overburdened communities.** In its air toxics program, EPA has not addressed the real-world, cumulative health risks, such as from multiple sources and background levels of exposure, that make communities especially vulnerable to toxic air pollution. OEHHA is expected soon to complete a ground-breaking scientific approach on cumulative impacts that would merit review and use in this rule. EPA also generally has not added multipathway (or non-inhalation) and inhalation-based risks together to look at the full risk from all exposure pathways. EPA also continues to use its short, outdated list of persistent, bioaccumulative pollutants<sup>2</sup> in its rulemakings, rather than recognize that additional pollutants, such as arsenic, also persist in the environment and should be part of EPA's multipathway risk assessment. Rather than not accounting for these risks at all, EPA must address them in an appropriate scientific manner, such as by using an appropriate default or uncertainty factor, per the National Academy of Sciences. EPA should also consider ways to incorporate new state-of-the-art health assessment tools such as Health Impact Assessments (HIA), with guidance from the CDC, EPA Regions, and other experts.
3. **Monitoring.** There are new scientifically supported methods to monitor emissions at the fence line and provide more useful and accurate information, such as by speciating toxic chemicals. Open-path monitoring, FTIR infrared spectroscopy, and Dual-Hyphenated Gas Chromatography (DHGC) are three proven technologies. Placement of monitors is another critical issue where scientific expertise could inform the rulemaking. And there are new methods available for continuous emission monitoring that the SAB could investigate and provide valuable scientific guidance on. These are vital tools that would ensure that EPA, states, and the affected public know what is going into the air at a given time and would strengthen the efficacy of and compliance with EPA's national air toxics standards. Communities need strong, real-time monitoring provisions to protect their health and safety, including by providing real-time information into an alert system used to warn people when there is a malfunction or emergency, a major problem with refineries.

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<sup>2</sup> EPA, PB-HAP Compounds, Exhibit 4-2, Risk Assessment and Modeling – Air Toxics Risk Assessment Reference Library, Vol. I Tech. Resource Manual, Ch. 4 Air Toxics: Chemicals, Sources, and Emissions Inventories, at 4-10 (2003), [http://www.epa.gov/ttn/fera/data/risk/vol\\_1/chapter\\_04.pdf](http://www.epa.gov/ttn/fera/data/risk/vol_1/chapter_04.pdf)

4. **Flaring.** Flaring or burning of toxic air emissions is a singularly important problem that EPA must solve in this rulemaking. EPA has valuable data on flaring from its 2012 study and significant examples from enforcement cases and consent decrees that have dramatically reduced flared emissions. These new data also show that flares have much lower destruction efficiency rates than previously understood, which requires a complete re-evaluation of scientific assumptions that are at the heart of EPA's outdated existing standards. Further, flares are being overused, to the detriment of communities' health, without achieving their intended goal. EPA will need to analyze and use the new flaring data in this rulemaking in both its risk and technology review. The new data – EPA's 2012 study combined with recent information from the South Coast Air Quality Management District and consent decrees in recent enforcement cases – warrant a careful, scientific consideration of ways to reduce and consider prohibiting routine flaring (such as by setting a cap on emergency flaring, and when flares are used improving the efficiency with additional control requirements, requiring monitoring, and ensuring that flaring emissions and chemical data are included in all annual and other regular public emission reporting).
  
5. **Calculating Emissions:** Emissions data are one of the most critical inputs to both the residual risk assessment required by section 112(f)(2) of the Clean Air Act and EPA's technology review under section 112(d)(6) of the Act. EPA collected new emissions data from refineries in 2011. A significant percentage of the emission factors used to report emissions from refineries are unreliable and likely to be inaccurate – calling out for scientific review and guidance. EPA has been aware of this problem for over a decade and is still struggling with how to account for the uncertainty in the data. SAB review of the emission data and emission factors would help EPA take the necessary steps to identify inaccurate emission factors and provide guidance on how to resolve the uncertainty. Furthermore, the collected data does not adequately account for emission spikes released during malfunctions. Not only is this an enormous source of too-often off-the-books emissions that EPA's rule must address, sudden exposure to high levels of toxic pollution must be specifically evaluated to assess the health risk and impacts from exposure. The Texas Commission on Environmental Quality has more than ten years of data on these events and the resulting pollution that the SAB should review and EPA must consider.

**Background.** As the Board is aware, refineries' toxic air pollution affects many communities in 32 states and the Virgin Islands. EPA's prior data showed that 90 million people live within about 30 miles of at least 1 refinery, and many live near more than one. Children are disproportionately exposed to the emissions and resulting health threats from refineries. People of color, including African Americans and Hispanic Americans, have a higher cancer risk from this source than the average risk for national population, as do adults living below the poverty level.

In data EPA collected for the upcoming rulemaking, refineries report approximately 22,000 tons per year of hazardous air pollutant emissions. Some of the largest refineries

individually report more than 1,000 tons of emissions per year. Research shows that actual emissions are likely much higher because toxic releases from flares, malfunctions, and fugitive emissions (such as from leaks) are underreported. Emissions include a toxic soup of hazardous air pollutants, including, *e.g.*, benzene, polycyclic organic matter (POM), hydrofluoric acid, glycol ethers, 1,3-butadiene, toluene, xylene, naphthalene, vinyl chloride, formaldehyde, phenol, hydrogen cyanide, hydrogen chloride, carbonyl sulfide, carbon disulfide, and metals (nickel, lead, mercury, arsenic, manganese).

In its health risk and review rulemaking for refineries under section 112 of the Clean Air Act, EPA must fulfill its responsibility to protect our communities, particularly children, from unacceptable cancer and other health threats, including from flared, fugitive, and malfunction emissions. EPA must require the maximum achievable degree of reduction in toxic air emissions from this industry. Because EPA's own data has shown that the communities most exposed to refineries' pollution are disproportionately communities of color and lower income communities, environmental justice is a major concern in this rulemaking.

In its 2009-10 review of EPA's refineries risk assessment method, the Science Advisory Board recognized serious analytical gaps regarding children's health and risk and the importance of looking at cumulative effects of toxic air pollution, including from multiple sources.<sup>3</sup> In air toxics rules since then, EPA has not responded to those concerns by updating its approach. Affected communities are concerned that SAB input is needed to ensure that EPA does not again fail to incorporate the new science on these issues into its Refineries rule, along with the other important issues discussed in this letter.

For all of these reasons, we believe the SAB should review this rule and provide timely scientific guidance to EPA as soon as possible.

More information is available on the above-listed topics, by request, and listed below. We would be glad to arrange a telephone conference or meeting to discuss. For more information, please contact Earthjustice: Emma Cheuse, (202) 745-5220, [echouse@earthjustice.org](mailto:echouse@earthjustice.org), or Stephanie Maddin, (202) 667-4500 ext. 5210, [smaddin@earthjustice.org](mailto:smaddin@earthjustice.org).

Sincerely,

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<sup>3</sup> Science Advisory Board, "Risk and Technology Review (RTR) Risk Assessment Methodologies: For Review by the EPA's Science Advisory Board with Case Studies – MACT I Petroleum Refining Sources and Portland Cement Manufacturing, EPA-SAB-10-007, at ii, 6-7, 9-10, 16, 34-35, 38, 41, 51-53 (May 2010).

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#### ATTACHMENTS

1. Cal. EPA, OEHHA, Second Public Review Draft of the California Communities Environmental Health Screening Tool (CalEnviroScreen) (Jan. 23, 2013), <http://oehha.ca.gov/ej/cipa010313.html>
2. EPA, Ofc. of Air Quality Planning and Standards, Parameters for Properly Designed and Operated Flares, Report for Flare Review Panel (Apr. 2012)

#### MORE BACKGROUND – DOCUMENTS AVAILABLE BY REQUEST

1. National Academy of Sciences, Science and Decisions: Advancing Risk Assessment at 109-10, 112-14, 134-39, 145-51, 177-82, 190-193, 196, 203-04, 207, 214-15, 220-23, 224, 226, 230-35 (2009), [http://www.nap.edu/catalog.php?record\\_id=12209](http://www.nap.edu/catalog.php?record_id=12209)
2. Cal. EPA, Office of Env'tl. Health Hazard Assessment (OEHHA), *Technical Support Document for Cancer Potency Factors: Methodologies for Derivation, Listing of Available Values, and Adjustments to Allow for Early Life Stage Exposures* 3, 50 (May 2009), [http://www.oehha.ca.gov/air/hot\\_spots/2009/TSDCancerPotency.pdf](http://www.oehha.ca.gov/air/hot_spots/2009/TSDCancerPotency.pdf), and [http://oehha.ca.gov/air/hot\\_spots/tsd052909.html](http://oehha.ca.gov/air/hot_spots/tsd052909.html); *id.* App. J: "In Utero and Early Life Susceptibility to Carcinogens: The Derivation of Age at Exposure Sensitivity Measures" – conducted by OEHHA's Reproductive and Cancer Hazard Assessment Branch," [http://oehha.ca.gov/air/hot\\_spots/2009/AppendixJEarly.pdf](http://oehha.ca.gov/air/hot_spots/2009/AppendixJEarly.pdf)
3. Cal. EPA, OEHHA, Table of child-chRDs (updated 06/22/09), [http://oehha.ca.gov/public\\_info/public/kids/chrdtable.html](http://oehha.ca.gov/public_info/public/kids/chrdtable.html)
4. Cal. EPA, Cumulative Impacts: Building A Scientific Foundation (2010), <http://oehha.ca.gov/ej/pdf/CIReport123110.pdf>

5. Cal. EPA, OEHHA Air Toxics Hot Spots Program Risk Assessment Guidelines, Technical Support Document for Exposure Assessment and Stochastic Analysis, Scientific Panel Review Draft at 1-6 to 1-7 (Feb. 2012) and Appendix E, at E-5, E-10 to E-12, [http://oehha.ca.gov/air/hot\\_spots/SRP/index.html](http://oehha.ca.gov/air/hot_spots/SRP/index.html).
6. Recent judicial settlements (e.g., with Marathon Petroleum Company, BP North America, and Shell include requirements designed to address potential oversteaming issues, limit the level of future flaring and upsets, and improve monitoring). <http://www.epa.gov/compliance/resources/cases/civil/caa/marathonrefining.html>; <http://www.epa.gov/compliance/resources/cases/civil/caa/bp-whiting.html>; <http://environmenttexas.org/news/txe/environmental-groups-and-shell-oil-company-propose-landmark-settlement-clean-air-act-0>
7. EPA Enforcement Report on Flaring: EPA, Ofc. of Enforcement, EPA Enforcement Targets Flaring Efficiency Violations, Vol. 10 Enforcement Alert No. 5 (Aug. 2012) <http://www.epa.gov/enforcement/air/documents/newsletters/flaringviolations.pdf>
8. South Coast Air Quality Management District, Rule 1118 – Control of Emissions from Refinery Flares (adopted Feb. 13, 1998, amended Nov. 4, 2005), <http://www.arb.ca.gov/DRDB/SC/CURHTML/R1118.PDF>
9. Presentation by Cary Secrest, EPA Office of Environment and Compliance Assurance & Dan Hoyt, EPA Region 6 at EPA Region 5 National Multimedia Inspection/Enforcement Workshop, Dallas, TX (May 15-17, 2012) : New Technology Applications – Air Monitoring Tools & Techniques Practical Applications for Savvy Air Investigators, <http://www.epa.gov/region6/6en/x/workshops/2012-may/>
10. City of Houston, Request for Correction of Information Under the Data Quality Act and EPA’s Information Guidelines, at 15-16 (July 9, 2008) *available at* <http://www.epa.gov/QUALITY/informationguidelines/documents/08003.pdf>
11. Texas Commission on Environmental Quality, Air Emission Event Report Database, <http://www11.tceq.texas.gov/oce/eer/index.cfm> (reporting data pursuant to 30 TAC 101.201(g) since 2003).
12. Chevron Work Plan for Richmond, CA Community Air Quality Monitoring Program