
LEAD POISONING PREVENTION & TREATMENT UPDATES

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Welcome

The newsletter will provide you with information from the current research literature and updates on available resources related to lead poisoning prevention. With your help we will strive to reach the goal of eliminating lead as an environmental hazard by 2010. This quarterly newsletter is a collaborative effort between the Virginia Department of Health's Lead-Safe Virginia Program and the University of Virginia, Division of Medical Toxicology.

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PHONE NUMBERS TO KNOW

- **Lead-Safe Virginia, Virginia Department of Health**
(877) 668-7987
- **Healthcare Lead Emergency Hotline**
(866) SOS-LEAD

Lead Poisoning and Pregnancy

Despite a steady decline in average blood lead levels in the U.S. population, women of childbearing age may still have blood levels exceeding 10 µg/dL. A woman of childbearing age with an elevated blood lead level is at risk of transmitting that lead to her fetus.

Strong correlations between maternal and umbilical cord blood lead levels demonstrate that lead is transferred from the woman to the fetus throughout pregnancy. Fetal lead uptake is constant and cumulative until birth. High lead levels are known to cause neurobehavioral effects in infants and children, and the cumulative effects of low levels of lead exposure in utero and after birth can have detrimental effects. Contrary to popular belief, ingestion of lead laden paint chips is not the only method of intoxication. Numerous other sources of exposure can occur, such as through their own or spouses occupation (i.e. battery reclamation, smelting, cleaning homes with lead dust), hobby (i.e. stained glass solder, lead musket balls), and environment (i.e. dust formation during home renovation).

Management of prenatal lead exposure focuses on the recognition of exposure and the removal of the lead source. If a pregnant woman is found to have low-dose exposure, the prognosis for the infant is good if the infant can be protected from further exposure. Rarely is chelation therapy necessary for maternal indications. Poor nutrition resulting in diets deficient in calcium, iron, and zinc enhance maternal lead absorption. Improved diet and vitamin supplementation may lower lead levels. Recognition and removal of lead sources during the prenatal period can prevent maternal and neonatal morbidity. If a pregnant or childbearing age woman is determined to be at risk for lead toxicity (see previous newsletter for potential sources of lead), the healthcare provider should consider obtaining a screening lead level.

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CALENDAR OF EVENTS



Practical Strategies in the Clinical Diagnosis and Management of Childhood Lead Poisoning: A Case-Based Approach.

Friday, November 4, 2005
Union Train Station, Petersburg, VA.

This one-day conference targets primary care physicians, nurses, and public health officials in the Crater Health District. **Earn up to 5 free category 1 CME credits.** *Course Director:* Dr. Christopher P. Holstege, M.D., Director, Division of Medical Toxicology and Associate Professor of Emergency Medicine and Pediatrics at the University of Virginia. **Attendance is free**, thanks to a grant from the Cameron Foundation. To register, contact the Office of Continuing Medical Education at the University of Virginia School of Medicine: (434) 924-1657 or ABL3X@virginia.edu.

Lead Safe Worker Training **Richmond, November 15, 2005**

In conjunction with the National Paint and Coatings Association (NPCA), Atrium Environmental Health & Safety Services is offering a one day Lead-Based Paint Training Program for Renovators and Remodelers. This no-cost training program, which meets the HUD-EPA curriculum, is sponsored by the NPCA, and is the result of a cooperative agreement between the NPCA and the individual states.

This course will be directed towards people who work in state and municipal agencies, community and social service organizations, home (or code) inspection companies and contractors. The information presented in this training will be beneficial to the remodeling and renovation industry, including sales, marketing and administrative personnel as well as workers and supervisory staff. It is also designed to be very informative for general rehabilitation workers such as drywallers, painters, carpenters and the general homeowner handyman.

There is **no cost** to attendees for this training program, and course materials will be supplied. Anyone who works in, or is involved in the areas of concern, should attend this training course.

Registration can be accomplished directly on this Website, or via a toll free number, 1-866-689-9484.
[Lead-Safe Training - http://www.lead safetraining.org](http://www.lead safetraining.org)

The Medical Literature on Lead Poisoning and Pregnancy

Yang Y. et al. Lead exposure through gestation-only caused long-term learning/memory deficits in young adult offspring. Exp Neurol. 2003 Nov; 184(1): 489-95.

Numerous observations in clinical and preclinical studies indicate that the developing brain is particularly sensitive to lead's pernicious effects. This study investigated the potential effects of three levels of lead exposure at the gestational period on the spatial memory of young adult offspring by Morris water maze spatial learning and fixed location/visible platform tasks. These results suggest that exposure to lead during the gestational period is sufficient to cause long-term learning/memory deficits in young adult offspring.

Lidsky TI, Schneider JS. Lead neurotoxicity in children: basic mechanisms and clinical correlates. Brain. 2003 Jan; 126(Pt 1): 5-19.

This review discusses the current state of knowledge concerning the effects of lead on the cognitive development of children. Addressed are the reasons for the child's exquisite sensitivity, the behavioral effects of lead, how these effects are best measured, and the long-term outlook for the poisoned child. Of particular importance are the accumulating data suggesting that there are toxicological effects with behavioral concomitants at exceedingly low levels of exposure. In addition, there is also evidence that certain genetic and environmental factors can increase the detrimental effects of lead on neural development, thereby rendering certain children more vulnerable to lead neurotoxicity.

Klitzman S, et. al. Lead poisoning among pregnant women in New York City: risk factors and screening practices. J Urban Health. 2002 Jun; 79(2): 225-37.

This article presents information on pregnant women with incident blood lead levels (BLLs) of 20 micrograms per deciliter ($\mu\text{g}/\text{dL}$) or greater as reported to the New York City Department of Health between September 1996 and June 1999 ($n = 33$). The BLLs were inversely associated with maternal age and length of time in the United States and directly associated with gestational age and pica behavior.

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RESOURCES

Download copies of the *Guidelines for Childhood Lead Poisoning Screening in Virginia*:
http://www.vahealth.org/leadsafe/Rev_Screening_04.pdf

CDC Spotlights on Lead
<http://www.cdc.gov/nceh/lead/>

U. S. Consumer Product Safety Commission
www.cpsc.gov

EPA Lead Page
www.epa.gov/opptintr/lead/index.html

HUD Office of Lead Hazard Control
www.hud.gov/offices/lead

Children's Environmental Health
<http://www.niehs.nih.gov/oc/factsheets/ceh/home.htm>

National Lead Information Center
<http://www.nsc.org/ehc/lead.htm>

National Center for Lead Safe Housing
<http://www.cehn.org/cehn/resourceguide/nclsh.html>

This data suggests that universal screening may increase case finding among high-risk, immigrant populations.

Johnson MA. High calcium intake blunts pregnancy-induced increases in maternal blood lead. *Nutr Rev.* 2001 May; 59(5): 152-6.

In pregnant women with low exposure to lead, high intakes of calcium (>2,000 mg/day) decreased the serum concentration of lead, which could potentially minimize fetal exposure to lead. The mechanism by which high calcium intake blunts pregnancy-induced increases in maternal blood lead may involve decreased lead absorption in the intestine or decreased maternal bone resorption with subsequent release of lead. Either mechanism could decrease maternal blood concentrations of lead and potentially limit fetal accumulation of lead.

FEEDBACK

If you have any topics pertaining to childhood lead poisoning you would like to see covered in an upcoming newsletter, or if you have any suggestions on how to improve the newsletter, please contact us at ch2xf@virginia.edu.