

IRANIAN FUNGI SHOW PROMISE IN CLEANING UP OIL SPILLS

Iranian scientists have isolated local strains of fungi that can digest petroleum compounds and may be useful in cleaning up polluted sites, especially in similar, semi-arid areas.

The researchers isolated fungal strains from oil-contaminated sites within the Arak refinery in Iran and found some of them to cut the amount of petroleum pollution in soil by more than half.

Although bioremediation the use of living organisms such as bacteria in cleaning up pollution is regarded as the default method for the rehabilitation of polluted environments because of its cost efficiency and environmental friendliness, the potential role of fungi in this process is still often overlooked, according to scientists.

In the new study, researchers in Iran tested for the first time the four fungal strains found at the Arak site for their ability to grow in polluted soil and to break down petroleum.

The research showed that strains from *Alternaria sp.* and *Penicillium sp.* were the most effective at reducing the amount of petroleum in the soil, as they managed to decrease it by around 55 per cent in experiments with sterile soils contaminated with eight per cent crude oil, which is considered a medium level of pollution.

Based on our results, there are several fungi that are resistant to petroleum pollution and they were able to remove oil pollution from the soil, says one of the study's authors, Abdolkarim Chehregani Rad, associate professor at Bu Ali Sina University, Iran.

Rad says the research team's other work suggest that fungi are more effective than bacteria and plants at getting rid of petroleum pollution.

Fungi's resistance to petroleum pollution allows them to grow in contaminated areas; they have a higher biomass so can spread in polluted areas, and they show a high activity of enzymes that break down the oil, according to Rad.

The fungal growth is visible with the naked eye, he adds, which may help control progress during the application of the fungi in the field.

Mia Rose Maltz, a researcher at the University of California, Irvine, says this is a landmark study, with results that expand the scope of this field.

She adds that bioremediation studies still overlook fungi, although they often have enzymatic machinery to degrade some of the most resistant compounds produced by industrial pollution.

Oil producing nations could benefit from continued research using fungi and other microorganisms to filter waste streams and prevent residual contamination from reaching adjacent sites, Maltz says.

Maltz worked with the Amazon Mycorenewal Project and points out that recent work in Ecuador also showed fungi to be effective at reducing petroleum pollution.

Ecuador's problem with surface pollution has been caused by billions of gallons of oil waste in the region, and fungal bioremediation is a strategy that could substantially improve the land within contaminated regions, Maltz concludes.

Ian Singleton, a senior lecturer at Newcastle University, United Kingdom, agrees that fungi are often overlooked and says the study is significant in highlighting their use in bioremediation.

But he tells *SciDev.Net*: Further work needs to be undertaken on non-sterile soils and on larger scales.

Source: <http://www.scidev.net/global/pollution/news/iranian-fungi-show-promise-in-cleaning-up-oil-spills-.html>