



World's Rivers Contaminated with Antibiotics

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Rivers around the world are contaminated with dangerous levels of antibiotics, with concentrations of antibiotics in some waterways exceeding safe levels by 300 times, a global team of scientists led by the University of York found.

Findings

- The Thames was contaminated with five antibiotics, including levels of ciprofloxacin — used to treat skin and urinary tract infections — that were three times what is considered safe.
- The most common antibiotic was a urinary tract infection antibiotic called trimethoprim, which was present in 307 of 711 sites tested.
- Bangladesh, Kenya, Ghana, Pakistan and Nigeria were home to the most contaminated rivers.
- Safe limits were most frequently exceeded in Asia and Africa. However, sites in Europe, North America and South America also had high levels of contamination showing that antibiotic contamination was a “global problem”.

Route of contamination: Drugs get into rivers via human and animal waste, as well as leaks from wastewater treatment and drug manufacturing sources.

Concerns

- Scientists fear antibiotics in rivers cause **bacteria to develop resistance** meaning they can no longer be used in medicines for humans.
- The UN estimates that the rise in **antibiotic resistance could kill 10 million people** by 2050.
- A lot of the resistance genes we see in human pathogens originated from environmental bacteria.
- **Antimicrobial resistance** happens when germs like bacteria and fungi develop the ability to defeat the drugs designed to kill them.

- Microorganisms that develop antimicrobial resistance are sometimes referred to as "**superbugs**".
- As a result, the medicines become ineffective and infections persist in the body, increasing the risk of spread to others.
- New resistance mechanisms are emerging and spreading globally, threatening our ability to treat common infectious diseases, resulting in prolonged illness, disability, and death.
- Without effective antimicrobials for prevention and treatment of infections, medical procedures such as organ transplantation, cancer chemotherapy, diabetes management and major surgery (for example, caesarean sections or hip replacements) become very high risk.

Solving the problem is going to be a mammoth challenge and will need investment in infrastructure for waste and wastewater treatment, tighter regulation and the cleaning up of already contaminated sites.