MANGROVES CAN TRAP TOXIC HEAVY METALS, SAYS STUDY

Researchers in New Caledonia have discovered that mangrove forests act as useful filters for toxic heavy metals, preventing these pollutants from contaminating the islands' waterways.

The researchers from France's Institute of Development Research (IRD), working in collaboration with regional research partners say that further destruction of the mangroves could therefore result in an increase in the discharge of heavy metals into waters that are incapable of filtering them out, with resultant contamination affecting local biodiversity and community water supplies.

High concentrations of heavy metals are found in New Caledonia's rivers and mangroves, because of the archipelago's active mining industry: it is the third largest nickel producer in the world, and home to 30 per cent of global reserves.

Cyril Marchand, an IRD scientist and the study's lead researcher, said thatmangroves act as a heavy metal 'sink'. Over a long period, they can therefore prevent the spread of harmful metal sediments into waterways used by local communities.

The researchers found that concentrations of heavy metals were 10-100 times higher in waters downstream of mining sites than in those unaffected by mining.

Marchand explained that close to older mines many of which are now abandoned metal concentration is particularly high because proper sedimentation retention systems have never been built.

New mines usually possess such retention system, which limits the deposit of metals in mangroves. However, [the systems] are only efficient during normal rainfall, not during cyclonic events, Marchand said.

In contrast, extreme climate events such as cyclones and thunderstorms, which seem to be occurring with increased frequency as a result of global warming, enable mining waste to be transported to coastal areas.

Because of their toxicity, bio-accumulation capacity and persistence, transitional metals represent a major threat to mangrove biodiversity and also for human health, says the report.

The islands are home to an abundance of terrestrial and marine biodiversity, with numerous endemic bird and plant species, and the world's richest biodiversity per square kilometre. Communities in the region rely extensively on mangrove ecosystems for food and income generation.

Currently mangrove forests are prolific on New Caledonia's coastline, but they are gradually being destroyed by encroaching urbanisation and population growth.

Researchers are concerned that this ongoing destruction could lead to the increasing discharge and dissemination of accumulated pollutants.

The replanting of mangroves can help correct such conditions. But at present, the rate of destruction is much higher than that of reforestation.

Whatever the degree of reforestation, the truth is that more mangrove areas are being chopped down to make way for development, compared to the amount being planted, says Ashishika Sharma, a lecturer in oceanography and marine pollution at the University of the South Pacific in Fiji.

This, combined with the longer time it takes for reforestation due to poor understanding of the species and long re-acclimatisation time, is putting our mangrove areas in serious danger.

Source: http://www.scidev.net/global/biodiversity/news/mangroves-can-trap-toxic-heavy-metals-says-study.html