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Highlight:
If you are exposed to high levels of manganese, you are at risk for severe health effects

- AIR:**
- You can absorb manganese mostly by breathing manganese dust.
 - There are high levels of manganese dust in the air near mining and processing activities of manganese.

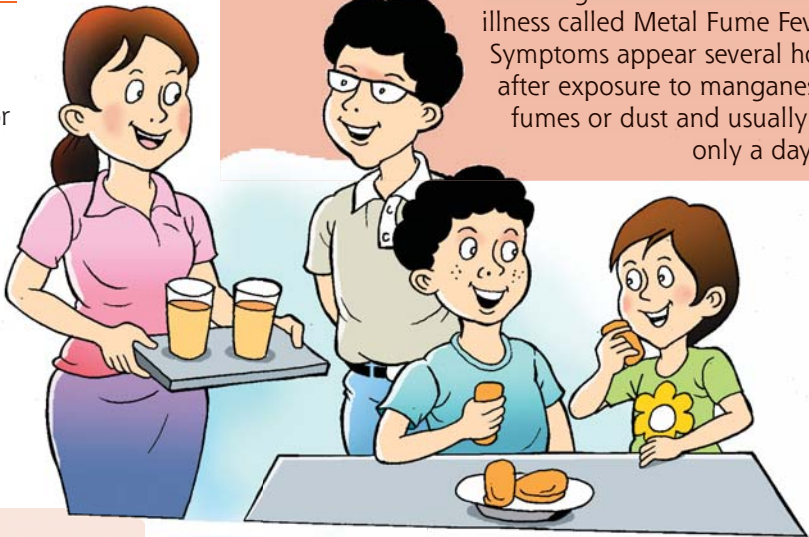
- GROUNDWATER:**
- There can be high levels of manganese in ground water from pollution or rock elements, especially near mining activities.

- FOOD OR DRINKING WATER:**
- You can expose yourself to manganese if you eat or drink contaminated food or drinking water.

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Highlight:
You are especially vulnerable to manganese dust if you work in mining, smelting operations, or the processing of manganese ores

- YOU ARE AT RISK IF YOU...
- Work in the mining or processing of manganese.
 - Work in the manufacturing of steel.
 - Work in the production of fertilizers or fungicides.
 - Work in the production of manganese oxide or dry-cell batteries.
 - Live near manganese mining activities.
 - Live near industries using manganese.



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Highlight:
If you are exposed to high levels of manganese, your brain and lungs may be affected

- HOW CAN MANGANESE AFFECT MY LUNGS?**
- Manganese can weaken your lungs, making it more difficult to breathe.
 - Manganese can cause you to cough more often.
 - Manganese can cause bronchitis and pneumonia.
 - Manganese can cause an illness similar to influenza called manganese pneumonitis.
 - Manganese can cause chronic obstructive lung disease.
 - Manganese can cause an illness called Metal Fume Fever. Symptoms appear several hours after exposure to manganese fumes or dust and usually last for only a day.

- Metal Fume Fever symptoms include:
- Chills and fever
 - Cough weakness
 - Upset stomach
 - Headache
 - Vomiting
 - Body pains
 - Dryness of throat
 - Mild to moderate injury of lung tissue

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Highlight:
The level and length of exposure to manganese is what determines the effects.
High levels and long periods of exposure are poisonous and dangerous

- HOW CAN MANGANESE AFFECT MY BRAIN?**
- Manganese can affect your brain in a way that impacts on your ability to think clearly. This is usually one of the first signs of manganese poisoning.
 - Manganese can result in permanent brain damage if you have been exposed to high levels for long periods of time.

- MANGANISM (Chronic Manganese Poisoning):**
- You may have Manganism if you experience....
- In the beginning...
- feelings of weakness
 - irritability
 - indifference and apathy
 - aggressiveness or excitability
 - hallucinations
 - sleepiness
 - loss of appetite
 - headache



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Highlight:
High levels and prolonged periods of manganese exposure can cause a condition known as Manganism
- dizziness
 - difficulty in walking and coordination
 - cramps
 - pains in the back
 - slow hand movements
- After a few weeks...
- Your voice is becoming weak.
 - Your speech is slow or irregular.
 - Changes in your facial muscles.
 - Sudden laughter or tears.
 - Inability to run
 - Difficulty in walking backwards.



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Highlight:
Manganism symptoms may...

- Appear slowly over months and years in different strengths.
- Appear together or in isolation.
- Improve when exposure to manganese stops. [However, in most cases, the symptoms continue for many years even after exposure to manganese ends.]
- Not all individuals have the same symptoms.



- Within a few months, disease continues to progress and cannot be reversed...
- Your condition becomes worse.
 - Keeping balance is difficult.
 - Your movements are slow.
 - Tremors appear.
 - Sweating or blushing.
 - You forget things.
 - Writing becomes difficult.
 - You may be completely disabled.

HOW CAN MANGANESE AFFECT MY CHILDREN?

- Children are more sensitive to manganese than adults.
- Manganese levels in soil or water may be higher when near a mining district or industry using manganese. As a result, there may be a higher risk to children who swallow contaminated soil by putting their hands in their mouth as children often do or by eating or drinking contaminated food or water.



- Mothers should not breast feed near a mining area or where manganese dust exists since this can contaminate the mother's milk.
- High levels of manganese exposure in children may produce:
 - changes in personality
 - difficulty in learning
 - negative effects on the development of the brain and muscles
- Exposure during pregnancy or exposure from a spouse who is exposed to high levels of

Highlight:

Manganism is a chronic (ongoing) condition. If you remove the manganese exposure early, your condition may be reversed. However, there may still remain disturbances in your speech and movements. If you continue to be exposed to manganese dust, your condition may become worse and irreversible, even when exposure stops at a later time, and you may become permanently disabled

manganese may result in later problems with the child's memory or attention.

- Abortions or stillbirths can result for pregnant mothers exposed to manganese either directly or from contact with husbands exposed to manganese.
- Workers may accumulate manganese dust on their work clothes and expose their families to the manganese dust when they come home.



Do's and Don't at the Manganese Mining Site

- At the mining site, to protect yourself from dust:
 - try to avoid dust becoming airborne (eg. by covering piles and filling the sort material in sacks right away);
 - use facial masks; and
 - use working clothes that cover your skin.
- Do not eat or drink contaminated food:
 - separate the working areas from areas where you eat and drink;
 - wash thoroughly before you eat and drink;
 - avoid drinking the water at the site, since it might be contaminated.
- After work, at the site:
 - take a shower to remove all dust; and



- change into your normal clothes before you go home

- Do not allow children to stay at the mining site, since they are likely to swallow contaminated soil by putting their hands in their mouth, as children often do, or by eating or drinking contaminated food or water.



For further information, please contact

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How can Manganese affect my health?

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