

## UN warns of drug-resistant germ risk brewing in nature (Update)

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Environmental activists are campaigning against the use of antibiotics in agriculture, a major source of bacterial resistance

The UN warned Tuesday of a ticking time bomb of drug-resistant germs brewing in the natural environment, aided by humans dumping antibiotics and chemicals into the water and soil.

If this continues, people will be at an ever-higher risk of contracting

diseases which are incurable by existing antibiotics from swimming in the sea or other seemingly innocuous activities, a report said.

"Around the world, discharge from municipal, agricultural and industrial waste in the environment means it is common to find antibiotic concentrations in many rivers, sediments and soils," the study found.

"It is steadily driving the evolution of resistant bacteria," it said. "A drug that once protected our health is now in danger of very quietly destroying it."

The report, "Frontiers 2017", was released at the UN Environment Assembly, the highest-level gathering on matters concerning the environment.

Health watchdogs are already deeply worried about the dwindling armoury of weapons against germs.

A report in 2014 warned that drug-resistant infections might kill 10 million people a year by 2050, making it the leading cause of death, over heart disease and cancer.

Bacteria acquire drug resistance partly by exposure to antibiotics.

To survive the drug onslaught, bacteria can transfer, even between different species, genes that confer immunity. They can pass these genes on to future generations, or DNA can mutate spontaneously.

## **Post-antibiotic era**

Strong enough doses of antibiotics will kill disease-causing bacteria before they have a chance to mutate.

But antibiotics are generally overprescribed, often at incorrect doses, which means the germs are not killed but instead given an evolutionary boost to survive future exposure to the same drug.

"We may enter what people are calling a post-antibiotic era, so we go back to the pre-1940s when simple infection... will become very difficult, if not impossible" to treat, Will Gaze of the University of Exeter, who co-authored the new report, told AFP.

The investigation highlighted a largely unknown and poorly researched contributor to the drug-resistance problem: environmental pollution.

Today, 70 percent to 80 percent of all antibiotics that humans take, or give to farm animals to bulk them up and keep them healthy, find their way into the environment, partly through wastewater and manure deposits.

"So the majority of those hundreds of thousands of tonnes of antibiotics produced every year end up in the environment," Gaze said.

Humans and animals also excrete germs, both resistant and non-resistant, into water and the soil, where they mingle with the antibiotic detritus and naturally occurring bacteria.

Add to this mix antibacterial products such as disinfectants and heavy metals that are toxic to germs, and ideal conditions are created for bacteria to develop drug-resistance in places where humans will come in contact with them.

"If we go into river systems, we see really big increases in resistance downstream (from) wastewater treatment plants... and associated with certain types of land use, so grazing land for example," Gaze said.

"If you go into coastal waters where... you might be heavily exposed to the environment, we know that we can measure quite high numbers of resistant bacteria in there."

## **'We need to invest more'**

One study showed that people were exposed to a drug-resistant E.coli bacteria in recreational waters off the British coast, despite "high levels of investment" in the treatment of wastewater.

In much of the effluent, drug concentrations are too low to kill bacteria, but "may be sufficient to induce antimicrobial resistance," the report said.

Delegates urged more research into the newly exposed origin of drug-immune germs.

"Antimicrobial resistance is an issue that has long been on the agenda... it is indeed one of the biggest threats to health," Norway's environment minister Vidar Helgesen said.

"When we see emerging evidence that tackling pollution is key to solving the antimicrobial resistance crisis, we need to invest more in getting more knowledge about that."

Gaze agreed that more research was needed to quantify the risk.

"There's no single smoking-gun study that says: 'This is the amount of infection caused by the environment'. But if you start piecing it together, it looks like it's significant," he said.

"It's like smoking: It took 50 years for the actual causal evidence to emerge after everyone knew that it was bad for your health."

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