

[Lead: The Hidden Poison](#)

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HEALTH

## Lead: The Hidden Poison

This utilitarian metal is a serious health hazard for India's children

Choodie Shivaram, Bangalore

What kind of mother earth are we going to leave behind for future generations? I have heard parents say with guilt, "Imagine, our children are going to live in a polluted world, where fresh air will be a luxury, unadulterated and organically grown food unavailable, natural uncontaminated water nonexistent." Many times I feel the same way, too. Our children are not going to enjoy the same fresh environment we did. They are going to live with the threat of the most dreaded diseases, and we have ourselves to blame. This may sound threatening, alarming and unbelievable—but that's the truth. Consider just one element, lead, which now pollutes our air, our water, our homes and our soil. It's poisonous, especially for children, who can suffer permanent brain damage even with low exposure.

Lead's toxic nature was recognized 4,000 years ago. That didn't stop the Romans from using the heavy metal for everything—water pipes, cooking pots, aqueduct liners, wine amendments, food seasoning, even facial makeup. One of

their lead mines in Spain required tens of thousands of slaves to operate. Even today Spain supplies half of Europe's lead, refined from the mineral galena. Romans, especially rich Romans, ingested so much lead from so many sources that many modern historians believe the consequent deterioration of their mental and physical health was a significant factor in the decline of the Roman Empire.

Today lead continues to poison humanity from these same ancient sources, especially pots and plumbing, plus a few new ones, notably leaded gasoline and lead-based paint. It's a worldwide problem, less serious in undeveloped regions where lead is little used and in highly developed regions that have outlawed its use. Most of the real danger exists in developing regions that have increased their use of lead without recognizing the hazards. Case in point: India's cities. Over 50 percent of children under twelve in metropolitan areas have unacceptable levels of lead in their blood (over 10 micrograms per deciliter), according to a study on lead poisoning conducted by the George Foundation ([www.leadpoison.net/INDEX.htm](http://www.leadpoison.net/INDEX.htm)). The study, "Project Lead Free," was conducted during 1997 and 1998. It found, for example, that about 40 percent of Bangalore's children have high levels of lead. Just twelve years ago, Bangalore's children had one of the lowest rates in India, just 15.8 percent.

The George Foundation, along with the World Health Organization and World Bank, has been focusing on the looming dangers of this widely used metal. The National Referral Centre for Lead Poisoning, headed by Dr. T. Venkatesh, professor of Biochemistry, St. John's Hospital, has been instrumental in these studies. The Centre has been

working towards reducing lead poisoning and plans to establish a lead mapping of the country.

Lead is highly toxic to humans. It is ingested through inhalation or absorbed through the skin. Once absorbed into the bloodstream, some of it is filtered out and excreted, but most is retained in the liver, brain, kidneys and bones— affecting them seriously.

Eighty to ninety percent of airborne lead poisoning in cities is caused by vehicle exhaust. According to the study, in Bangalore there has been a 250 percent increase in lead levels in blood, which is directly proportional to the increase in vehicular density. With the introduction of lead-free petrol, hopefully the figures should fall, as they have in Delhi and Mumbai, which require unleaded gasoline.

Lead doesn't occur naturally in gasoline. It's added to prevent "knock," the premature ignition inside a cylinder. Lead's antiknock property was discovered in 1921 and promptly introduced to gasoline. There were serious health concerns about it even then, because workers at the plants producing the antiknock additives died or went crazy. But— shades of the tobacco companies— the manufacturers of leaded gasoline set up a laboratory which "proved" lead in gasoline wasn't a health risk. This misguided and erroneous conclusion was only overturned in the late 1960s, when researchers finally showed, among other evidence, that the amount of lead in our bodies today is a hundred times that of our ancient ancestors. Lead in gasoline was first limited in the US in 1976, then outlawed in 1990. The mean blood lead concentration in American children

dropped from 13.7 mcg/dL to 3.2 mcg/dL, in direct proportion to the reduction of leaded gasoline produced. See: [www.leadpoison.net/general/history.htm](http://www.leadpoison.net/general/history.htm) for more details.

[Airborne lead from exhaust is especially difficult to protect against. "In a polluted environment, there is no use in wearing a mask or covering the face with a handkerchief, because the fine lead particles mingle in the air. None of these can filter out the lead. Lead, when deposited in any other organ, can be removed by treatment. But once it enters the brain, the damage is irreversible," said Dr. Venkatesh.](#)

[After airborne lead, the next most common source is ingestion. Children's digestive system absorbs up to 50 percent of the lead they swallow. Younger children absorb lead six to eight times more easily than adults. Low calcium and iron in children makes them more susceptible to lead poisoning. In adults, doses as low as five micrograms per deciliter result in increase in blood pressure and damage to the kidneys and liver, according to doctors and experts working on effects of lead pollution.](#)

[Beyond 10 mcg/dl, lead entering the brain in children leads to permanent lowering of intelligence and learning disability. Anemia, lethargy, hypertension, inability to concentrate on studies and neurological disorders are the common effects of lead poisoning.](#)

["We have an environmental health crisis in India. It is a national disgrace that we have collectively allowed lead](#)

poisoning to affect millions of our children and others," says Dr. Abraham George, founder of George Foundation. The resulting loss in productivity to India is estimated at three billion rupees per year.

Canned food and drinks, newspapers used for packing food, cosmetics like eye makeup, hair dye, sindhoor, lead-based paints, ceramic glazes, industrial emissions, exposure at battery units and tea are all potent media for lead poisoning. While we rightly blame vehicular pollution for the majority of lead exposure, our own habits contribute also. Packing food in newspapers is a very common Indian practice in shops, hotels and at home. The newspaper ink contains lead. Most households use newspapers for kitchen work, especially to drain fried foods. Lead binds itself to that fat and is ingested. So, caution should begin at home.

"Some Ayurvedic medicines, specifically Vasanatha Malathi, Swarna Malathi, Trivanga Bhasma, certain brands of Chyawanprash and liver medicine, have tested high for lead," stated Dr. Devaki Nag of King George's Medical College.

Even our religious festivals are contributing. With lead used in most paint in India, the colorfully painted Deities immersed in our lakes, bays and reservoirs each year during Ganesha Chaturthi and Durga Puja are a source of ground water pollution. Temples and religious institutions can set an example by requiring all Deities to be painted with lead-free, nontoxic paints. Lead paint was outlawed in the US in 1978.

Experts state, "Children's toys and pencils can do without paint. A single chip of paint the size of a thumbnail contains 50 to 200 mcg of lead, and an ingested few chips can raise the intake to 1,000 times the acceptable limits." Even cow's milk has been found to have abundant lead when the cows drink from polluted water sources.

The risk to children starts before they are born. In pregnant women, lead in the mother's blood passes on to the fetus. "It is essential for pregnant women to have their blood lead level checked in order to save the newborn from developing any deformities," states Dr. Needleman, professor of Psychiatry and Pediatrics at the University of Pittsburgh in the US. He studied 5,000 newborns and found that minor deformities and later neurological behavior were associated with lead in the mother's blood. Lead poisoning causes genetic disorders for three generations, caution experts.

Treatment is not easy. In severe cases, exceeding 40 mcg/dl, the patient is put on medication, or chelation. In India, the drug Penecillmin is used despite its severe side effects. The drug Des Mercapto Succinic Acid (DSMA) used in the US and believed to be safer, is awaiting clearance from the Indian authorities. In other cases, doctors advise change of environment to a pollution-free atmosphere, good nutritive food with multivitamin supplements and plenty of fluids. Yogurt, which is an essential part of Indian food, is highly advised if a lead-free source of milk is available to make it from.

Lead poisoning is emerging as a deadly scourge. Our

[government needs to institute laws controlling vehicular and industrial lead pollution, while we ourselves need to control the sources right within our homes.](#)

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