



Membrane to Clean Toxic Effluents

 drishtiias.com/printpdf/membrane-to-clean-toxic-effluents

Recently the scientists at **Council of Scientific and Industrial Research- North East Institute of Science and Technology (CSIR-NEIST)** have developed a ceramic membrane with the help of a mixture of potter's clay, stone dust and tea waste which can clean toxic effluents.

- The membrane was tested on effluents from a textile unit. It could remove adsorptive dyes from wastewater.
- The study was funded by the **Department of Science and Technology (DST)**.

Applications

- These filters are especially useful in petrochemical processing, where it is not possible to use organic membranes.
- It is capable of discolouring two commonly used dyes - **methylene blue** and **Congo red** -from water.
Methylene blue is a toxic dye, while Congo red is a known cancer-causing agent.
- Ceramic filters and membranes are commonly used in several sectors like food and beverage, drugs and chemicals, waste recovery and recycling industries.

Properties

- Ceramic membranes can withstand frequent cleaning, harsh operating environments and situations that require continuous flows of material.
- They can also be regenerated over many cycles and used for separation of both aqueous and non-aqueous solutions.
- The newly developed membrane has good thermal and chemical stability.
- The used membrane could also be regenerated by heating at 400 degrees for 30 minutes, without much loss of efficiency.

Council of Scientific and Industrial Research (CSIR)

- CSIR is an autonomous research and development body established by the **Government of India in 1942.**
- It covers a wide spectrum of science and technology –from radio and space physics, oceanography, geophysics, chemicals, drugs, genomics, biotechnology and nanotechnology to mining, aeronautics, instrumentation, environmental engineering and information technology.
- It provides significant technological intervention in many areas with regard to societal efforts which include environment, health, drinking water, food, housing, energy, farm and non-farm sectors.
- **CSIR Firsts**
 - First to introduce DNA fingerprinting in India.
 - Designed & developed India's first all-composite aircraft Hansa.
 - Designed and developed India's first 14-seater plane 'SARAS'.
 - First to produce baby food from buffalo milk by the name of Amulspray.
 - First to produce the indelible ink used in elections in the country.
 - Completed the first Complete **Genome Sequencing** of an Indian.
 - First indigenous "Electronic Nose" to detect toxic fumes.