



KAMARAJ IAS ACADEMY
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Formation water

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Why is in news? The green panacea to restore the wastewater disposed during crude oil excavation and processing

A mixture consisting of plant-based biomaterial, biosurfactant, and NPK fertilizer can help efficient restoration of formation water -- the wastewater disposed during crude oil excavation and processing.

Formation water exists naturally in the rock all along, before drilling. It is water associated with the oil and gas reservoir and has some outstanding chemical characteristics.

Connate water is **fossil water** that was out of contact with the atmosphere during most part of the geologic age at least.

Formation water consists of oily components, brine solutions, and solvents that are used during various phases in the oil industry.

It is usually drained off and reaches the rivers and streams, ultimately deteriorating the water quality and threatening the existing aquatic life.

Further, the larger animals' consumption of fish and plants collected from such contaminated sites can transfer and even magnify the associated risks.

Thus, the formation water **needs to be treated before it is released to the environment** for a safe and sustainable tomorrow.

In order to address this challenge, scientists of the Institute of Advanced Study in Science and Technology (IASST), an autonomous institute of the Department of Science and Technology, worked towards **developing a green approach for the treatment of formation water**.

With repeated trial and error, several experiments, and studies, they formulated a mixture consisting of plant-based biomaterial, biosurfactant, which are secondary metabolites of microbes, and NPK fertilizer, to efficiently restore formation water.

Around **2.5 gm of the formulation could treat one litre of formation water in 12 hours**. The team has filed an Indian patent on the development.

The "**wonder mixture**" can help prevent pollution of the environment from formation water and render it reusable for maintaining the green revolution. This can help enhance crop production to meet the ever-growing food demand.

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