



CSIR IN MEDIA

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Air too polluted to breathe safe in Aurangabad

A study conducted by two city scientists, in association with National Environmental Engineering Research Institute (NEERI) and Council of Scientific and Industrial Research (CSIR), has revealed an alarming 14 out of 17 zones in Aurangabad to have high levels of pollution. The average concentration of PM₁₀ (particulate matter) ranged between 82.1 to 343.9 microgram per metric cube (g/m³). According to WHO guidelines, the recommended level of PM₁₀ in urban areas should be less than 20 g/m³.

The figures aren't far behind New Delhi's pollution levels, which, at 470 g/m³, make one of the most lethal air to breathe in.

Scientist and environmentalist Geetanjali Kaushik and Arvind Chel, who did his post-doctoral fellowship in thermal engineering from Ghent University, Belgium, published the results of a two-month-long study in the International Journal of Environment recently. Their paper, titled 'Ambient air and PM₁₀ respirable dust concentration and control strategies for Aurangabad', is the first ever such study done for the city. Both are professors at the city-based JNEC college of engineering.



"There are gradations of pollution levels. The scales for PM 10, according to the National Ambient Air Quality Standard, are classified into standard (0-100 g/m³), controllable (100-200 g/m³), alarming (200-300 g/m³) and worst (300-400 g/m³). We conducted the study in 17 prime locations in the city and included five major industrial zones within a 20-km radius," said Kaushik. PM10 refers to particles less than or equal to 10 micrometres in diameter, less than the width of a single human hair. This excludes larger particles like soot and ash, which is easily seen by the naked eye, but includes the coarse dust particles which are 2.5-10 micrometres in diameter. These particles can easily get into the lungs, and can potentially cause several health problems and respiratory ailments.

"Busy areas of the city like the railway station, City Chowk recorded the most dangerous levels of pollution: recording a lethal 300-500 g/m³ of particulate matter. Zones which reported alarming levels include Waluj MIDC area, Beed Bypass, Bus stand-CIDCO, Seven Hill Crossing, Gajanan Mandir, Dudh Dairy Crossing, Kranti Chowk, Mill Corner, S B College, Gulmandi, Harsul Crossing and TV Centre. Chikalhana MIDC area and the city airport showed readings between 100 to 200 g/m³, which is controllable," said Chel.

Kaushik added that the PM10 concentration has rarely been monitored according to the land use pattern for Aurangabad city. They took the readings using the respirable dust sampler developed through collaboration of NEERI-CSIR. Only one location in the city was a literal breath of fresh air. "The MGM campus showed PM10 levels at 82.1g/m³, which can be regarded as standard. This was possibly because of the widespread greenery in the campus. One of the sure-fire ways to ensure that the air you breathe in is safe for you is to plant trees and maintain them," Chel said.

<http://timesofindia.indiatimes.com/city/aurangabad/Air-too-polluted-to-breathe-safe-in-Aurangabad/articleshow/52580690.cms>

Ranjana Diggikar | TNN | Jun 4, 2016

LACE UP FOR SHOES FASHIONED OUT OF CHICKEN LEGS

Gearing up for a future that might see a reduced supply of cow-hide in the light of cow-slaughter bans, one of India's premier labs dealing with leather technology, is looking at ways to use skin from unusual sources — chicken legs and fish scales — to meet domestic and export demands for leather.

The Chennai-based CSIR-Central Leather Research Institute (CLRI) is looking to firm up deals with hatcheries in Tamil Nadu to ensure a steady and increased supply for chicken legs that can be used to prepare leather.

Alternative materials

“We have to look at alternative materials,” B. Chandrasekaran, Director, CLRI told The Hindu. “Exporters tell us about reduced supplies of cow hide. It's still small now but we must be prepared.” The CSIR-CLRI already has a dedicated research project to understand how “200 million square feet of chicken legs” annually available can be turned into a viable aide for the leather industry.

Cow-hide constitutes about a quarter of the raw material that's used to make leather with goat, sheep and buffalo supplying the bulk of the annual 1.8 billion square feet of leather produced in India. Bans on the slaughter of cows in Haryana and Maharashtra have meant a decline of 5%-10% in the supply of cow hide, Dr. Chandrasekaran added.



Annual turnover

According to the estimates from the India International Leather Fair 2015, the leather industry accounts for an annual turnover of over \$11 billion, recording a cumulative annual growth rate of about 14.77%. India is also the second largest producer of footwear and leather garments in the world and employs 2.5 million, with nearly 30% of them being women.

<http://www.thehindu.com/sci-tech/technology/lace-up-for-shoes-fashioned-out-of-chicken-legs/article8691228.ece>

Archana Jyoti | 03 June 2016

Wheelchairs that move at finger touch

SWIPE TO MOVE: The Intelligent Patient Vehicle enables manoeuvring by no more than twiddling a finger on a touchpad. A future upgrade hopes to have the system wholly controlled by head gestures.

Photo: Biomedical instrumentation, CSIR-CSIO, Chandigarh



Motorised wheelchairs available in India are costly because the control panel that powers it is usually imported

Dinesh Pankaj, a scientist at the Council of Scientific & Industrial Research (CSIR)-Central Scientific Instruments Organisation (CSIO), is looking to reinvent the wheel. The current generation of motorised wheelchairs rely on a joystick to control motion and that, he says, rules out quadriplegics or even those who cannot effectively coordinate their limbs.

The Intelligent Patient Vehicle (IPV), being developed by Mr. Pankaj and his colleagues at this Chandigarh-based lab whose inventions span an earthquake warning system now used in the Delhi Metro to a 'reading machine' to help the visually impaired read online, enables wheelchairs to be manoeuvred by no more than twiddling a finger on a touchpad. More ambitiously, a future upgrade hopes to have the system wholly controlled by head gestures.

"Two variants of the IPV are being developed to meet the needs of elderly and paraplegic with weak limbs and quadriplegics," says Mr. Pankaj.

Getting the details right

Much like scrolling up-down-left-right on smartphones, the IPVs will be powered by a microcomputer that will ‘transmit’ these directions to the wheelchair’s motor. It isn’t a major technical challenge but one needs to ensure that there are enough sensors on the vehicle to ensure the user’s safety. “What if the person is very close to a flight of stairs? So safety and braking systems are key,” he adds.

Motorised wheelchairs available in India are costly because the control panel that powers it is usually imported. Making it in-house, says Mr. Pankaj, would reduce the cost of such wheelchairs from Rs.1.5 lakh to Rs.60,000. CSIO has developed the control system and integrated it into test wheelchairs but they are yet to be tested by paraplegics for reliability and ruggedness. Ostrich Mobility, a Bengaluru-based company that makes electric wheelchairs, has tested the IPV and talks are on for potential commercialisation, says Mr. Pankaj.

But the tough nut to crack is the version of the wheelchair that can be controlled entirely by head movements. In the lab prototype, a laptop with a camera is attached to the wheelchair that maps the relative position of the head from the screen. For such a system to work, the machinery has to correctly interpret head movements as ‘left’ or ‘right’. By March next, not only will the team have to eschew the laptop for a more compact monitor but also ensure that the wheelchair is ready to be used safely. “For a first-time user, there would be some amount of learning that the machine has to do to adjust to the user, but I doubt it would involve more than a few days,” says Mr. Pankaj.

Making spaces disabled-friendly

India is particularly deficient in making public spaces more accessible for the differently abled, according to several reports by advocacy groups as well India's own Urban Development Ministry that earlier this year announced a scheme to begin rating the disability-friendliness of public buildings.

The Ministry of Social Justice records that India has about 20 million differently abled people with nearly 11 million of them classified as being affected by locomotive disability. India has among the highest prevalence of locomotive disability internationally at 1,046 per 1,00,000 people in the rural areas and 901 per 1,00,000 people among the urban population.

The IPV resulted from a larger CSIR-led push to use technology to improve access for the differently abled. Given low incomes in India, manual wheelchairs make up the vast majority but more affordable motorised wheelchairs could capture a significant market, says R.K. Sinha, director, CSIR-CSIO.