

Preliminary Comments from Bruce Lanphear, M.D.

Re: EPA's Proposed Rule for the Revision of the National Ambient Air Quality Standard (NAAQS) for Lead (May 2008)

May 16, 2008

Rogene:

The initial proposal for the NAAQS lead standard appears to be consistent with the CASAC and EPA Staff recommendations. Nevertheless, given the Administrator's recent decision to use the "white glove" technique in the LRRP Rule and the comment below, I think it is important to reiterate our main recommendations, specifically about the selection of the most relevant slope factor to be used for setting the standard.

The Administrator suggested that he would select a standard in the range of 0.1-0.3 $\mu\text{g}/\text{m}^3$, but the proposed standard was conditional on which parameters (steep or shallow slope, air/blood ratio) were judged to be most appropriate. Because the selection of the slope and the air/blood lead ratio are critical factors to ensure there is an adequate margin of safety, I think we should restate our recommendations in a letter.

As you noted, a comparison is made between studies with steeper slopes and lower blood lead concentrations and the 8 studies with higher blood lead and shallower slopes (Table 1, page 80). The text correctly states that CASAC recommended using the steeper slopes because the blood lead levels better reflects those of children in the US. Based on this we recommended air levels of $<0.2 \mu\text{g}/\text{m}^3$. A comparison is also made between the use of the steep slope and the shallow slope; if you use the shallower slopes you can go as high as $0.5 \mu\text{g}/\text{m}^3$ and still get an acceptable IQ loss (1-2 points) (see Table 7, page 223).

As described in our letter to Stephen Johnson, dated September 27th, 2007, the Panel recommended using the two-piece linear function for relating IQ alterations to current blood lead levels with a slope change or "hinge" point at $7.5 \mu\text{g}/\text{dL}$. The data indicate that the linear slope below $7.5 \mu\text{g}/\text{dL}$ is about minus three (-3) IQ decrements per $1 \mu\text{g}/\text{dL}$ blood lead (Lanphear *et al.*, EHP 2005). The vast majority of children in the U.S. have maximal baseline blood lead levels $<7.5 \mu\text{g}/\text{dL}$ (MMWR 2005). On a population level, the mean increase in blood lead concentration from airborne lead would generally be less than $7.5 \mu\text{g}/\text{dL}$. Use of the linear slope below $7.5 \mu\text{g}/\text{dL}$ should also account for sensitive subpopulations of children and provide a margin of safety.

Best regards,

Bruce