



INDOOR AIR POLLUTION

ABOUT 400,000 INDIANS DIE OF AIR POISONING IN THEIR HOMES EACH YEAR. IF YOU THINK IT'S ONLY DUE TO THE BIOMASS-BURNING 'CHULHAS' OF RURAL INDIA, AND URBAN WORRIES SHOULD BE LIMITED TO SMOG, CAR EXHAUST OR FACTORY EMISSIONS, THINK AGAIN. INDOOR POLLUTION ALSO COMES FROM EVERYDAY ITEMS SUCH AS LAMINATE FLOORING, EMULSION PAINTS, COUNTERTOPS AND CUPBOARDS, INSECT REPELLENTS AND CLEANERS. SO ASK YOURSELF...

IS YOUR HOME SLOWLY KILLING YOU?



BY ARCHANA RAI

The World Health Organization says India accounts for 80% of the 0.6 million premature deaths from indoor pollution in South-East Asia each year. True, the biggest chunk of this figure comes from the 70% rural households that lack proper ventilation, and which use biomass as fuel. But a recent study on indoor air pollution (IAP) in Mumbai (published in the June issue of the *Journal of Association of Physicians of India*) sounds a warning bell for city dwellers. The study noted that IAP is emerging as a concern for urban households, with city residents typically spending around 90% of their time indoors in an enclosed environment (home or office), with restricted air circulation.

Deadly if ignored
It's not just India. Worldwide, outdoor air pollution accounts for 800,000 deaths annually, traffic accidents for 1.2 million, physical inactivity for 1.9 million...and IAP for 1.5 million, says WHO. Yet, the Mumbai study says only 1 in 100 respondents was aware of this health hazard. The lack of awareness is worrying because prolonged exposure to IAP can lead to cancer, obstructive pulmonary diseases and permanent lung damage, according to the study in which 489 of the 754 respondents were asthmatic.

The study also noted that "experts feel that IAP impacts health to a greater extent than outdoor pollution due to higher concentration and prolonged exposure". K.K. Manjunath, general physician, Wockhardt Hospitals, Bangalore, finds that his clinical routine bears out the findings: Nearly a quarter of his patients have respiratory complaints; and nearly one-fifth of them are victims of IAP, he says.

Pollution peevs
Eye irritation, blocked nose, sore throat, headache, dizziness and fatigue may be the more innocuous effects. Lower respiratory tract infections,

chronic pulmonary disease—such as chronic bronchitis and chronic obstructive pulmonary disease (a progressive and only partially reversible airflow obstruction)—conditions such as otitis media (middle-ear infection) and acute upper respiratory infections, are typically caused by particulate pollutants and volatiles (see *Sources of Distress*).

Vivek Narang, chest physician, Fortis Hospital, New Delhi, adds eye and skin allergies and cardiac disorders to the list. He says these are associated more with biological contaminants: bacteria, fungi, mould, viruses and mildew. Even the kitchen can be deadly when solid fuels and biomass are widely used for cooking. "Evidence is tentative and based on fewer studies, but (the effect) includes conditions such as low birth weight, stillbirth, deaths in the first week of life, asthma, tuberculosis, nasopharyngeal and laryngeal cancer, cataract and cardiovascular disease," says Himanshu Garg, respiratory and sleep consultant, Max Healthcare, Delhi.

WHO suggests switching to more efficient stoves burning "clean fuels" such as biogas or LPG; but even gas stoves, stoves and particulate pollutants, causing respiratory problems.

The enemies within
Indoor air pollutants lurk everywhere. The trouble is, they look benign. The oldest one in the book: dust mites (which feed on dead skin cells and their droppings causes an allergic reaction; it is also asso-

ciated with asthma. Other common pollutants are items of everyday use: cooking stoves, mosquito repellents, incense sticks, etc. "Every time we build a case history of patients with respiratory illnesses, apart from cigarette smoke, the most common cause is mosquito repellents," says Dr Manjunath. A year ago, the *Journal of Cancer* reported that burning incense produces a mix of possible carcinogens. However, many other prominent pollutants are practically invisible. Laminates on cupboards, carpets and upholstery, paints and other treatments use chemicals that are increasingly seen as responsible for a rise in respiratory illnesses.

"The formaldehyde and adhesives used to preserve and hold together particle- or fibre-board can off-gas toxic fumes," says Dr Garg. These volatile organic compounds are also released by chemicals used to treat upholstery fabric, as well as paints and solvents—all common causes of air pollution, equally ubiquitous in our lives. "Every time you buy a mattress, you are not aware that there is an anti-fire solvent spread on it. There are huge amounts of chemicals in most household items that users are completely unaware of," says Chandra Bhushan, associate director, Centre for Science and Environment (CSE), a Delhi-based activist organization.

A recently released CSE study (*See Story, below*) found that paints in India have unacceptable levels of toxic lead, exceeding the Bureau of Indian Standards' recommendation. Part of the problem is the absence of a mandatory cap on lead content. Similar lack of legislation and standards for other household products continues to be a problem. Meanwhile, the very ordinariness of these pollutants concerns medical practitioners. While they may be able to identify the culprit and treat the symptom, the burden of avoiding these silent killers falls on sufferers.

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SOURCES OF DISTRESS

Particulate matter: Stoves (wood, coal, kerosene, LPG), building construction dust. **Volatile organic compounds (VOCs):** Insect repellents, incense, paints, household cleaners, tobacco smoke, cooking vapours, off-gas from plastics and composite wood products, wood polish and other furniture treatment (that 'new furniture' smell), pesticides, air fresheners, naphthalene balls. **Indoor radiation:** Television and other digital devices, radon (a natural radioactive gas which accumulates in confined spaces). **Biological contaminants:** Dust, cobwebs, bird feathers, rodents, insects, pets, fungi.

SOURCE: "Poor Awareness and Knowledge about Indoor Air Pollution", *Journal of Association of Physicians of India*, June.

THE CURE IS PREVENTION

- A large proportion of household pollutants, even in urban areas, comes from the kitchen. Install high vents, and supplement with exhausts to remove noxious fumes.
- Ensure cross-ventilation, even if (or especially if) your home or office is air-conditioned. "Often windows and doors are kept closed for most of the day. We need to allow air exchange once every few hours," says Dr Garg.
- Make sure all cooling systems (coolers, air-conditioners) are cleaned at least once a month. These can become dusty or mouldy, spreading mites and mould spores through the home.
- When choosing flooring and countertop materials, wherever feasible, choose natural stone, wood or tile. Aim for real wood furniture instead of pressed board. Avoid veneers.
- Given the CSE findings on toxic lead content, choose paints carefully. Insist on 'low VOC' too.
- Check the labels on household detergents and cleaners. "We have no idea what goes into common cleaning liquids," says CSE's Chandra Bhushan. Simplest is best; and don't discount the cleaning abilities of food-grade substances such as vinegar, lime juice and baking soda.
- Vacuum and air out mattresses, upholstery and carpets periodically, to reduce (if not eliminate) dust mites and volatile chemicals. Lack of labelling is a big problem for such products in India, notes Bhushan, since one never knows what treatments were used.