Effects of Drugs Discharged into the Yamuna

Why in news?

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A recent study reveals the effects of the discharge of drug-containing effluents into the Yamuna.

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What is the study on?

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- Human body does not use the entire quantity of the drug when it is taken.
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- Resultantly, most of it is excreted and thus end up in aquatic systems via domestic sewage.
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- The study thus looks at the occurrence, fate and ecological risks of these compounds.
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- It observed nine different pharmaceutical active compounds in the Yamuna river.
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- These are six over-the-counter drugs (aspirin, paracetamol, ibuprofen, ranitidine, caffeine, diclofenac) and three prescription drugs (carbamazepine, codeine, diazepam).
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What were the findings?

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- The highest concentration of pharmaceutical compounds was located downstream Wazirabad at the point where Najafgarh drain joins the Yamuna.
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- This is one of the largest drains of Delhi and has an average discharge of about 25 cubic metres per second.

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- This drain is the largest polluter of the river contributing more than 50% of the total discharge into the Yamuna.
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- At this site, ibuprofen and paracetamol were found at a high concentration of 1.49 and 1.08 microgram per litre respectively.
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- Previous studies have shown that even small concentration of ibuprofen could cause an antagonistic effect on aquatic organisms.
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- Studies have also shown that ibuprofen exposure could increase cyanobacterial growth in the water.
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- Caffeine was found in high concentration in most of the sites.
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- Caffeine is used as a stimulant in medicine. Residue from beverages and other food products may also be a contributor.
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What could the impact be?

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- The individual levels of the drugs were small and cannot cause acute toxicity to the marine life.
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- But the mixture of compounds can “possibly cause chronic toxicity” to aquatic life and to humans who use this water for drinking purposes.
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- This not only affects the biodiversity of the river but can also lead to the rise of superbugs.
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- The discharge of drug-containing effluents in rivers and other water bodies can potentially make many microbes drug-resistant.
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- The sewage treatment plants are not designed to take care of these pharmaceutical compounds.

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- The study thus highlights the need for the government to bring in the guidelines or specific rules to arrest and address this.
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Source: The Hindu

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