



Removal of Toxic Chromium from Wastewater

Source: PIB

Recently, researchers at the Institute of Nano Science and Technology (INST) Mohali, an autonomous institute of **Department of Science and Technology** have developed an innovative, method for **removing toxic chromium from industrial wastewater** by utilising **sunlight as a catalyst** in combination with microfluidic technology (manipulation and control of fluids at a very small scale).

- Hexavalent chromium (Cr(VI)) is highly toxic, with **World Health Organization (WHO)** recommended limits of **0.05 mg/L and 5 mg/L for hexavalent and trivalent forms in drinking water**, necessitating the reduction of hexavalent to trivalent chromium.
 - Trivalent chrome is believed to be less readily absorbed by the human body compared to hexavalent chrome making its removal critical.
- Traditional methods like ion exchange, adsorption, and bacterial reduction are costly and often inefficient.
 - INST researchers have used sunlight as a **catalyst in combination with microfluidic technology** and **TiO₂ nanoparticles** to convert Cr(VI) into a less harmful trivalent form. The process has shown a **95% efficiency in degradation**.
- **Nanotechnology** is the science of manipulating matter at the **atomic or molecular scale, typically** between 1 and 100 nanometers.
 - It has a wide range of applications across various fields, including: Biomedicine, Electronics, Removal of pollutants and toxins from water and soil, cosmetics and Food Science.

Read More: [Removal of Heavy Metals from Water](#)

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