

LEAD

Chronic lead poisoning

Plumbism, saturnism

Toxic salts

- **Lead carbonate**
- **Lead chromate**
- **Lead sulphide***
- **Lead tetroxide****
- **Lead acetate**
- **Lead monoxide:** litharge or massicot
- **Tetraethyle lead:** antiknock additive

*Least toxic

**HgS:Sindoor, vermilion



Exposure

- **Occupational**
- **Non-occupational**
- **Absorbed thr'**
 - **Inhalation: lung deposition higher in child**
 - **Oral**
 - **Placenta**
 - **cutaneous**



- Radiator repair is an industry where workers may be exposed to lead fumes.



- **Heating & Air-conditioning duct can accumulate lead dust**



Lead based paints are the most common source of exposure to lead among preschool children.

As paint gets older, it tends to peel off the walls. Because young children are inclined to put things into their mouths, they often eat these chips of paint.

Toy



Present Day Exposure

- **Occupational**

melting, Batteries, Glass manufacture, Ship building, Printing & Potteries, Rubber industries, Fire arms, PVC

- **Non- Occupational**

Leaded petrol, Window sills, Toys, food, water

Severity

- **The amount of lead that gets into the body**
- and**
- **The length of time it remains there.**

action

- **At cellular level**
- **Interacts with -SH₂**
- **Haem synthesis,, Hb and cytochrome**
- **Interferes mitochondrial oxidative phosphorylation, ATPase and enhances oxidation and cellular ischaemia.**

plumbism

Colic and constipation

colica pictonium, dry belly ache, painter's colic, Devon's colic

- **Night and sudden**
- **Sweating and vomiting**
- **Constipation**
- **Abdomen muscles**
- **recurrent**
- **Relieved**

Burtonion line (Blue line on gums)



<https://www.livescience.com/40304-rare-melanoma-in-gums.html>

- Upper jaw
- Edentulous person
- Hygiene
- H₂S
- Copper, iron, mercury, silver, bismuth



**A house painter
affected by chronic
lead poisoning.
Wasted muscles
and wrist drop are
tell-tale symptoms
of lead poisoning.
*Phospocreatinine
enzyme***



- **Male**
- **Preceding symptoms**

- **Wrist drop, claw shaped hand**
- **Foot drop**

pallor



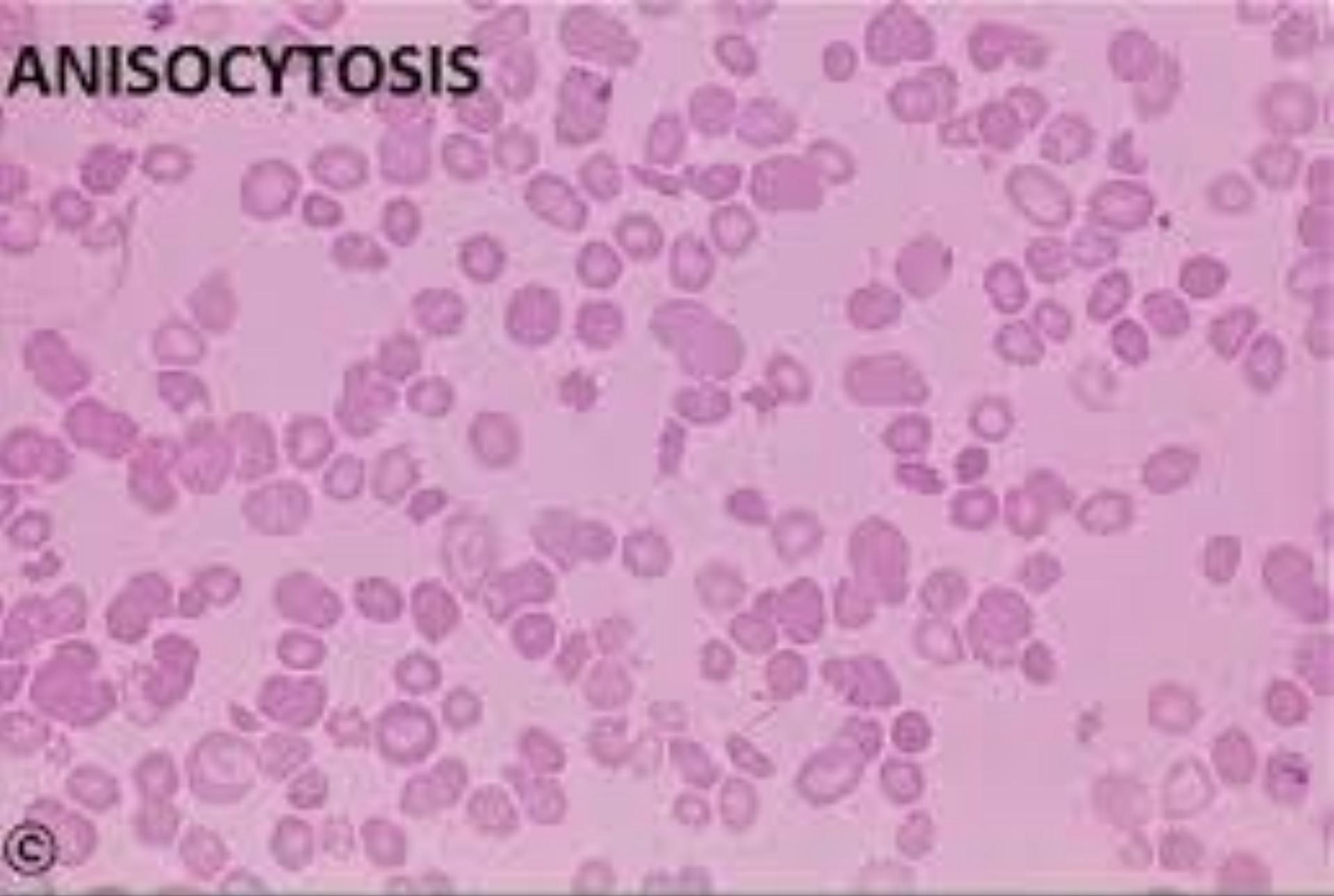
anaemia

- **Polycythemia with polychromatophilia**
- **Hypochromic**
- **Poikilocytosis [irregular RBC]**
- **Reticulocytosis [immature RBC]**
- **Punctate basophilia**
- **Mononuclear cells**
- **Polymorphs, Platelets**
- **Sideroblast [nucleated RBC]**
- **Anisocytosis [unequal RBC]**
- **Eosinophilia**

Basophilic stippling



ANISOCYTOSIS



©

Source: <http://www.hematologyatlas.com>

pratikpatel_nhlmmcfm

Encephalopathy

irreversible : inactivation of MAO

- **Ataxia**
- **Vomiting**
- **Stupor and lethargy**
- **Neuritis**
- **Cerebral psychic affection**
- **Convulsion**
- **Coma**

Renal –cardiac-reproductive

Remembering

- **A**naemia
- **B**urtonian line
- **C**olic
- **D**rops
- **E**ncephalopathy
- **F**acial pallor
- **G**enitourinary
- **H**ear

Lead is even more dangerous to children than adults because:

- They often put their hands and other objects in their mouths. These objects can have lead dust on them.**
- Children's growing bodies absorb more lead.**
- Children's brains and nervous systems are more sensitive to the damaging effects of lead.**
- Even children who appear healthy can have dangerous levels of lead in their bodies.**

diagnosis

- **Blue line**
- **Colic**
- **paralysis**

Lab. Investigations

- **Microcytic siderocytic anemia**
- **Basophilic stippling [200 cell]**
- **Corporohyrin in urine 150 microgm/l**
- **ALA in urine > 0.1 mgs/l**
- **Increase zinc protoporphyrin IX**
- **Decrease 5 amino levulinic acid dehydratase**
- **Increase blood lead conc. (0.8mg/l)**
- **Lead in urine (0.08 mgs/l)**
- **X-rays**

70 mg/dL is serious

Treatment

- **Prompt removal from exposure**
- **K-Na iodide**
- **Na- bicarbonate 20-30 gm in divided dose**
- **Ammonium chloride 1gm qds with low Ca diet**
- **Iv Ca gluconate/ Ca chloride**
- **Urea 1g/kg in 200ml of mannitol [10%]**
- **Chelating agent**
- **Ca EDTA + BAL**