OMAN'S CHEMISTS USE PALM LEAVES FOR WATER TREATMENT

Date palm leaves currently a waste product of date farming could be used to remove pharmaceutical chemicals and dyes from hospital wastewater, say researchers from Sultan Qaboos University (SQU) in Oman.

The first hospital wastewater treatment pilot project is due to start in Oman early next year, and scientists are working to use this technology in both drinking water filters and for industrial wastewater treatment.

Since 2010, the analytical and environmental research group at SQU's chemistry department has been working to establish a hospital wastewater treatment unit. The unit would treat wastewater usually loaded with microorganisms and pharmaceutical chemicals before its release into the sewers, and potentially produce water that could be used in crop irrigation.

The team has been working to produce 'dehydrated carbon', a greener alternative to 'activated carbon', which is widely used in water filtration even though its production is a polluting process as it is usually derived from charcoal and requires the use of high temperatures.

Using dehydrated carbon made from waste date leaves instead is greener, cheaper and more sustainable, the scientists say.

Waste leaves are carbonised by sulphuric acid treatment at 170 degrees Celsius, before being used to treat wastewater.

This technique could be used across most of the Middle East and North Africa, particularly in Oman, where 180,000 tonnes of date palm leaves are produced annually, they say.

We have found that dehydrated carbon produced from date palm leaves is as efficient as activated carbon for removing pharmaceuticals and dyes from wastewater, El-Said El-Shafey, the project's principal researcher and an assistant chemistry professor at SQU, tells *SciDev.Net*.

Date palm dehydrated carbon was also extraordinary in removing heavy metals and can be reused many times, he adds.

El-Shafey says he has spent almost 12 years producing different types of dehydrated carbon from agricultural waste such as date palm leaves, rice husks and olive stones, which have all proved exceptional at removing different pollutants from water.

He is now developing the technology for palm leaves as they are abundant in the region.

The research group is also working to clean up industrial waters from the oil and mining industries, says El-Shafey. But treating drinking water is our ultimate goal, he adds.

Wael Abdelmoez, owner of a start-up company that produces activated carbon from rice husks, says: Activated carbon filter production causes a lot of [air] pollution, so using dehydrated carbon from agricultural waste might be greener.

There are doubts about whether this technique can be effectively rolled out, however.

Mahad Baawain, assistant professor of environmental engineering at SQU, says: Even if the pilot-scale experiments provide positive results, it is very difficult for the industrial sector in our region to adopt and commercialise this technology, compared with the available and tested technologies on the market.

This is partly due to a lack of confidence in local technologies and a preference for those that are familiar and recognised as being effective.

Source: http://www.scidev.net/global/pollution/news/oman-s-chemists-use-palm-leaves-for-water-treatment-.html