Yearly measurements of blood lead in Swedish children since 1978: an update showing that the falling trend continues

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Letter to the Editor:

Yearly since 1978 we have measured blood lead concentrations (B-Pb) in children living in the municipalities of Landskrona and Trelleborg, in southern Sweden. A substantial decrease of B-Pb was found for the period 1978-2001, as an effect of gradual reduction of petrol lead.[1,2] We here present results up to 2006. Altogether, 3646 children, aged 7-12 years, have been studied (different children across all years).

Figure 1 shows the substantial decrease of B-Pb over the years. A lowering the community intervention from 100 to 50 µg/l,[3] or even down to 20 µg/l,[4] is discussed in the USA. In the period 2002-2006, 0.6% and 29.9% of our investigated children had B-Pb above 50 and 20 µg/l, respectively.

Analysis of variance analyses focusing on the petrol-lead-free period revealed consistently and significantly ($p<0.05$) decreasing B-Pb time trends during the period 2000-2006 in Landskrona and during the period 2001-2005 in Trelleborg.

In each of the three periods 1978-94, 1995-99, and 2000-06, the proportional decrease of the average B-Pb per year seemed to be fairly constant. Linear regression analyses of sample year on *ln*(B-Pb) yielded B-Pb reduction estimates of 5%/year in 1978-94, 0%/year in 1995-99, and 7%/year in 2000-2006. Adjustments for other influential factors[1, 2] gave similar results.

In Sweden, petrol lead was banned 12 years ago; nevertheless, B-Pb levels in Swedish children continue to fall markedly. There has not been any significant lead exposure from other important sources, such as contaminated drinking water and lead-based paint. Petrol lead seems to yield a long-lasting environmental exposure effect. Lead in vegetables is mainly due to direct deposition on the plant; however, lead deposited on the ground can be recycled into the air. The

recent B-Pb decrease can also have been influenced by a weakened global exposure from surrounding countries, where petrol lead has been phased out later.[5]

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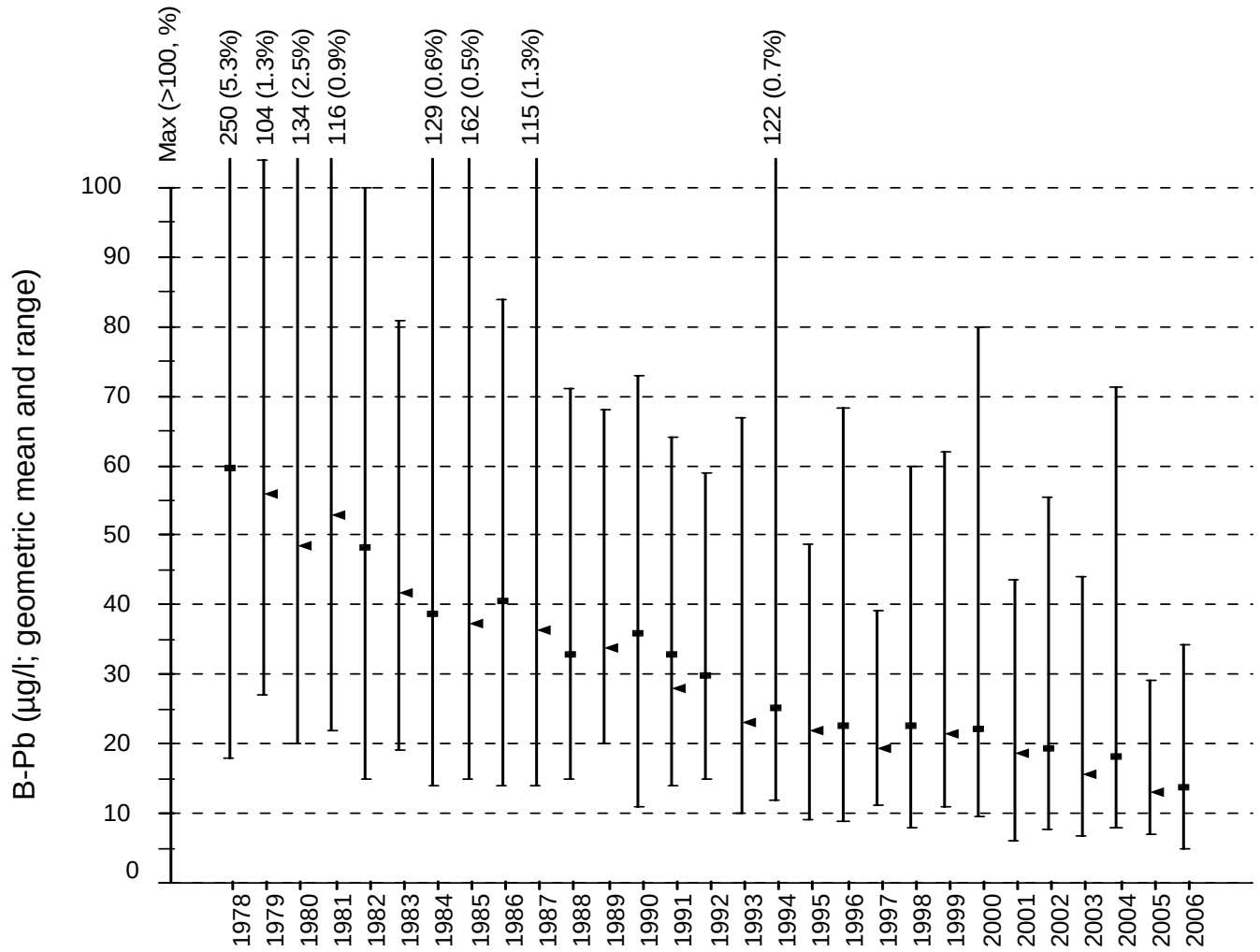
FIGURE LEGEND

Blood lead concentrations (B-Pb) found in Swedish children from the municipalities Landskrona (geometric means represented by squares) and Trelleborg (triangles) during the period 1978-2006. Notice that, in 1991, children from both municipalities were measured. For the sample years with maximum B-Pb above 100 µg/l, the range of B-Pb is truncated; we present the maximum B-Pb value and the proportion of measured children with B-Pb above 100 µg/l.


B-Pb (µg/l; geometric mean and range)
Max (>100, %)
250 (5.3%)
104 (1.3%)
134 (2.5%)
116 (0.9%)
129 (0.6%)
162 (0.5%)
115 (1.3%)
122 (0.7%)
100
90
80
70
60
50
40
30
20
10
0
1978
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