

Metal Toxicity

Part-2



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Metal Toxicity



Toxicity of heavy metals:

Most common heavy metals

- Lead (Pb)
- Mercury (Hg)
- Cadmium (Cd)
- Arsenic (As)
- These are mainly produced by industrial activities, and deposit slowly in the surrounding water and soil

Metal Toxicity



Toxic effect of some heavy metals:

Lead:

- Lead accounts for most of the cases of pediatric heavy metal poisoning.
- It is a very soft metal and was used in pipes, drains, and soldering materials for many years in the past
- Lead poisoning occurs when lead builds up in the body, often over a period of months or years .

Metal Toxicity



Lead(contd...):

- Both organic and inorganic form of lead compounds may cause health and environmental hazards.
- The soluble compounds of lead are more poisonous than lead itself, except when lead is in the volatile state.
- Lead toxicity is due to concentration of diffusible Pb in soft tissues.

Metal Toxicity



Lead may get access to the body-

- By inhalation
- By ingestion
- By absorption from the skin or mucous surfaces
- Lead is ten times more toxic when inhaled than when ingested.

Metal Toxicity



SOURCES :

- Lead-based paint and lead-contaminated dust in older buildings.
- Contaminated air, water and soil.
- Adults who work with batteries
- Do home renovations
- Work in auto repair shops.

Metal Toxicity



Lead poisoning :

- A characteristic Symptom of lead poisoning is often found in plumbers, painters and potters using lead.
- The major toxicological effects of lead is its interference with heme synthesis, which leads to haematological damage.
- Chronic exposure to lead causes weight loss, constipation and loss of teeth.



Metal Toxicity



Lead poisoning(contd...)

- Lead also damage liver, kidney and central and peripheral nervous system.
- An increase in blood pressure is probably the most sensitive adverse health effect from lead exposure.
- Lead is also carcinogen.
- The most common tumours found in people working in lead industry is of the respiratory and digestive system, not the kidney.

Metal Toxicity



Lead poisoning(contd...)

- Due to lead intoxication ,the rate of absorption goes up and may also lead to low birth rate,brain damage and low reproductive ability.
- In higher concentration, it tends to accumulate in foetal bone and liver and leads to deformity and physiological malfunctioning.
- In fishes lead inhibits liver enzymes, causes muscle tremors, reduces haemoglobin production.

Metal Toxicity



SYMPTOMS:

- High blood pressure
- Abdominal pain
- Constipation
- Joint pains
- Muscle pain
- Declines in mental functioning

Metal Toxicity



SYMPTOMS (contd....)

- Pain, numbness or tingling of the extremities
- Headache, Memory loss, Mood disorders
- Reduced sperm count, abnormal sperm
- Miscarriage or premature birth in pregnant women

Metal Toxicity



Sources of Lead Poisoning



**Paint in Homes
Built Before 1978**



Dirt



Lead Dust



Some Pottery



**Take Home Lead
(Jobs or Hobbies)**



**Traditional Remedies, Make-up
and Powders**



Some Candy



Some Jewelry



Some Toys

Metal Toxicity



Brain or Nerve Damage ➤

◀ Hearing Problems

Digestive Issues ➤

◀ Stunted Growth



Effects of Lead Poisoning

Metal Toxicity



Lead poisoning

Lead buildup in the body causes serious health problems

Symptoms

- Headaches
- Irritability
- Reduced sensations
- Aggressive behavior
- Difficulty sleeping

- Abdominal pain
- Poor appetite
- Constipation
- Anemia

Additional complications for children:

Lead is more harmful to children as it can affect developing nerves and brains

- ▶ Loss of developmental skills
- ▶ Behavior, attention problems
- ▶ Hearing loss
- ▶ Kidney damage
- ▶ Reduced IQ
- ▶ Slowed body growth

Source: MedlinePlus/Mayo Clinic 240600 AFP

Thank You

