

# Plastic waste can be converted to useful fuel

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Chennai: First we pretended it didn't exist. Then we thought of dumping them. Then followed the thought of burning them. But none of this helped to rid Chennai of the problem of plastic waste as can be seen by the growing mounds of plastic in almost all street corners. According to data available on the website of Greater Chennai Corporation, every day 4,500 tonnes of waste is collected from the city, of which 316 tonnes is plastic waste. That constitutes 7.04 per cent of the total garbage lifted from the metropolis.

But Sriram, director, Hand-in-Hand NGO, Chennai, says, "The plastic waste collected in the city is much lower than what it actually generates. This is due to lack of awareness and people's busy lifestyle. Secondly, open group dumping is followed by the Corporation which is not healthy for the environment. Thirdly, burning of waste is adopted to decrease their volume. This further increases air pollution levels in the city."

How would it be if we can not just reduce plastic waste, but also put it to good use like converting it into fuel? Rudra Environmental Solutions, a Pune-based organisation, was one of the first to start this initiative that has been followed in British-based companies like Cynar that have been doing this project right from early 2000.



Established in July 2009, the ISO 9001-2008 certified Indian company has done research in converting waste plastic into fuel and currently runs three plants to generate fuel from waste.

Medha Tadpatrikar (photo on right), managing director of Rudra Environmental Solutions (bottom photo), says, "We have been successful in getting rid of non-degradable polymer waste by pyrolysis process and generating poly fuel from these plastic waste," she adds.

Explaining the process, Medha, says, "The waste plastic is shredded into smaller pieces following which they are transferred to the reactor along with a catalyst. Then the process of liquefaction and, in turn, vaporisation of solid waste plastic occurs. These vapours are carefully transferred to a condensing system where the final liquefied plastic fuel is recovered from the vapour."



"The plastic fuel generated by our machines has a calorific value of 10,400 to 10,800 KJ/kg and can be effectively used to run tractors, diesel electricity plants, boilers, stoves, agri pumps, etc. We have four kinds of machines, based on their batch loading capacity. Our machines can take up from anywhere between 300 kg to 2 tonnes of plastic waste for each cycle of the process. Our pro 34 machine can consume 15 to 20 tonnes of plastic in a single day. For every kilogram of plastic, we get around 40 to 45 litres of fuel," says Shirish Phadtare (photo on top), chairman of the company.

"The only problem is we don't get enough plastic waste even though tonnes of such waste are discarded as garbage in cities. To address the issue, we started Keshav Sita Foundation through which we appoint volunteers to collect plastic waste from households in Pune. As of now, we are reaching around 5,000 households in the city on a daily basis and collect around 1.5 to 2 tonnes of plastic waste," he adds.

Another niggling problem is the 3-4 per cent solid and 5-6 per cent moisture residue that the process generates. But there is a solution to this also as it is mixed with tar and used for laying plastic roads, he said, adding, "We give it to the government."

What is the feasibility of employing this technology in cities like Chennai? Shirish enthusiastically says, "This plant can be started anywhere in the world and all it needs is a mere one ground of vacant land. It can also be installed in villages, taluks, etc. More than decomposing non-degradable plastic, it provides employment to many. The investment is also very little."

## RECYCLING TYRES

In the United States alone, over 290 million car tyres are discarded annually. Pyrolysis of worn-out tyres allows the high energy content of the tyre to be recovered as fuel. Using tyres as fuel produces energy equal to burning oil and 25 per cent more than burning coal.

## FLYING HIGH

Pilot and environmentalist Jeremy Rowsell is planning a ground-breaking flight in August 2016, travelling 4,828 km from San Francisco to Anchorage, Alaska, in a plane fuelled by plastic waste.

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