



---

# **LEAD** *Action* NEWS

---

**LEAD Action News vol. 18 no. 3, March 2018 ISSN 1324-6012**  
Newsletter of The LEAD (Lead Education and Abatement Design) Group Inc.  
PO Box 161 Summer Hill  
NSW 2130 Australia

**Ph: (02) 9716 0014**  
**Contact Us:** [www.lead safeworld.com/about-us/contact-us/](http://www.lead safeworld.com/about-us/contact-us/)  
**Web:** [www.lead.org.au/](http://www.lead.org.au/) & [www.lead safeworld.com](http://www.lead safeworld.com)

Editorial & Graphics team: Emily Choong, Elizabeth O'Brien & Fergus Thomson  
Web developers: Helen Huiming Guo & Shivani Patel

---

## *Article 10*

### *Is lead harming my unborn baby? Lead Week of Action Event 2017, Northern Ireland, United Kingdom*

---

**LEAD Action News**  
**Volume 18 Number 3**

**Celebrating 5 Years of the  
WHO Lead Week of Action**



## Is lead harming my unborn baby? Lead Week of Action Event 2017, Northern Ireland, United Kingdom



International Lead Poisoning Prevention Week of Action Event held at Ulster University on the 8<sup>th</sup> November, 2017 at 1800-1930 local time

*Event Report Written by Dr. Priyanka Chaurasia, Ulster University*

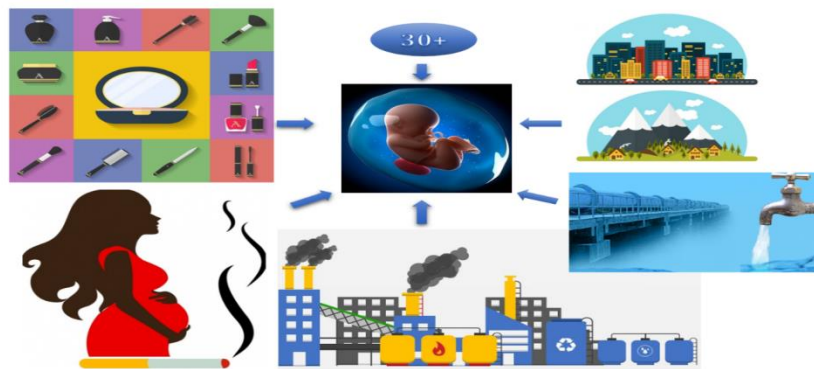
Creating awareness about lead toxicity in public is important. The event's aim was to generate social awareness of lead toxication and emphasise the severe impacts it can have, especially for pregnant woman. Lead toxication has become a rising concern due to its effect on the environment and human health. Sources of lead include ammunition, ceramics, solders, cosmetics, hair dye, airplanes, farm equipment, shielding for x-ray machines, leaded gasoline, batteries, and water carried out in lead pipes. During the event, a possible new app was explored that could predict the toxicity levels of lead on a developing foetus. This would be highly beneficial as biological monitoring techniques are costly and time consuming.

Numerous researches have recognised the importance of childhood lead poisoning and the need of intervention to prevent it. The neuro-behavioural toxicity produced by lead places huge economic burdens on families and societies all together. The concept of urban slums in urban cities is a common issue. Lead-based poisoning is more common in poorer communities in developing countries. Poorer sections of the society within an urban setup are more vulnerable to lead poisoning. Most of the lead comes from contaminated dust and drinking water. Water acquires lead as it travels through the widely used lead pipes to



homes and businesses. In addition to this, corrosive water can increase the amount of lead that is getting into the drinking water. Smoking is another common problem. Lead exposure through cigarettes has a negative impact on pregnant women health and influence the development and growth of the foetus. Furthermore, lead based industries polluting air is another major cause for lead poisoning. Creating awareness about the issue is the first step towards handling lead toxicity.

### Is lead killing my baby?





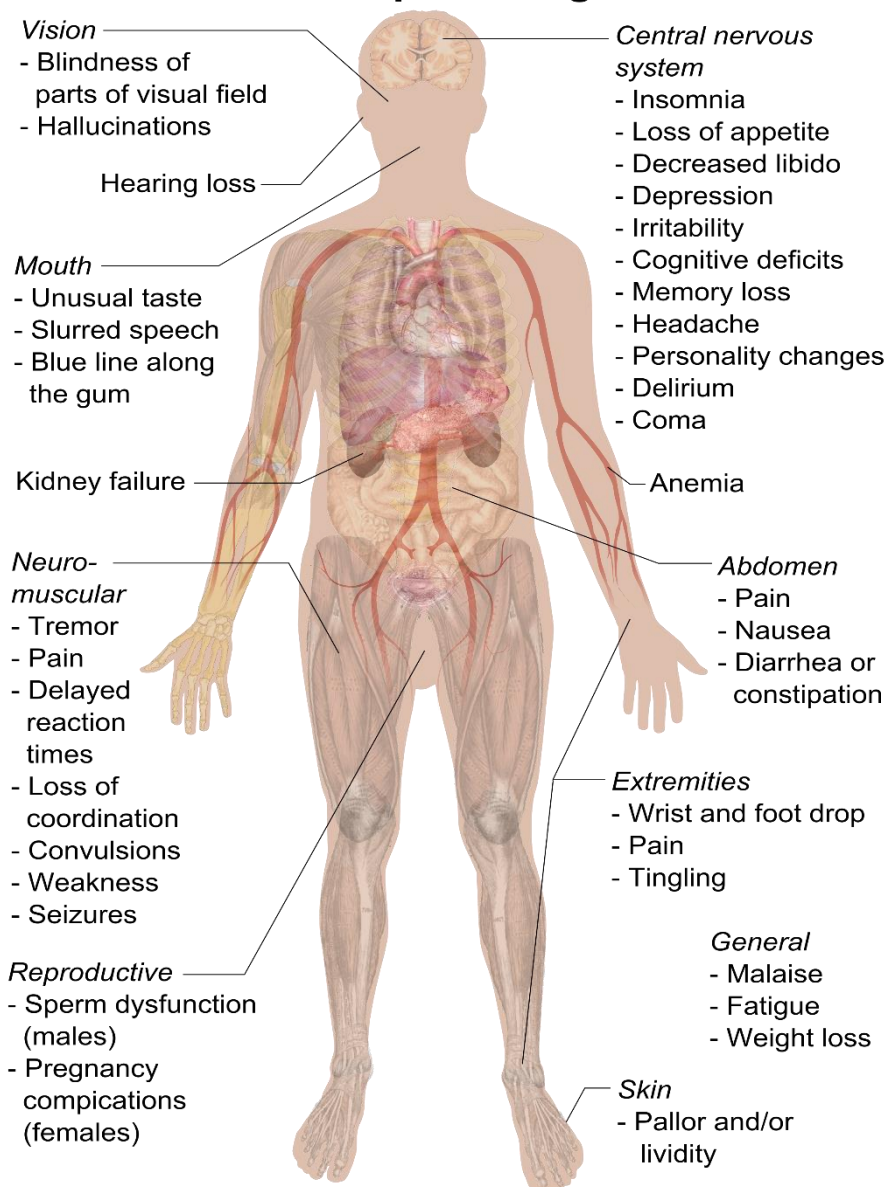
## Introduction

- Lead, an environmental toxicant, accounts for 0.6% of the global burden of disease
- Can permeate through the foetus blood-brain barrier
- Causing negative impact on foetal growth and the developing brain
- Literacy and awareness related to its impact is low
- Pregnant women are at a greater risk of suffering from neuro-toxic effects of lead



*High blood lead levels are especially harmful to children and pregnant women, and can cause "learning disabilities, behavioural problems and mental retardation," the World Health Organization says.*

### Symptoms of Lead poisoning





## Lead exposure pathways

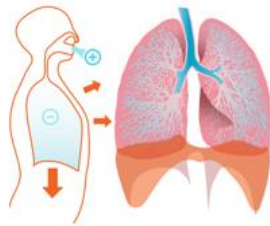
### Primary

- Ingested (hand-to-mouth)



### Secondary

- Inhaled
- Through skin



- ✓ Can be circulated throughout your body
- ✓ Some is excreted while some remains in organs and body tissues
- ✓ If exposure continues, the amount stored in your body will increase if you are absorbing more lead than your body is excreting

## What is lead?

- Soft blue-grey metal
- Found in the natural environment



## History behind

The words “plumber” and “plumbing” come from plumbum (the Latin word for lead) because the ancient Romans used lead for their water pipes.





Faculty of Computing,  
Engineering & the  
Built Environment

**Dr. Priyanka Chaurasia**

## How does lead get into the environment?



Lead paint



Lead based water pipes



Lead smelting



Disposal of lead acid batteries



Lead hunting ammunition



E-waste recycling  
Waste incineration

- ✓ A typical 17-inch computer monitor contains approximately 2.2 pounds of lead
- ✓ 500 million computers that will become obsolete between 1997 and 2007 will contain nearly 1.6 billion pounds of lead

Occupational Exposure to Lead



Dr. Priyanka Chaurasia

p.chaurasia@ulster.ac.uk





Faculty of Computing,  
Engineering & the  
Built Environment

**Dr. Priyanka Chaurasia**

## Common products that may contain lead



Toy maker accused of knowingly selling lead paint-tainted toys



An assortment of children's jewellery recently recalled for high amounts of lead. Claire's, Forever 21 and H&M and other retailers across the United States

'Spacer beads' made of lead, which caused the baby to develop poisoning. Hidden danger lurking behind fashion jewellery

Exposure to lead



Lead can be in the ceramic itself, the paint applied to the item or the glaze that coats the outer surface



Studies find synthetic fields have few health risks, although lead levels may be elevated in older fields. U.S. Commerce Dept.: 85% of Fake Christmas Trees Come From China, Made From Carcinogens, Toxins and Lead

A child wears safe face paints, but trading standards officials say dangerously high levels of lead have been discovered in the Tartan Collection brand

### Newest threat

Researchers find dangerous amounts of lead in fidget spinners. A variety of spinners tested positive for lead and mercury



- ✓ Turmeric spices found heavily contaminated with toxic LEAD
- ✓ Lead solder detected in can seams will eventually leach into the food product
- ✓ Report: Damaging Levels Of Lead Found In 20% Of Baby Food Samples



Dr. Priyanka Chaurasia

p.chaurasia@ulster.ac.uk





Faculty of Computing, Engineering & the Built Environment

Dr. Priyanka Chaurasia

## Lead risks- Harming our health



This x-ray shows a package of processed game meat. The white spots are toxic lead fragments from spent lead ammunition.

Lead lives in legs



"Lead shot" in knee joint can result in pain and swelling from lead of 20-40 µg. Reduce the increased activity on the metaphyseal growth rate of the knee.



Lead shot in the joints of the hand can cause pain and swelling.



Nigerian children suffering in lead poisoning

- ✓ Lead is a known metabolic poison
- ✓ Dangerous to children's developing brains, and causes reduced intelligence quotient
- ✓ (IQ) and attention span, impaired learning ability and increased risk of behavioural problems
- ✓ These health impacts also have significant economic costs to countries



Attention deficit hyperactivity disorder (ADHD)



Lead lives in legs

Lead shot in the joints of the hand can cause pain and swelling.



A nail after one month of exposure to Detroit water (above) and Flint River water (below) Each nail was rinsed in flowing water before taking the picture.



### Killing Wildlife



### Philly's shame: City ignores thousands of poisoned kids

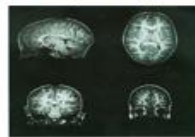
- "Whatever you're doing," he told her, "you have to stop." Take your son to the emergency room immediately, he insisted. Her son had a severe case of lead poisoning
- Deteriorating lead paint in the 1920s-era house
- Murad and his twin brother, Jihad, moved into the house in March 2015
- Eight months later, they tested high for lead. Now the amount in Murad's blood had skyrocketed to 46, nine times higher than the level that triggers medical alarms
- The boys can barely speak because of lead contamination



Lead is an extremely toxic element that we've sensibly removed from water pipes, gasoline, paint and other sources dangerous to people. Yet toxic lead is still entering the food chain through widespread use of lead hunting ammunition and fishing tackle, poisoning wildlife and even threatening human health.



Using non-lead bullets prevents lead poisoning in wildlife



Child brain scan image Affect cognitive development in kids



Large Quantity of lead paint chips can be seen in radiograph of the abdomen and pelvis of a 2-year-old boy with lead poisoning

- Children are most vulnerable to lead poisoning.
- In fact, two-year olds have the highest blood level concentration of lead, partly because they place many objects and toys, some laden with lead, in their mouths
- Children with blood-lead concentrations greater than 10 micrograms per deciliter (µg/dL), or one millionth of a gram of lead in about half a cup of blood, have excess lead exposure.
- Recent studies, however, have shown that children with blood-lead concentrations of even less than 10 µg/dL are subject to adverse health effects.
- Lead poisoning has been shown to cause cognitive impairment (decreased IQ) in children globally.
- A study comparing blood-lead concentrations and IQ in 172 children found that each increase of 10 µg/dL in the lifetime average blood-lead concentration was correlated with a 4.6 point decrease in IQ.
- In a subsample of children with maximal lead concentrations below 10µg/dL, a given change in lead concentration caused an even greater change in IQ.
- In addition to lowering IQ, lead exposure also causes behavioural problems in 5- to 7-year-old children who were first exposed to dangerous levels of lead when they were 1-2 years old.
- Children exposed to lead poisoning scored worse on a behaviour test for opposition, hyperactivity, and attention deficit hyperactivity disorder (ADHD) than did their peers.



An 18-year-old nonsmoking man presented to the emergency department with a 1-week history of diffuse, colicky abdominal pain. He had had no change in his bowel or bladder function. He had worked in a battery-recycling factory for the past year. Examination revealed diffuse abdominal tenderness, as well as a bluish line around the gums, known as Burton's line. Results of routine hematologic, liver-function, and kidney-function tests were normal. Ultrasonography of the abdomen was unrevealing. The blood lead level was elevated at 81 ng per deciliter (3.9 nmol per liter) (reference range, <10 ng per deciliter [0.5 nmol per liter]). The patient was admitted to the hospital and started on chelation therapy with penicillamine. He was discharged in 2 weeks, after the pain had subsided and the blood lead level had declined; the Burton's line had disappeared. He was counselled regarding potential occupational exposure. In developing countries, occupational exposure is the main cause of lead poisoning.



Dr. Priyanka Chaurasia

p.chaurasia@ulster.ac.uk