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the froth. There follows a scramble to remove the foam. The phosporus settles within a few hours if the froth is not removed," he says.

A glistening stream of froth floats out for nearly a kilometre from the lake through the canals feeding the fields. Indeed the canals transport more than just water to the farmland—they bring the metropolis' sewage, which has made its way to the lake through stormwater drains.

And the genesis of the froth is a seemingly innocuous, daily household activity: washing. Shampoos and detergents and soap suds containing phosphorus compounds that leave residences upstream, are carried through pipes and drains to a series of ponds, tanks and lakes in the city including Maragondanahalli.


Fire and foam

"Sewage water containing these compounds enter every single lake in the city. Froth is formed when the polluted water is churned at the inlets or outlets, through wind and rain, or when the water cascades at weirs," says T.V. Ramachandra from Centre of Ecological Sciences at the Indian Institute of Science (IISc).

Margondanahalli is one of six locations where the water bodies routinely foam up. The most notorious, and most-photographed, 'frothing sites' are Bellandur and Varthur lakes, which have become spectacular symbols of all that is wrong with Bengaluru's urbanisation. The two lakes together receive more than 500 million litres of sewage everyday. Froth is ever-present, and it often spills onto the road and into apartment complexes. And sometimes, it catches fire.

Another waterbody that routinely froths up is Byramangala reservoir, designed to store water along the Vrishabhavathy river. It irrigates over 5,000 acres of cropland growing tomato, carrot and leafy vegetables, sold in south Bengaluru.

Even 'rivers'—Arkavathy and Vrishabhavathy, which are little more than cesspools carrying the city's sewage—now froth when the water tumbles over gorges or flows across reservoirs.



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M. Ramu from a fishing community in Ramgondanahalli village tells me what the declining state of Varthur—a lake now synonymous with sewage—has meant to his livelihood. For reasons he now regrets, he took a five-year contract to fish in the lake a couple of years ago. But for the past eight months, his boat has not so much as entered the lake. “Who would touch our fish if they knew it came from this lake?” he asks.

Indeed, to a consumer, the contamination can be fairly deadly. A team from IISc has been periodically testing the froth at Varthur Lake and trying to correlate it to the produce of the area. They have found cadmium, chromium, lead, copper and nickel in high concentrations—particularly so in vegetables.

The scientists found another pattern: if lake water contained lead 2.5 times above permissible limit, the chemical was found to be up to 59 times above the limit in cultivated crops. Copper was 61 times above the permissible limit, chromium seven times, copper 11 times and nickel 61 times above the limit in vegetables grown here.

“These heavy metals are clearly industrial discharge, particularly from the electroplating sector. Bengaluru is eating the dangerous heavy metals it produces,” says Ramachandra.

The State government has drawn up plans to treat nearly 1,450 million litres of sewage a day. But experts have warned that ‘frothing’ is not about to stop any time soon.

Primary and secondary sewage treatment plants may reduce organic matter, but they allow most of the phosphorus content to pass right through. In a letter to the State and Central governments, Almitra Patel, a member of a Supreme Court Committee for Solid Waste Management, has asked for a clear labelling of phosphorus content in shampoos and detergents.

India is different

“The U.S. and Canada jointly saved Lake Erie in 1973 by limiting phosphorus content to 2.2% in all detergents, laundry bars and industrial cleaners



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Now even the traditional green banana (pis) has become scarce, leading to... orders and overseeing the rejuvenation of lakes.

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