

**CITYWEATHER**

33.1° | 16.4°

HIGH LOW

☀️ CLEAR SKY VERY LIKELY

SUNRISE WED | 7:02 AM  
SUNSET THU | 5:53 PM  
MOONRISE WED | 11:12 PM  
MOONSET THU | 11:46 AM

**Tuesday report:** Generally easterly winds are prevailing at lower levels over the region



**AHMEDABAD**

AQI OF POLLUTANT PM2.5  
FORECAST FOR NOV 28 (7PM)

PIRANA	317	Very poor
RAIKHAD	222	Poor
AIRPORT	196	Moderate
BOPAL	192	Moderate
CHANDIKHEDA	168	Moderate
RAKHIAL	198	Moderate
NWRANGPURA	128	Moderate
SATELLITE	114	Moderate
GIFT CITY	96	Satisfactory

GOOD RANGE | 0-60 µg/m³

SOURCE: SAFAR

## GNLU holds Constitution Day event

Gujarat National Law University (GNLU) organized a seminar at Gujarat Raj Bhavan on Monday to mark the 70th Constitution Day, in presence of Gujarat governor O P Kohli, Goa governor Mridula Sinha, Gujarat law minister

# SEWAGE SINKS SABARMATI

## Filth Nurtures Bugs Resistant To Antibiotics

Paul John @timesgroup.com

Ahmedabad: The Sabarmati today quietly weeps. Its waters that once supported life have turned putrid and carry a high concentration of deadly superbugs — variants of Escherichia Coli (E. coli) bacteria — which have turned resistant to most known antibiotics.

Every day, the Sabarmati drowns in a sea of filth. Around 143 million litres per day (MLD) of untreated sewage — of the total of 960 MLD produced from our cities — is injected into the river by the Ahmedabad Municipal Corporation (AMC), by its own admission. Even the treated effluents from the civic body's sewage treatment facilities cannot get rid of the superbug demon.

Our indiscriminate use of antibiotics for treating basic illnesses and their use as growth agents in poultry and cattle feed have made a health catastrophe imminent. An IIT-Gandhinagar study by the discipline of earth sciences has shown that antibiotic-resistant bacteria are present in treated sewage.

The researchers took samples from AMC's sewage treatment plants (STP) at Jaspur, Chandkheda, and Juhapura. All three sewage treatment plants use the activated sludge process (ASP) to treat sewage.

The influent of the AMC's Jaspur STP had an E. coli concentration of 16,000 cfa/ml — or colony-forming units per ml (a



measure of viable bacterial cells). Of this, 49% of E. coli showed resistance to antibiotics such as levofloxacin (LVX), ciprofloxacin (CIP), and norfloxacin (NFX). The treated effluent from the STP contained an E. coli concentration of 14,000 cfa/ml, of which 90% bacteria was resistant to LVX, KM, and sulfamethoxazole (ST).

At the Chandkheda STP, an E. coli concentration of 4,300 cfa/ml was found, of which 20% bacteria was resistant to LVX, NFX, and TC. And nearly 40% was resistant to kanamycin monosulphate (KM). The treated effluent contained 60% bacteria resistant to KM and 20% bacteria resistant to the Chandola samples showed up to 60% resistance to tetracycline and sulfamethoxazole and 40% resistance to norfloxacin.

The IIT-Gn research was carried out under the Collaborative Regional Research Programme of Asia Pacific Network in association with Kanazawa University, Japan, and the University of Ruhuna, Sri Lanka.



## Pirana superbugs flow into Chandola lake

Paul John @timesgroup.com

Ahmedabad: The Sabarmati alone is not infested with superbugs. When the IIT-Gandhinagar research team analyzed water samples from two of Ahmedabad's important lakes — Kankaria and Chandola — alarming findings emerged. The study found superbugs in Chandola lake, largely the result of leachates from the nearby Pirana dumping site.

The prevalence of E. coli in Kankaria lake — at 15,333 cfa/ml (colony-forming units per ml, a measure of viable bacterial cells) — was five times that of Chandola lake (3,467 cfa/ml). But surprisingly the Kankaria samples exhibited 0% resistance to all six antibiotics under review while the Chandola samples showed up to 60% resistance to tetracycline and sulfamethoxazole and 40% resistance to norfloxacin.

The IIT-Gn team suggests that even though Chandola lake had less E. coli, most of the bacteria gained resistance probably before being discharged into the lake in domestic sewage.

### MAIN CONCERNS

► **Waste water quality standards** in our state do not include the antibiotic resistance parameter and most prominent cities lack any baseline data on the prevalence of antibiotic-resistant bacteria (ARB).

► **The lack of the complete picture** of the distribution and frequency of antibiotic resistance may impair the ability to evaluate freshwater quality and prevent future disease outbreaks.

► **The ARB get concentrated in sludge** which requires higher concentration of chlorine for removal in waste water treatment plants. The antibiotic resistance analysis highlights the importance of effluent sterilization.

► **Only primitive pollution parameters** like biological oxygen demand, major ions, and metals are measured. Among microbial parameters, only total coliform or E. coli counts are taken.

► **Major cities lack efficient waste water treatment plants** and waste is discharged into rivers and lakes without guidelines.

► **From 2000 to 2015, India recorded a 103% increase in antibiotic consumption** — from 3.2 to 6.5 billion defined daily doses.



### WHAT IS E. COLI ?

Escherichia coli is a type of bacteria that normally lives in your intestines. It's also found in the gut of some animals. Most types of E. coli are harmless and even help keep your digestive tract healthy. But some strains can cause diarrhoea if you consume contaminated food or water. While many of us associate E. coli with food poisoning, you can also get pneumonia, breathing problems, and urinary tract infections from different types of the bacteria. In fact, 75% to 95% of urinary tract infections are caused by E. coli.

### ANTIBIOTIC-RESISTANT BACTERIA

Antibiotic resistance is a situation in which microorganisms, especially bacteria, become capable of reproducing and survive within the target sites in the presence of antibiotics.

**Story 1 Title:** Sewage Sinks Sabarmati - Filth Nurtures Bugs Resistant To Antibiotics

**Story 2 Title:** Pirana superbugs flow into Chandola lake

**Source:** Times of India (Follow up special stories, Pg. no. 2)

**Link:** <https://timesofindia.indiatimes.com/city/ahmedabad/sewage-sinks-sabarmati/articleshow/66834903.cms>

<https://timesofindia.indiatimes.com/city/ahmedabad/pirana-superbugs-flow-into-chandola-lake/articleshow/66834905.cms>

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