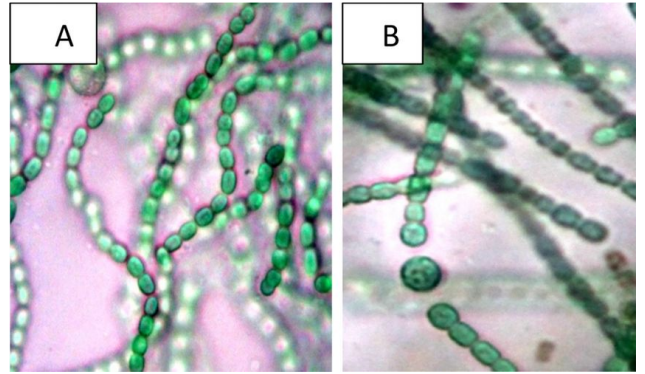


GRANTED

(IN356324)

Process for the reduction of chromium(VI) to chromium(III) by *Nostoc calcicola* immobilized on silica gel



NEED

Industrial effluents discharge over 30,000 tons of toxic Chromium(VI) annually in India. Conventional treatments involve high energy, hazardous byproducts, or slow biological methods. But what if this toxin could be neutralized quickly—using a safe, nature-based approach that works without enzymes?

TECHNOLOGY OVERVIEW

This technology uses *Nostoc calcicola* immobilized on silica gel to reduce highly toxic Chromium(VI) to safer Chromium(III) under mild conditions. It works with both fresh and dry biomass, without enzymes, using a simple 24-hour incubation at pH 2 and room temperature, with complete reduction and safe metal accumulation inside cells.

TECHNOLOGY KEY FEATURES

Enzyme-free process; pH 2 tolerance; up to 300 mg/L Cr(VI); ambient temperature (23–27°C); 24-hour incubation; wet or dry biomass usable; intracellular Cr(III) sequestration; scalable bio-remediation method; no hazardous additives; silica-based immobilization.

[Read more here](#)

MARKET ANALYSIS

Global chromium remediation market projected to grow at 6.8% CAGR to reach \$3.1B by 2033. Indian wastewater treatment market expanding at 9.2% CAGR. Growth driven by stricter regulations, zero-liquid discharge mandates, and eco-safe detox solutions. (Sources: ResearchAndMarkets, IMARC)

Target Industries

, Environmental biotech firms; industrial effluent treatment system integrators; bioremediation technology platforms; enterprises in zero-waste process design for tanneries, electroplating, and mining.

AT A GLANCE

- SDG 3 (Good Health and Well-Being), SDG 6 (Clean Water and Sanitation), SDG 9 (Industry, Innovation, and Infrastructure), SDG 12 (Responsible Consumption and Production), SDG 14 (Life Below Water)

Technology is available for licensing/ co-development.

Reach out to Prof. Deepak Chitkara, Coordinator, BITS Technology Enabling Centre,

BITS Pilani Contact Details: tec.bits@pilani.bits-pilani.ac.in, 91 1596-255913