

New battery uses microbes to turn sewage into energy

WASHINGTON, USA: American scientists may have found a way to produce clean energy using contaminated water, according to a new study published on Monday (16 September).



The engineers have developed a more efficient method to use microbes to harness electricity from waste-water.

They hope their method could be used in waste-water treatment facilities to break down organic pollutants in the "dead zones" of oceans and lakes where fertiliser run-off has depleted oxygen, suffocating marine life.

However, for now the team from Stanford University have started small, with a prototype about the size of a D-cell battery, comprising two electrodes - one positive, one negative - plunged into a bottle of waste-water, filled with bacteria.

As the bacteria consume the organic material, the microbes cluster around the negative electrode, throwing off electrons, which are captured in turn by the positive electrode.

"We call it fishing for electrons," said environmental engineer Craig Criddle, one of the lead authors of the study published this week in the Proceedings of the National Academy of Sciences (PNAS).

"You can see that the microbes make nano-wires to dump their excess electrons," Criddle added.

Scientists have long known of microbes, dubbed exoelectrogenic, that live in airless environments and are capable of "breathing" oxide minerals, instead of oxygen, to generate energy.

Over the past dozen years, several research groups have tried different approaches for transforming these microbes into bio-generators - but it has proven difficult to harness this energy efficiently.

The researchers said their new model is simple, yet efficient, and can harness about 30% of the potential energy in the waste-water - about the same rate as commercially available solar panels.

There is far less energy potential available in waste-water than the sun's rays, they concede, but say the process has an added benefit: it cleans the water. This means it could be used to offset some of the energy currently being

consumed to treat waste-water.

Source: AFP via I-Net Bridge

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