



A close up of an 'Indus' wall | Photo source [Bio-ID Lab](#)

[Innovation](#) > [Architecture & Design](#) > [Algae tiles offer affordable purification of polluted water](#)

## ALGAE TILES OFFER AFFORDABLE PURIFICATION OF POLLUTED WATER

 ARCHITECTURE & DESIGN

### The Indus Project is a tile-based, modular bioreactor wall system for sustainably cleaning water in rural areas with limited resources

**Spotted:** A team of designers and biochemical engineers from University College London (UCL) developed a tile-based wall system that can filter toxic chemical dyes and heavy metals out of water.

The project is based on bioremediation, which uses biological organisms (in this case algae) to help purify the water from contamination in a sustainable way.

“Indus”, which mimics nature’s ability to distribute water, is composed of modular tile units with vein-like channels and inspired by the structure of leaves. The tiles contain a preparation of micro-algae suspended with a biological scaffold of a seaweed-derived hydrogel. This enables to keep the algae alive and also makes it recyclable and biodegradable.

The research is being led by Dr Brenda Parker, the professor Marcos Cruz, and Shneel Malik, from UCL. The team tested the invention of algae-wall in India, where they found that a species of algae has the ability to reduce cadmium concentration ten times within 45 minutes.

As Indus is modular, it is designed to be handily built on-site in areas with contaminated water sources.

The team hopes the tiles will eventually be made adaptable to different countries and continents, enabling the rural community of artisans to regenerate water and reuse it for their manufacturing processes.

29th October 2020

Email: [brenda.parker@ucl.ac.uk](mailto:brenda.parker@ucl.ac.uk)

Website: [ucl.ac.uk/indus](http://ucl.ac.uk/indus)

## **Takeaway:**

More than 80 per cent of India's surface water is polluted. In countries such as this, with small-scale artisanal industries, there are limited resources to manage wastewater. Indus thus reflects an interdisciplinary approach to water pollution: the design was developed from case studies and interviews conducted with artisans in India, allowing the development of a simple, scalable and sustainable system to locally treat heavy metal-contaminated wastewater.