

Lead Poisoning: A Health Hazard Among Children



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Lead, a by-product of silver processing was first founded around 4000 B.C. and the complications of lead poisoning were first acknowledged in the early 20th century in the United States. However, despite the awareness, lead was incorporated as an ingredient of gasoline in the 1920s, and continued to be a component of paint up to the 1970s. Once lead was removed from paint and gasoline, the average blood lead level (BLL) in kids declined from 16 mcg/dL to around 3 mcg/dL with BLL ≥ 5 mcg/dL currently determine by the Centers for Disease Control (CDC) the toxic lead level. Not to forget, that in many parts of the developing world, lead continues to be an ingredient of gasoline, paint, cosmetics, crayons, cooking vessels, medications, and many more acting as potential sources of lead exposure and toxicity (1).

This calls out for public health intervention in an effort to prevent, eliminate and control sources of lead in the environment.

Lead is an element that cannot be degraded, hence residual lead from gasoline, paint and other products remains in the environment. The typical routes of exposure to environmental lead are through inhalation or ingestion and children below six years of age (particularly 1-3 years old) are more susceptible than the adults; this discrimination in susceptibility is due to the incomplete blood-brain barrier that permits the access of lead into the nervous system and because they have a greater frequency of being iron deficient, which is related to lead poisoning by increasing the absorption of lead from the gastrointestinal tract. Also, they are at a bigger risk of exposure to lead dust because of hand-to-mouth behavior and crawling (2).

The symptoms of Lead poisoning vary depending on the level of exposure and on the age of the individual; early symptoms can vary wildly from abdominal pain, anorexia, and irritability to insomnia, headache and fatigue. Over time lead has a toxic effect on various organs of the human body:

Neurologic: the effect of lead poisoning ranges from behavioral problems (e.g. emotional instability, hyperactivity, or attention deficit), general developmental delay, or loss of milestones, particularly in language, to encephalopathy. What's threatening is that some children with neurobehavioral effects appear to have persistence of such effects into adulthood despite a decline in their BLL. Lead toxicity can also lead to hearing impairment, and peripheral neuropathy. Acute encephalopathy ensues at BLLs greater than 100-150 mcg/dL and is indicated by intractable vomiting, altered mental status, ataxia, seizures, or in severe cases lead to coma (3).

Hematologic: lead poisoning in children can cause anemia since lead decreases hemoglobin synthesis and can cause lysis of R.B.Cs (4).

Renal: prolonged high lead exposure can lead to multiple lead related nephrotoxicity's including chronic interstitial nephritis.

Gastrointestinal: even very low lead levels can lead to abdominal cramps, vomiting, and constipation.

Endocrine: vitamin D metabolism is reduced at BLLs of 30 mcg/dL (5). That effect of lead on Vitamin D can be behind the effect of lead on teeth and bone development in children.

A cross-sectional study was carried out in Lebanon to study the prevalence of lead poisoning among children and the risk factors. Published in 2001, this study tested BLL on children attending private and outpatient clinics at the American University of Beirut Medical Center and showed that elevated BLL in children was associated with paternal manual jobs, residence being located in high traffic areas, summer season (higher outdoor activities), using hot tap water for cooking, exposure to kohl, and living in older buildings (6). This study also mentioned the need for BLL screening among high-risk children to avoid the harmful effects of lead poisoning since it could be easily preventable.

Even though this Lebanese study dates before 2010, the fact that lead poisoning is still a major health problem that might have been overlooked, its detrimental and well preventable complications necessitate public health awareness and intervention.

Parent education and awareness about the sources of lead and the serious effects of lead on the child's wellbeing and on how to minimize lead exposure plays a fundamental role in minimizing lead toxicity in children; parents should be aware that old houses contain old paint that has lead and is one of the major sources of lead toxicity. Once aware, parents should perform proper abatement, which is the specialized way of cleaning that holds paint stabilization, exclusion and substitution of some building components. When it comes to lead contaminated pipes it is recommended to use cold instead of hot water when used for cooking since hot water is more able to seep lead from the pipes. Furthermore, the water must be run for couple of minutes before it is collected which helps in getting rid of the water that contains high lead content due to standing in the pipe. On another note, when it comes to food preparation, parents should provide adequate diet to their children that is sufficient in iron, zinc, calcium and vitamin C since a deficiency in any, can cause higher absorption and retention of lead in the body. Also, parents should be aware regarding food storage in lead crystal glassware, imported or old pottery. Furthermore, avoid eating vegetables grown in soil that is high in lead or sprayed with lead containing insecticides or even allowing their children to play around such areas. Parents should also be advised not to purchase

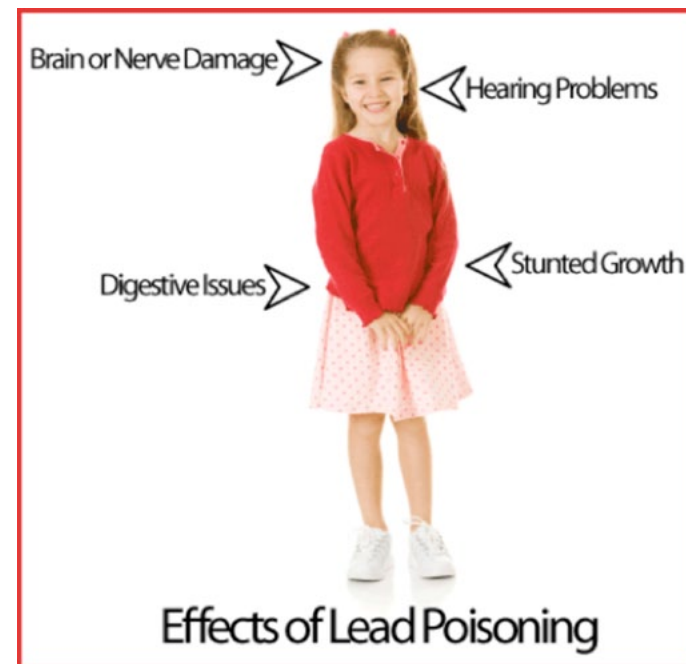
nonbrand toys/old toys and avoid giving their children custom jewelry due to the presence of lead in these items.

Primary intervention by the ministry of public health should first and foremost aim on the removal of lead sources from the child's environment including: lead painted surfaces, lead soldered pipes, and lead contaminated soil. Second, create screening programs to identify children at risk namely children from poor families, children living in old houses, and children below the age of 6 by measuring their BLL.

These combined efforts can help in minimizing lead exposure and create a healthier and safer, lead-free environment for our children to grow with a healthy mind and body.



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Infos

Espérance de Vie en Baisse?

La dernière étude démographique de l'INSEE montre que l'espérance de vie des Français a diminué en 2015, pour la première fois depuis 1969.

Il est question d'une perte de 3 mois pour les hommes et 4 mois pour les femmes.

Si on compte en 2015, 41 000 décès de plus qu'en 2014, il n'y a pour autant pas de réelle inquiétude. En effet, on observe un pic de décès chez les personnes les plus âgées, dont les baby-boomers qui représentent tout de même 1/6 de la population. Ces populations plus fragiles ont été touchées par l'épidémie de grippe du début d'année et par la météo (canicule et vague de froid). De plus, les

naissances ont légèrement baissé en 2015.

L'évolution de l'espérance de vie est un bon indicateur de l'état d'une société, mais l'espérance de vie en bonne santé est également à prendre en compte sérieusement. Cet indice est en légère baisse, probablement à cause de nos habitudes de vie. En effet, des maladies telles que le diabète et les maladies cardiovasculaires ont beaucoup progressé.

Notons toutefois que sur les quarante dernières années, les hommes ont gagné 10 ans d'espérance de vie et les femmes un peu plus de 8 ans.



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