'Safer' pesticide could create toxic mercury, study says

August 19 2014

A farmer sprays pesticide on a rice field as the sun sets in Santa Fe, central Philippines on February 17, 2014

A compound in pesticides that replaced another banned for its harmful effects, may threaten humans and wildlife by reacting with mercury in natural water to form a toxic chemical, researchers said Tuesday.

Methyl iodide (CH3I) has been registered as a fumigant in several

countries, "although its environmental impacts are not well understood," a team from the United States and China reported in the journal *Nature Communications*.

It replaces methyl bromide, phased out under the Montreal Protocol on substances that deplete the Earth-shielding ozone layer.

For the latest study, researchers probed the behaviour of the new compound, which was approved by the US Environmental Protection Agency as a fumigant in 2008, and since registered in several countries including Japan and New Zealand.

Compared with methyl bromide, methyl iodide degraded more slowly in soil and thus had a higher chance of ending up in natural water via runoff, the researchers said.

Once there, it could interact under sunlight with mercury to form methylmercury, they showed in lab experiments using pond water.

Methylmercury is the most dangerous and toxic form of mercury, and damages the brain and immune system. It can accumulate in fish.

"Fumigants are widely applied in agricultural fields to control pests and weeds," the researchers wrote, adding that with the phase-out of methyl bromide, use of methyl iodide was expected to increase "dramatically".

"This study shows that CH3I could also indirectly threaten the health of humans and wildlife by forming a toxic chemical (methyl mercury), suggesting the necessity of a more comprehensive risk assessment of CH3I as a fumigant," they said.