

# Bacteria in groundwater can break down pesticides

**Bacteria in groundwater can break down pesticides, but they don't have the right environmental conditions for this, according to PhD research by Andrea Aldas-Vargas.**

Concentrations of pesticides in Dutch groundwater are increasing, which is bad news as two-thirds of our drinking water comes from groundwater. 'The concentrations are low but we are getting better at measuring the pollutants in the monitoring wells,' says co-supervisor Nora Sutton of the Environmental Technology group. 'On average the water stays in the ground for 30 years, so we are actually measuring future contamination. The water companies have to purify the water to make sure the water we get from our taps is clean and safe.'

Aldas-Vargas showed that bacteria can be used for this. She collected water samples from the monitoring wells and added low concentrations of pesticides in the lab. She found that the bacteria in the groundwater failed to break down the pesticides in normal, anaerobic conditions but they did do so when oxygen and organic matter were added.

## Vidi

At present, the law forbids such additions because the consequences are unknown. Last year, Sutton was awarded a Vidi grant by the Dutch Research Council to investigate this further. 'I want to develop technology for the biological breakdown of pesticides in groundwater.'

Aldas-Vargas has laid the foundation for this technology as she obtained a lot of information about the composition of bacterial communities in groundwater. Sutton now wants to create the right environmental conditions in groundwater to allow the bacteria to break down the pesticides. She also intends investigating the risks and any unforeseen effects of this intervention. AS