



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF AIR QUALITY PLANNING AND STANDARDS
HEALTH AND ENVIRONMENTAL IMPACTS DIVISION
RESEARCH TRIANGLE PARK, NC 27711

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TO: Lead NAAQS docket
FROM: Zachary Pekar (EPA OAQPS)
SUBJECT: Correction to Errors Identified in Lanphear et al. 2005 Pooled Analysis Study and Implications for Pilot Risk Assessment

EPA has identified an error in the study titled "Low-Level Environmental Lead Exposure and Children's Intellectual Function: An International Pooled Analysis", (EHP, vol 113, No. 7, July, 2005). The error involves blood lead concentration ranges presented in Table 4 of the article. We have since received a corrected copy of Table 4 from Dr. Lanphear (presented below).

Values from the original Table 4 of the Lanphear et al. 2005 study were used in the pilot risk assessment. Specifically, two of the erroneous values in Table 4 (5th percentile concurrent and lifetime average blood Pb values) were used in deriving the cutpoints used in the pilot analysis. Consequently, these errors in Table 4 have an impact on our reported risk estimates, including those based on the concurrent and lifetime average blood Pb metrics. Specific results affected in the First Draft Staff Paper (December 2006) include those in Tables 4-13 through 4-17 (risk results) and Table 4-19 (sensitivity analysis results). Specific results tables affected in the supporting draft technical report ("Lead Human Exposure and Health Risk Assessments and Ecological Risk Assessment for Selected Areas", December 2006) include Exhibits 6-1, 6-2, 6-4, 6-5 and 6-7 (risk results) and Exhibit 6-24 (sensitivity analysis results). In addition, Exhibits J-1 through J-5, the detailed risk results tables in the appendix to the risk assessment report, are also impacted.

The degree to which errors in Table 4 of the Lanphear et al. 2005 study impact pilot risk results is not clear without rerunning the risk analysis for both the concurrent and lifetime average blood Pb metrics. Assuming that the Table 4 values would play a role in the pending full-scale risk assessment, the corrected values would be used and reflected in those results.

Corrected Table 4 from Lanphear et al., 2005. Corrected values are highlighted.

(Note, corrected table obtained from Dr. Bruce Lanphear in a January 10th, 2007 e-mail)

Table 4: Mean Unadjusted and Adjusted Changes in Full Scale IQ Score associated with an Increase in Blood Lead Concentration (log scale), from the 5th to 95th percentile of the concurrent blood lead level at the time of IQ testing.

Blood Lead Variable	Unadjusted Estimates		Adjusted Estimates		Blood Lead Concentration	IQ Deficits
	β (95% CI)	β (95% CI)	β (95% CI)	β (95% CI)	5 th to 95 th %ile	5 th to 95 th %ile
					($\mu\text{g/dL}$)	(95% CI)
Early Childhood	-3.57 (-4.86, -2.28)	-2.04 (-3.27, -0.81)	-2.04 (-3.27, -0.81)	-2.04 (-3.27, -0.81)	4.0 - 34.5	4.4 (1.7, 7.0)
Peak	-4.85 (-5.16, -3.54)	-2.85 (-4.10, -1.60)	-2.85 (-4.10, -1.60)	-2.85 (-4.10, -1.60)	6.2 - 47.0	6.1 (3.4, 8.8)
Lifetime Average	-5.36 (-6.69, -4.03)	-3.04 (-4.33, -1.75)	-3.04 (-4.33, -1.75)	-3.04 (-4.33, -1.75)	4.1 - 34.8	6.2 (3.6, 8.8)
Concurrent	-4.66 (-5.72, -3.60)	-2.70 (-3.74, -1.66)	-2.70 (-3.74, -1.66)	-2.70 (-3.74, -1.66)	2.5 - 33.2	7.1 (4.4, 9.8)