

Antibiotic factory waste water was as toxic as drugs

Chris Smyth Health Editor

Pollution from factories making antibiotics is so bad that quantities in waste water can be strong enough to treat patients, according to research that suggests lax manufacturing is fuelling the rise of superbugs.

One sample of antibiotic in the water was almost a million times over the safe limit and almost all samples from around Indian manufacturing plants that supply the NHS contained superbugs resistant to multiple drugs.

Drug-resistant superbugs are rife in India and there are fears that they are spreading to Britain. Ministers have been urged to close a loophole which means that there are no international standards for antibiotic pollution, despite expert fears that it is a "huge problem" that hastens the speed at which crucial medicines stop working.

Indiscriminate use of antibiotics is one of the most serious threats to world health because exposure to the drugs helps infections develop resistance to vital medicines.

Dame Sally Davies, the chief medical officer, is on a quest to tighten global rules, warning of an "apocalyptic" scenario where common infections once again kill and treatments from hip replacements to chemotherapy become impossible.

Even though 193 countries have pledged to tackle overuse of antibiotics, standards to control pollution are left up to individual countries.

India, which produces a fifth of the world's generic drugs, has previously been criticised for high pollution levels and an investigation last year by the Bureau of Investigative Journalism found antibiotic-resistant *E. coli* near factories in Hyderabad, with one next to an NHS supplier.

Further work by the Bureau, NDR TV in Germany and Leipzig University has found antibiotics in the water around Hyderabad's Patancheru-Bollaram industrial zone, strongly suggesting that industrial run-off is fuelling the

resistance. Scientists found antibiotics in all 23 waste water samples and the only tap water not to contain drug-resistant bacteria came from a four-star hotel, according to a study published in the journal *Infection*.

One antibiotic sample was almost a million times higher than safe levels, the highest ever measured in the environment and 20 times the desired levels in the blood of patients being treated with drugs, scientists said.

Mark Holmes, of Cambridge University, said that such levels were "eye-wateringly high" and "almost the same as a therapeutic dose", insisting that they could only have come from industrial pollution. "That's not just getting rid of a few tablets down the toilet."

Timothy Walsh, of Cardiff University, said: "It's a huge problem and I don't think we can overestimate it." Professor Walsh discovered a key gene which gives bacteria resistance to antibiotics in India and warned that outbreaks of such NDM-1 positive infections are now seen in Britain.

So far there have been 1,129 cases in this country but he warned that this was "the tip of the iceberg" as travel smoothed the spread of resistance. "Economic globalisation has allowed its spread around the world unchecked," he said.

Professor Walsh urged India to wake up to the problem as "currently there is no accountability" for polluters. Britain needed to help developing countries improve manufacturing standards as well as threatening to stop buying from companies that did not have strict pollution standards, he said. "Supporting these countries is also mitigating the spread of [resistance] in the UK."

The Department of Health has previously said that it would look at setting rules on pollution for companies that supply the NHS but no progress has been made.

Companies approached by the Bureau of Investigative Journalism have denied suggestions that their factories are responsible for pollution.