The presence of contaminated indoor air assumed an alarming proportion in the recent times\(^1,2\). The indoor air quality is now shown to affect the well being and productivity and is responsible for a large number of health problems\(^2\). In the developing world, the indoor combustion of biomass fuels may account for at least 2 million deaths a year\(^3\). In India, about 3.5 per cent of the national burden of disease and over 0.4 million deaths are attributable to solid fuel use\(^4\).

The extensive list of indoor pollutants includes numerous exhaust vapours, particulate matter, gases, organic chemicals, spores, allergens, micro-organisms and various other substances. Fuel combustion, tobacco smoking, air conditioning, building and construction materials, paints, consumer products, pet animals, plants and people living indoors are some of the important sources. In Indian homes, in villages, small towns and urban slums, the indoor combustion of solid fuels (such as the dried wood, leaves and animal dung used for cooking) is the major source of indoor pollution as is true globally for most of the rural communities in the developing countries\(^5,6\).

Many of the indoor workplace exposures are specific to the occupation and the type of work being done. These are generally confined to the select populations of workers engaged in these occupations. On the other hand, there are several other pollutant related specific diseases which can affect any individual.

Indoor burning of the solid fuels which emits a large amount of ‘visible smoke’ due to the presence of particulate matter, and a number of other toxic, irritant and carcinogenic components remains a major cause of several respiratory and other illnesses especially in the rural areas of the developing countries\(^4,6\). Other fossil fuels such as the gas, kerosene and liquid petroleum gas (LPG) have been similarly shown to relate to the presence of respiratory symptoms, lower respiratory tract infections (LRTI), asthma and chronic obstructive pulmonary disease (COPD)\(^7,8\). Household gas cooking was shown to possess a dose response relationship with the prevalence of respiratory illnesses in preschool children in an estate with a lower outdoor pollution clearly implying its important health perspective\(^9\).

Ever since the demonstration from Japan of a higher mortality from lung cancer among nonsmoking wives of smokers (exposed passively to smoke from their husbands) vs those of nonsmokers, a large body of data has accumulated on ill effects of passive smoking, i.e. ETS exposure\(^10-12\). The ETS exposure is responsible for an increased respiratory infection and poor lung function, as well as an increased morbidity and poor control of asthma in children\(^13,14\). Significant contribution has been made on this subject from India especially on ETS exposure in adults\(^15-17\). In a multicentre study sponsored by the Indian Council of Medical Research (ICMR) in India, the ETS exposure has been also demonstrated to have a causal relationship with asthma as well as the COPD\(^18,19\).

Volatile organic compounds (VOC) such as formaldehyde, which originate from building materials, furnishings, resins, cosmetics, paper products and other sources in the home significantly influence the air quality, responsible for problems such as the sick building syndrome (SBS), mucosal irritation, neuro-behavioural impairment and carcinogenesis\(^20-22\). As per the recent epidemiological estimates, 18,600 lung cancer deaths per year in the United States alone are attributable to residential exposure to radon progeny or radon decay products i.e. radon, polonium and others (radon daughters) present in indoor air from construction materials\(^23\). In Europe, residential radon is responsible for about 2 per cent of all deaths from cancer\(^24\). Presence of asbestos fibres is another important health hazard.
Low relative humidity of the air is bad for the eyes and the respiratory tract. Another type of physical pollution which is now recognized, occurs from electromagnetic hypersensitivity or the ‘dirty electricity’. Several case studies and reports have appeared on its deleterious effects in patients with asthma, diabetes, multiple sclerosis, chronic fatigue, fibromyalgia and others.

Dampness, poor ventilation and pet keeping in the dwellings promote the presence of numerous Aeroallergens including thermophilic actinomycetes, fungi, bacteria and other sensitizing antigens. Their causal relationship with a number of hypersensitivity pneumonias, asthma and respiratory infections is well known. The indoor mould contamination has been linked with SBS and hypersensitivity problems.

Asthma among children in the damp, and ill ventilated houses is worse and difficult to control. Home exposures are also shown to increase the risks of new onset asthma in adults. Lower respiratory infections are common in children living in polluted dwellings. Legionnaires’ disease and aspergillosis are two infections specifically related to the indoor air contamination. Tuberculosis is also more likely to spread among close inmates living together in common dwellings.

Besides homes and workplaces, a significant amount of time is also spent in enclosed microenvironments of cars, buses, trains and aeroplanes during transport, crowded restaurants, clubs, bars, theatres, shops, subways and many other public or private places. Exposures at these places, even though for short periods, are responsible for many symptoms akin to those of SBS, for precipitation of asthma attacks, aggravation of COPD and other diseases. Such exposures are of particular importance in the spread of infections.

There is an urgent need to improve the indoor air quality for a better health. This is particularly important to prevent respiratory diseases and general health problems such as the SBS. There is a good evidence to show that improvements in ventilation and other intervention to improve the indoor air quality at homes and offices reduce the health problems such as the presence of respiratory symptoms, asthma attacks and the prevalence of COPD.

Improved ventilation also results in reduction of airborne infections and SBS. There are several new methods aimed to achieve improvements in indoor air quality. But a lot can be achieved by relatively easier measures adopted at individual levels. For example, avoidance of smoking in closed environments especially in the company of nonsmokers including children, at homes; avoiding indoor combustion of domestic fuels; allowing well ventilated kitchens; improvised cooking and heating stoves; prevention of dampness; regular cleaning; proper disposal of body secretions, such as the sputa and the nasal discharge; allowing regular exposure of furnishings to sunlight; improvements of home ventilation and other simple hygienic measures can significantly reduce the health problems related to indoor air pollution.

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