Children's Health Protection Advisory Committee

Chair:

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Administrator Gina McCarthy
United States Environmental Protection Agency
1200 Pennsylvania Ave, NW
Washington, DC 20460

RE: National Ambient Air Quality Standards for Lead

Dear Administrator McCarthy:

Thank you for requesting the advice of the Children's Health Protection Advisory Committee (CHPAC) regarding the National Ambient Air Quality Standard (NAAQS) for lead and the Office of Air Quality Planning and Standards' (OAQPS) 2014 Policy Assessment of this standard. In the assessment, "staff concludes that the currently available evidence and exposure/risk information do not call into question the adequacy of the current standard to provide the requisite protection for public welfare. Thus, staff concludes that consideration should be given to retaining the current standard, without revision, and this document does not identify potential alternative standards for consideration in this review."[1] Per our charge, we provided recommendations on the 2014 Policy Assessment. We also considered the January 5, 2015 proposed rule[2] which retains the current standard without revision, and all comments similarly apply to this proposed rule. We appreciate the opportunity to provide you with feedback on this proposed rule.

CHPAC commends the Agency for its timeliness and diligence in conducting the cyclic review. However, we respectfully disagree with EPA's conclusion because it is insufficient to protect children's health. CHPAC reaffirms its recommendation in 2008[3] that the standard should 1) be lowered to 0.02 µg/m^3; 2) based on an averaging period of one month; and 3) use a more robust lead particulate monitoring network that is better able to capture children's exposures to lead. While the reduction of the standard from 1.5 to 0.15 µg/m^3 in 2008 was an important step in protecting children's health, it was insufficient then and remains so now to prevent the lifetime impacts from neurodevelopmental damage and the consequences of low birth weight in children from this persistent and debilitating element for which there is no safe level of exposure.

[1] EPA, Policy Assessment for the Review of the Lead National Ambient Air Quality Standards, 2014, EPA-452/R-14-001.
[2] EPA, National Ambient Air Quality Standards for Lead; Proposed Rule, 2015 at http://www.gpo.gov/fdsys/pkg/FR-2015-01-05/pdf/2014-30681.pdf.
[3] CHPAC, Proposed Rulemaking for the National Ambient Air Quality Standards for Lead, 2008 at http://www2.epa.gov/sites/production/files/2014-05/documents/61608.pdf. See also CHPAC, OAQPS Final Staff Paper/Policy Assessment of Scientific and Technical Information and Advanced Notice of Proposed Rulemaking for the Lead NAAQS, 2008 at http://www2.epa.gov/sites/production/files/2014-05/documents/192008.pdf.

The 2014 Policy Assessment acknowledges these risks to children's health at the lower levels, but concluded that, as in 2008, the benefits were not enough to warrant a more protective standard.[1] We maintain that, given the disparate impact of lead on minority and low-income communities[4], these public health benefits are more than sufficient to justify a lower standard that more accurately takes into account the many transient sources of lead.

In the intervening years since 2008, the evidence of the harm to children from exposure to low levels of lead has become even more compelling. Recent studies on lead's effects on the brain and birth weight make this point clear:

- A 2013 pooled analysis of seven cohort studies used a benchmark dose approach to estimate the range of blood lead levels associated with a one-point IQ loss to be as low as 0.1 µg/dL.[5] On a population level, loss of one IQ point has significant societal, economic, and health implications.
- A 2014 review of several studies suggests the increased neurotoxicity of lead in the presence of other metals, such as manganese and cadmium. Real-world settings include exposures to multiple neurotoxic chemicals (e.g. metals) and the combined exposures can exacerbate the effects of lead on children's brains.[6]
- Two studies since 2013 strengthen the association of decreased birth weight and maternal blood lead levels (the first with median maternal and cord blood lead levels of 3.20 and 2.52 µg/dL, respectively, and the second with mean maternal blood leads of 0.98 + 0.55 µg/dL).[7] These findings are consistent with a much larger study conducted in upstate New York[8] which was discussed in the 2013 Integrated Science Assessment for Lead.

While these studies were published after the cutoff for EPA's current NAAQS review, CHPAC recommends that EPA should consider them in this review cycle. The studies on IQ indicate, contrary to the 2014 Policy Assessment[1], that lead affects children's IQs at exposure levels appreciably lower than recognized in the previous review and raises concerns with multiple chemical exposures that warrant an extra margin of safety. There is growing concern about a range of chemicals in the environment that can impact the neurodevelopment of children.[9] These exposures do not occur in isolation and their cumulative effects with lead are not well understood but should be considered. Like lead, many of these exposures have greater impact on vulnerable populations.

CHPAC is also concerned that the policy assessment did not adequately consider the impact of other significant sources of airborne lead in our communities, such as demolition activities and lead wheel weights. Regarding demolition activities, old buildings contain lead-based paint. If care is not

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[4] Bellinger DC, Leviton A, Waternaux C, Needleman H, Rabinowitz M. 1989. Low-level lead exposure, social class, and infant development. Neurotoxic Teratol 10:497-503.

[5] Budtz-Jorgensen E, Bellinger D, Lanphear B, and Grandjean P (2013). An International Pooled Analysis for Obtaining a Benchmark Dose for Environmental Lead Exposure in Children. Risk Analysis, Vol. 33, No. 3, 2013. DOI: 10.1111/j.1539-6924.2012.01882.x.

[6] Claus Henn B, Coull BA, Wright RO (2014). Chemical mixtures and children's health. Curr Opin Pediatr 26:223-229. DOI:10.1097/MOP.0000000000000067.

[7] Xie X, Ding G, Cui C, Chen L, Gao Y, Zhou Y, Shi R, Tian Y. (2013). The effects of low-level prenatal lead exposure on birth outcomes. Environ Pollution 175:30-34; Nishioka E, Yokoyama K, Matsukawa T, Vigeh M, Hirayama S, Ueno T, Miida T, Makino Sh, Takeda S. (2014). Evidence that birth weight is decreased by maternal lead levels below 5µg/dl in male newborns. Reproductive Toxicol 47:21-26.

[8] Zhu M, Fitzgerald EF, Gelberg KH, Lin S, Druschel CM. (2010). Maternal low-level lead exposure and fetal growth. Environ Health Perspect 118(10):1471-1475.

[9] Grandjean P, Landrigan PJ. Neurobehavioural effects of developmental toxicity. Lancet Neurol. 2014 Mar; 13(3):330-8. 2014 Feb 17. Review. PubMed PMID: 24556010.

taken to control the spread of lead particulate matter (and other heavy metals) from these activities, children and pregnant women in the area will be exposed.[10] Note that the agency's current Renovation, Repair and Painting Rule at 40 CFR Part 745, Subpart E does not cover demolition. It also does not cover renovation at public and commercial buildings[11] other than residences and child-occupied facilities.

With respect to lead wheel weights, EPA reports that 1.6 million pounds of lead in wheel weights fall off each year under normal driving conditions.[12] While we are unaware of studies that have assessed the isolated impacts of lead wheel weights on childhood blood lead levels, EPA has acknowledged that they are often ground by traffic into particulate matter. This lead dust is readily resuspended into the environment where children and pregnant women may be exposed. Additionally, it can contaminate surface and ground water.

The sampling program and monitoring network used to determine compliance with the current lead NAAQS is not designed to monitor these numerous and diverse activities because they are transient and the lead is unlikely to reach the few monitoring stations in place. Thus, EPA's conclusion in the 2014 Policy Assessment overlooks the contribution of these and other sources and, therefore, may underestimate the number of children exposed to lead from transient sources.

In summary, the current standard is not sufficient to protect children's health. Lead is a unique criteria pollutant of special concern. Airborne lead can: accumulate in the environment and in our bodies, result in harmful exposures through ingestion and inhalation, and can cause permanent harm. The scientific consensus, endorsed by EPA[13] and the Centers for Disease Control and Prevention[14], is that there is no safe level of exposure to lead.

CHPAC recommends the standard be: 1) lowered to 0.02 $\mu g/m^3$; 2) based on a shorter monitoring period of one month to capture transient sources; and 3) use a more robust network to adequately estimate children's lead exposures from transient and other sources.

We appreciated your participation in the April 2014 CHPAC meeting when you highlighted lead poisoning prevention as a priority. We feel that the 2015 proposed rule will not adequately protect children's health. Therefore, we urge you to adopt a more health-protective NAAQS for children, especially those from minority and economically disadvantaged communities who bear the brunt of harm from lead. Thank you for your consideration of our comments and recommendations.

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[10] Jacobs et al, Lead and Other Heavy Metals in Dust Fall from Single-Family Housing Demolition, Public Health Reports, 2013, 128:454. See also: Farfel MR, Orlova AO, Lees PSJ, Rhode C, Ashley PJ, Chisolm JJ Jr. A study of urban housing demolitions as sources of lead in ambient dust: demolition practices and exterior dust fall. Environ Health Perspect 2003; 111:1228-34; and Farfel MR, Orlova AO, Lees PS, Rohde C, Ashley PJ, Chisolm J Jr. A study of urban housing demolition as a source of lead in ambient dust on sidewalks, streets, and alleys. Environ Res 2005; 99:204-13.

[11] EPA is evaluating the potential risks of lead from renovation, repair and painting at these buildings. It is unlikely that any standards that result from the evaluation would include demolition.

[12] EPA, National Lead Free Wheel Weight Initiative, accessed November 7, 2014 at http://www.epa.gov/epawaste/hazard/wastemin/nlfwwi.htm. On August 26, 2009, EPA announced that it was initiating regulatory action to address lead hazards associated with the manufacture, processing, and distribution in commerce of lead wheel balancing weights. See http://www.epa.gov/oppt/chemtest/pubs/Document.pdf. Despite the announcement, EPA has taken no action and the item is no longer on its regulatory agenda.

[13] 40 CFR §141.51 establishes a Maximum Contaminant Level Goal for lead of zero.

[14] CDC, Blood Lead Levels in Children Aged 1-5 Years – United States, 1999-2010, Morbidity and Mortality Weekly Report, April 5, 2013, 62(13);245-248.

Sincerely,

Sheela Sathyanarayana, M.D., M.P.H.
Chair

cc: Janet McCabe, Acting Assistant Administrator, Office of Air and Radiation
Ruth Etzel, Director, Office of Children's Health Protection