



# Quantum Leap

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## A hope for rural energy needs

**J**UST imagine a light source that also doubles up as a stove or vice versa. Such a dual-purpose device can tackle the energy problem in rural India to a large extent. And if such a lamp-cum-stove can run on a non-conventional fuel, it can also address issues relating to greenhouse gas emissions.

At present, most rural households without electricity burn kerosene for lighting and fuel wood for cooking. To tackle this problem, the Nimbkar Agricultural Research Institute at Phaltan near Pune has developed a lanstove (lantern and stove) that runs on an ethanol-water mixture. This is a brainchild of Dr Anil K Rajvanshi,

founder and director of the institute, who has been working on biomass-based energy systems for a long time now.

Rajvanshi, a product of the Indian Institute of Technology, Kanpur, has been working on rural technologies for the past two decades. The idea behind the lanstove, he says, is to set up decentralised distilleries in villages for producing low grade ethanol from locally available resources like sweet sorghum, poor quality jaggery or any other sugar bearing material. Such factories can store it in sealed cylinders, which can then be supplied to consumers just like LPG.

Rajvanshi has tested the new device in 20 houses in rural areas surrounding Phaltan. Lanstove can also provide clean drinking water for households — the heat from the stove can be used for boiling water once cooking is finished. Problems such as high capital costs, says Rajvanshi, can be resolved if the subsidy that kerosene gets at present can be extended to low-grade ethanol. As for fears of ethanol diversion for illicit drinking, the use of sealed cylinders can help.

Rajvanshi is also working on improving the efficiency of cooking vessels used in rural and semi-urban areas. He has developed an efficient cooking device based on the heat pipe principle to use the heat of flue gases for cooking a meal for a family of four. This is a slow cooker in which the food is brought to boil via steam cooking and then it cooks in its own heat. In fact, this is an improvement over this type of cookers which were in vogue in the country in the 1960s. These



## Jaipur could be another Bhopal

**T**HE fire in the storage tanks of the Indian Oil Corporation depot near Jaipur is still on. This is a living testimony of how much we as a nation care for industrial safety as well as human life. In about a month's time, it will be 25 years since India witnessed the industrial disaster in Bhopal. The magnitude of the Jaipur disaster is no less. This may not be so in public perception because the chemicals involved in the Jaipur disaster — petrol, diesel and kerosene — are used every day. We get exposed to diesel and petrol exhaust in our cities routinely and nobody dies of exposure to them, unlike Methyl Isocyanate that killed and maimed thousands in Bhopal.

But this is no reason to think lightly of pollutants in the former category. Both diesel and petrol fumes are a deadly cocktail of highly toxic and cancer-causing chemicals. Diesel exhaust includes carbon monoxide, carbon dioxide, nitrogen oxides, sulphur oxides, hydrocarbons and unburned carbon

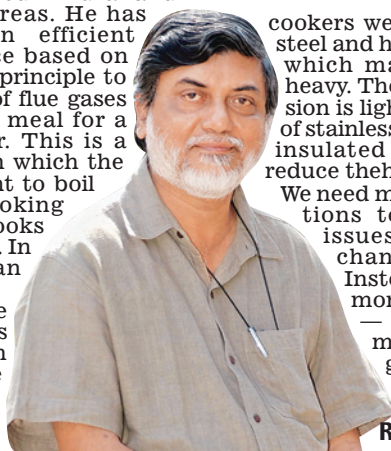
particles. The carbon particles are small enough to be inhaled and deposited in the lungs and they can occupy a large surface area. Organic compounds from diesel exhaust with known toxic and carcinogenic properties, such as polycyclic aromatic hydrocarbons (PAH), adhere easily to the surface of the carbon particles and are carried deep into the lungs.

Besides causing and aggravating acute respiratory problems, these chemicals can even clog arteries and lead to heart attacks. Pregnant women exposed to intense smoke can give birth to babies with deformities. Several studies have linked diesel exhaust exposure to low birth weight in infants, premature births, and elevated infant mortality rates, besides a fall in sperm count in men. PAH in diesel exhaust is associated with DNA damage and is rapidly absorbed through the lungs into the central nervous system causing diseases like Parkinson's and Alzheimer's.

**THE** touted ad campaign of Idea Cellular — 'walk when you talk' — is misleading. This is because talking on your mobile phone while walking can be injurious to health. Researchers at Western Washington University have found that this causes 'inattentive blindness'. This is a condition in which one fails to notice a fully visible, but unexpected object due to attention being engaged on another task.

The researchers found that cell phone users walked more slowly, changed directions more frequently, and were less likely to acknowledge other people than individuals in other conditions. It was also found that such users were less likely to notice an unusual activity along their walking route, such as a unicycling clown deployed in the study.

Cell phone usage may cause inattentive blindness even during a simple activity that should require few cognitive resources. So, instead of telling people to 'walk when they talk', Idea should sell its service with a health warning: 'don't walk when you talk, it may cause inattentive blindness'.



cookers were made of mild steel and had brass utensils which made them quite heavy. The improvised version is lighter as it is made of stainless steel and has an insulated outer jacket to reduce the heat loss.

We need more such innovations to address core issues in the climate change debate. Instead of setting up more power stations — and emitting more greenhouse gases — we need sustainable solutions.

Rajvanshi

**OUR** performance in administration of essential vaccines to the newly born and infants is getting worse. Measles is a vaccine preventable disease, yet thousands of children are still dying due to it in India. We account for a third of all deaths due to measles. The reported coverage of measles vaccination has been 80 per cent since 1990, but 'evaluated coverage' has been found to be just 56 per cent.

Most of the measles deaths are reported in children

below five, which indicates huge gaps in routine immunisation. This is a reflection of the weak health infrastructure in rural areas. To close these gaps, an expert group convened by the Public Health Foundation of India recently recommended a special campaign for mass measles vaccination, on the lines of polio. The fact that it is a highly contagious, life-threatening disease and that a safe, cost-effective vaccine is available needs to be reinforced in the public domain.

## Move to conserve rhododendrons

**E**VEN as India and China sparred over the Dalai Lama's visit to Arunachal Pradesh, botanists from China and India (including those from Arunachal Pradesh) were busy working out a conservation plan for *Rhododendrons*, a genus which has its centre of diversity in the Sino-Himalayan region. Many rhododendrons are in danger because of excessive use of the flowering plants

as fuel wood and habitat destruction due to human activity. These plants are facing a change in flowering time possibly due to climate change impact in the Himalayan region.

At a three-day meeting in Delhi last week, experts from India, China and Nepal identified priority locations and discussed possible conservation strategies. The Indian participants categorised

14 of 45 priority *Rhododendron* species as 'critically endangered'.

Winrock International India — which organised the meeting — is at present working on a landscape approach to conservation of rhododendrons in Tawang and West Kameng districts of Arunachal Pradesh, according to Sudipto Chatterjee who is coordinating the effort.



A rhododendron