

Lead 10 to 2

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National campaign to reduce the CDC action level for childhood blood lead levels from 10 to 2 µg/dl.

The issue:

There is sufficient evidence that the lead levels below 10 µg/dL adversely effect the neurodevelopment of children.

In 1991 CDC considers children to have an elevated level of lead if the amount in the blood is 10 µg/dL. According to the CDC in 1999 and 2000, 2.2% of children in the 1-5 year age group had lead levels that were above 10 µg/dl. There are approximately 20 million children under age 5, which means that about 440,000 children in the US have blood lead levels above 10 µg/dL. (The CDC states that – “Approximately 434,000 U.S. children aged 1-5 years have blood lead levels greater than the CDC recommended level of 10 micrograms of lead per deciliter of blood.” (from - <http://www.cdc.gov/nceh/lead/faq/about.htm>). There is not adequate national data on children with blood lead levels below 10 µg/dL.

The rational 2 µg/dL action level:

There are three primary reasons for reducing the CDC action from 10 µg/dL to 2 µg/dL: 1) there is sufficient scientific evidence that children suffer from cognitive deficits when exposed to lead that results in blood lead levels less that 10 µg/dL; 2) we know how to reduce lead exposure and should be doing it; and 3) the CDC level of 10 ug/dl give health care provides (physicians and others) the ability to argue against taking appropriate measure to reduce childhood lead exposure (for example, lead in the water of some Seattle schools). Additional supportive points are listed below:

- Children have a right to develop in an environment that allows them to reach their full potential
- We/adults have an ethical responsibility to provide a healthy and safe environment for our children
- We should determine why any child has an elevated blood lead and take appropriate measures to reduce or eliminate the exposure
- Reducing exposure helps a child’s siblings and future children living in this location
- Better reflects current results from human research
- Consistent with animal research
- Opportunity to explain to government official the importance of protecting children from lead exposure
- Opportunity to educate families health effects of lead
- Provide more accurate recommendation to pediatricians and other health care professionals
- Raise profile of child health related group

- Lead exposure in children cost the US \$43.4 billion per year
- Lead exposure is a problem for children around the world. The US CDC should be a leader in setting the highest standards.

Action recommendations:

The current CDC action recommendations are included as Appendix A.

Recommended revisions to the CDC actions are detailed below:

Time Frames for Environmental Investigation and Other Case Management Activities According to a Child’s Blood Lead Level

Blood lead level (µg/dL)	Actions	Time frame for beginning intervention
<2	No Action required	
2-5	Provide caregiver lead education. Provide follow-up testing. Refer the child for social services if necessary.	Within 30 days
5-10	Above actions, plus: If BLLs persist (i.e., 2 venous BLLs in this range at least 3 months apart) or increase, proceed according to actions for BLLs 10-20.	Within 2 weeks
10-20	Above actions, plus: Provide coordination of care (case management). Provide clinical evaluation and care. Provide environmental investigation and control current lead hazards.	Within 1 week
20-70	Above actions.	Within 24 hours
70 or higher	Above actions, plus hospitalize child for chelation therapy immediately.	Within 24 hours

The opposition:

The CDC states provides the following rational for not changing from 10 to 5 (<http://www.cdc.gov/nceh/lead/spotlights/changeBLL.htm>). Counter points follow each CDC asseration.

“Recent studies suggest that adverse health effects exist in children at blood lead levels less than 10 µg/dL. In the past the Centers for Disease Control and Prevention (CDC) has lowered the level considered elevated in response to similar reports. However, at this time the reasons not to lower the level of concern are as follows:

- No effective clinical interventions are known to lower the blood lead levels for children with levels less than 10 µg/dL or to reduce the risk for adverse developmental effects.
 - a. Reducing lead exposure reduce blood lead levels. We know how to safely abate lead in or around homes.

- b. Families can be advised to do simple procedure around the home to reduce childhood lead exposure, for example, remove shoes, dust and vacuum frequently, remove carpets, wash hands.
 - c. This is a sibling and multigenerational issue – protect the current child and others are also protected.
- Children cannot be accurately classified as having blood lead levels above or below a value less than 10 µg/dL because of the inaccuracy inherent in laboratory testing.
 - a. There are adequate analytical procedures to for less than 2 µg/dL
- Finally, there is no evidence of a threshold below which adverse effects are not experienced. Thus, any decision to establish a new level of concern would be arbitrary and provide uncertain benefits.
 - a. This is correct the conclusion does not follow. The conclusion should be that any detectible level of lead is unacceptable.
 - b. The current level gives false and inaccurate guidance to health care professionals.
 - c. If lead caused cancer we would not be having this discussion.

Campaign

- Circulate amongst likely supporter to assess interest and potential endorsements
 - a. Bernie Weiss, Bruce Lanphear, Herb Needleman, Bellinger, Canfield, etc ...
 - b. LDDI, ICEH, Public health associations, Alliance for Healthy Homes, Children's Environmental Health Network and
- Solicited endorsements (individuals and organizations)
- Enlist support and endorsement from congressional members
- Petition the CDC to change the blood lead level from 10 to 2
- Raise issues at scientific meetings

Notes – references.

The CDC states that “For children 5 years old and younger, lead levels of 10 micrograms or more in a deciliter of blood can damage children's ability to learn.”, while failing to adequately assess 1-2 year of children that are likely to have the highest blood lead levels.

“During 1991 through 1994, 4.4% of children 1-5 years old had more than 10 micrograms of lead per deciliter of blood. In contrast, for 1999 and 2000, 2.2% of children in this age group had lead levels that were above 10 micrograms per deciliter.” (CDC, lead fact sheet, http://www.cdc.gov/exposurereport/2nd/lead_factsheet.htm)

“ATSDR has not derived MRLs (minimum risk level) for lead. The EPA has not developed a reference concentration (Rfc) for lead. EPA has also decided that it would be inappropriate to develop a reference dose (RfD) for inorganic lead (and lead compounds) because some of the health effects associated with exposure to lead occur at blood levels as low as to be essential without a threshold (IRIS 1999).” (ATSDR Toxicology Profile for Lead - <http://www.atsdr.cdc.gov/toxprofiles/tp13.html>)

(Bellinger 2004; Bellinger and Needleman 2003; Canfield *et al.* 2003; Gavaghan 2002; Lanphear *et al.* 2003; Rogan and Ware 2003) (Landrigan 2002; Landrigan *et al.* 2002) (Lanphear *et al.* 2000a; Lanphear *et al.* 2000b; Lanphear *et al.* 2002)

Recent studies and reviews supporting a reduction

Bellinger, D. C. (2004). Lead. *Pediatrics* **113**, 1016-22.

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Canfield, R. L., Henderson, C. R., Jr., Cory-Slechta, D. A., Cox, C., Jusko, T. A., and Lanphear, B. P. (2003). Intellectual impairment in children with blood lead concentrations below 10 microg per deciliter. *N Engl J Med* **348**, 1517-26.

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Landrigan, P. J. (2002). The worldwide problem of lead in petrol. *Bull World Health Organ* **80**, 768.

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Lanphear, B. P., Dietrich, K., Auinger, P., and Cox, C. (2000a). Cognitive deficits associated with blood lead concentrations <10 microg/dL in US children and adolescents. *Public Health Rep* **115**, 521-9.

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Lanphear, B. P., Eberly, S., and Howard, C. R. (2000b). Long-term effect of dust control on blood lead concentrations. *Pediatrics* **106**, E48.

Lanphear, B. P., Hornung, R., Ho, M., Howard, C. R., Eberly, S., Knauf, K., and Eberle, S. (2002). Environmental lead exposure during early childhood. *J Pediatr* **140**, 40-7.

Rogan, W. J., and Ware, J. H. (2003). Intellectual impairment in children with blood lead concentrations below 10 microg per deciliter. *J Pediatr* **143**, 687-8.

Appendix A

Current CDC management recommendations

Table 2.2. Time Frames for Environmental Investigation and Other Case Management Activities According to a Child's Blood Lead Level^a

Blood lead level $\mu\text{g}/\text{dL}$ ^b	Actions	Time frame for beginning intervention
10-14	Provide caregiver lead education. Provide follow-up testing. Refer the child for social services if necessary.	Within 30 days
15-19	Above actions, plus: If BLLs persist (i.e., 2 venous BLLs in this range at least 3 months apart) or increase, proceed according to actions for BLLs 20-44.	Within 2 weeks
20-44	Above actions, plus: Provide coordination of care (case management). Provide clinical evaluation and care. ^c Provide environmental investigation and control current lead hazards.	Within 1 week
45-70	Above actions.	Within 48 hours
70 or higher	Above actions, plus hospitalize child for chelation therapy immediately.	Within 24 hours

For additional information see:

Managing Elevated Blood Lead Levels Among Young Children: Recommendations from the Advisory Committee on Childhood Lead Poisoning Prevention

Centers for Disease Control and Prevention (CDC) - March 2002

Online: http://www.cdc.gov/nceh/lead/CaseManagement/caseManage_main.htm