Manganese Toxicity: What You Need to Know

What is Manganese?

Manganese is an essential trace mineral involved in brain, nerve, and bone health. While small amounts are necessary, excess manganese—especially from environmental or occupational exposure—can be toxic.

Sources of Excess Exposure

- Contaminated well water
- Occupational exposure (welding, mining, battery production, smelting)
- Gasoline additives (MMT fumes)
- Total parenteral nutrition (IV nutrition in hospitals)
- People with liver disease or low iron levels absorb more manganese and are more susceptible to toxicity

Who Is Most at Risk?

- Infants and young children (reduced ability to eliminate excess manganese)
- Individuals with liver disease (impaired excretion)
- Women with low iron levels (manganese competes with iron transport)

Symptoms of Manganese Toxicity (Manganism)

Early Symptoms:

- Depression, anxiety, insomnia, headaches

Advanced Symptoms:

- Tremors and slowed movement (bradykinesia)
- Shuffling gait, speech changes, and muscle stiffness
- Poor balance, mask-like facial expression
- Small handwriting (micrographia)

These neurological signs resemble Parkinson's disease.

Other Health Effects

- Male infertility
- Cardiovascular symptoms: rapid heartbeat, hypertension, abnormal EKG results

Testing & Diagnosis

- Blood, urine, saliva, hair, and nail levels may indicate exposure but are often unreliable
- Brain imaging (MRI or PET scans) can detect changes
- Blood manganese and ferritin levels may be helpful

Treatment Options

- **Para-aminosalicylic acid (PAS):** Most effective for removing manganese from the brain and reversing symptoms
- **IV EDTA:** Sometimes used but less effective for neurological symptoms