PLASTIC MAN OF INDIA ENCOURAGES A BETTER PLAN FOR PLASTIC DISPOSAL

Relevant for: Environment & Disaster Management | Topic: Environmental Conservation, Sustainable Development & EIA

Prof Vasudevan at his lab in the college

The Thiagarajar College of Engineering (TCE) in Madurai shelters three important things: India's only Centre for Plastic Waste Management funded by the Ministry of Environment and Forests, stretches of plastic road on campus, and a quake-bullet-water-proof model of a toilet made with 'plastone' (plastic plus stone).

The credit goes to Prof R Vasudevan, a retired chemistry professor who has spent the last two decades researching and implementing the purposeful reuse of waste plastic. "Plastic is my resource," he says, as we make our way to his lab, walking past heaps of plastic wrappers, discarded carry bags, and plastic bottles.

In the lab, he takes his seat on a swivel chair retrieved from the college junkyard years ago. Shredding and block-making machines, ovens, equipment that checks the weight, pressure and texture of his products fill up the room. He points to a rusted iron *kadai* by his side and smiles, "This is where the experiment began and continues."

Eighteen years ago, Prof Vasudevan, who is also the college dean for extra-curricular activities, mixed bitumen with plastic-coated granules to lay the first-ever plastic-tar road. Jamboolingam Street in Chennai's Valluvarkottam was his first experimental site in 2000, followed by Lenin Street in Kovilpatti, near Madurai. "Both stand strong," he says.

So far, 1,00,000 km of plastic roads have been laid across the country using his technology, for which the college got a patent in 2006. "The technical know-how and guidance are free for anyone in the country who wishes to lay plastic-tar roads," says the man, whose method to build all-weather roads earned him the Padma Shri this year.

Yet, the Plastic Man of India, as he is known, is disappointed with the Government's recent proposal to ban single-use plastic. "Banning is not the answer," he says, "efficiently managing the disposal and collection of waste plastic is."

As per his calculations, India would require 100 lakh tonnes of plastic waste, if it were to use the plastic-tar technology to lay the 46 lakh-kilometre multi-lane roads that criss-cross the country.

"Plastic waste that is irresponsibly littered and can be used for laying roads is only 30 lakh tonnes," claims Prof Vasudevan. He says the fault lies with the government, companies and people who do not dispose of plastic waste properly and allow it to choke the water bodies and channels. "A highly productive material like plastic earns disrepute due to human error," he rues.

He advocates that people sell their domestic plastic waste to junk dealers, as they do with their old newspapers, and not throw it in the bins. Segregation has to be carried out at various levels. Plastic waste ought to be collected from every private and public place and the SHGs could be involved in collecting, shredding and selling it to companies that lay roads. "It will financially empower women, save the environment, and improve the quality of roads," says the 74-year-old.

Plastic, in Prof Vasudevan's opinion, is an important invention. "It is impossible to eliminate plastic from our lives as it has become convenient for multiple uses," he notes.

Single-use or disposable plastics, such as carry bags, wrappers and pet bottles are most commonly used. The three types of single-use plastics — polyethylene, polypropylene and polystyrene — he points out, are safe plastics and do not emit toxic gas when burnt. "The drawback is plastic does not decompose, and we are allowing it to strangle us by failing to manage it," says the professor, who successfully converted the non-biodegradable waste into a coating over pebbles that bond with bitumen for road laying.

His idea of plastic roads germinated while watching a TV programme in 1999. "A doctor said that plastic dissolves in water bodies and causes pollution, and I rushed to my lab because I knew plastic is a product of petroleum and the doctor's theory was incorrect. I mixed waste plastic with heated bitumen and coated the mixture over stone. It stayed strong," he recalls.

History was slow in the making, however. The first two plastic roads that he laid went unacknowledged. The former president, Dr Abdul Kalam — whom he met at a college function — told him not to worry if people were not convinced with his idea and advised him to continue his work and lay plastic roads within the college campus. Between 2002 and 2004, three 60-foot roads were laid, and every new road laid at TCE now uses plastic waste.

Prof Vasudevan's ongoing experiment with plastic has led to the creation of plastone — a stone block with plastic coating. He uses granite and ceramic waste or industrial slug with waste plastic to make plastone. Each block measures two feet in length and one foot in width and consumes 300 carry bags and six PET bottles. The non-porous plastone can be used in flooring, for raising compound walls and as an effective liner for water bodies.

Six months ago, he built a model toilet using plastone blocks that require no cementing and can be dismantled and moved to different locations. It takes two hours and half a tonne of plastic waste to build one 8x4 sq ft plastone toilet. He has offered his technology to build two crore toilets under the Swachh Bharat Abhiyan. "To do it, 100 lakh tonnes of plastic waste will be required," he says.

The patented technology is now being used in the Netherlands, while he offers every innovation free to the Government of India. "My dream is to replace all existing and pot-holed roads in India with plastic-tar," he says.

Sign up to receive our newsletter in your inbox every day!

Please enter a valid email address.

'We have no trained personnel or even the necessary medicines or vaccines,' says a beat guard

Our existing notification subscribers need to choose this option to keep getting the alerts.

END