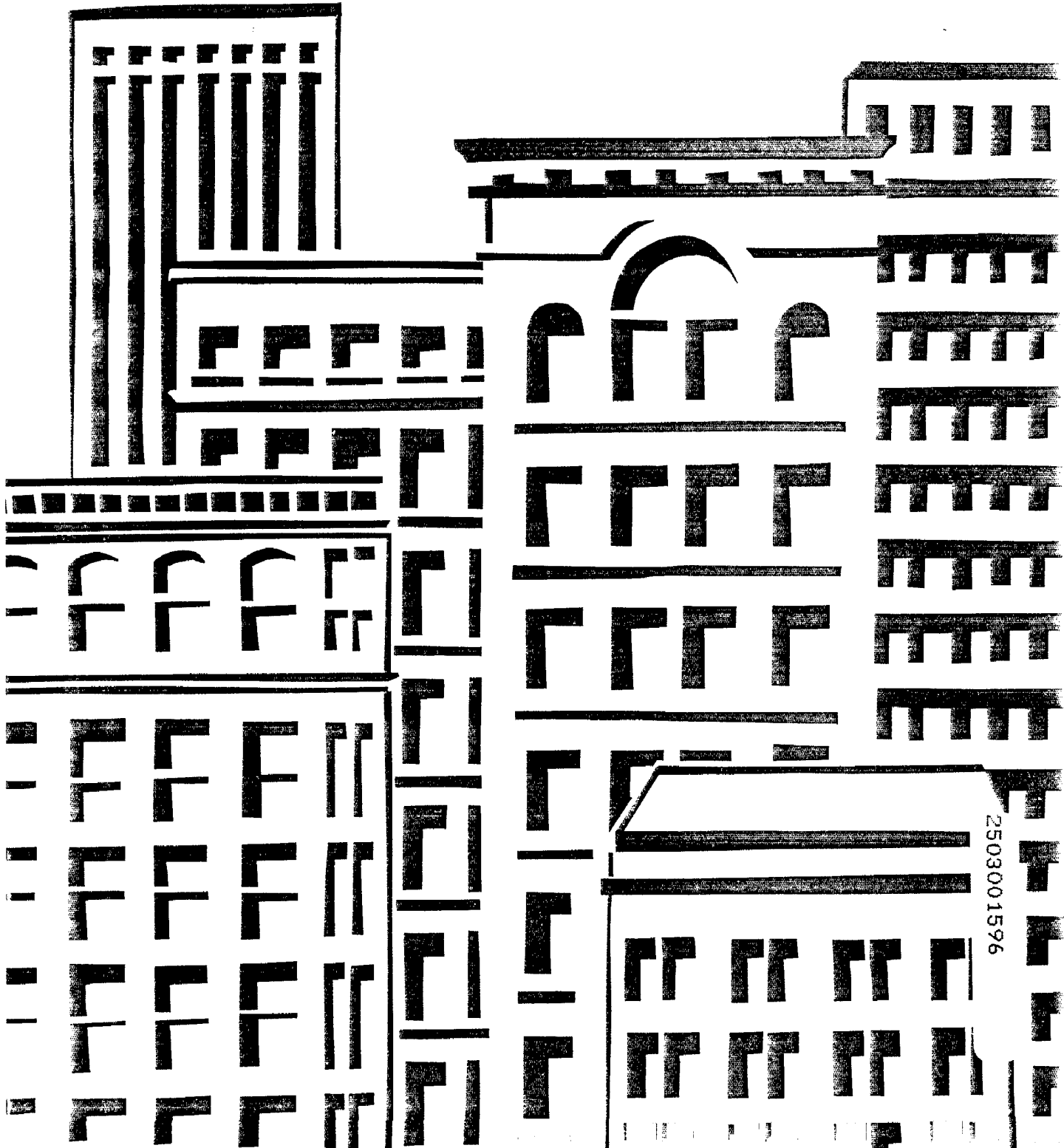


Fresh Air in the Workplace

The Tobacco Smoke Myth



2503001596

If your house was too hot or stuffy, you'd likely open a window and let in fresh air. But today's energy-efficient office buildings, and many older buildings refitted to conserve energy, don't make that solution to poor air quality quite so easy.

Poor indoor air quality has been found to foster a broad range of physical reactions among employees in offices and factories worldwide. The term "Sick Building Syndrome" has been applied to these symptoms.

• • • • •

"Sick" Buildings

Automated to control cooling and heating, ventilation systems often recycle air as they seal out (or in) the hot (or cold) weather without proper attention to maintenance, filtration or quality air intake and distribution.

The result: indoor air polluted with contaminants such as dust, fibers, fumes and gases from construction and furnishing materials, office machines and supplies, cleaning chemicals and solvents, bacteria, fungi and allergens.

More than 500 different volatile organic chemicals (VOC) from indoor air have been identified by the U.S. Environmental Protection Agency (EPA 1988). Many of those chemicals — invisible and odorless — were 100 times more concentrated indoors than in outside air.

The World Health Organization estimated in 1989 that 30% of the world's modern buildings are plagued by such air pollution. "Sick building syndrome" is now considered a major source of workplace health and productivity problems and absenteeism.

Occupants of these "sick" buildings report a wide range of irritant symptoms: sore eyes and throats, coughs, nausea, fatigue, headache, poor concentration, dizziness and respiratory discomfort.

Four out of five employees suffer from sick building syndrome, a British survey of 4,373 office workers in 42 buildings concluded (Burge *et al.* 1987). In the Federal Republic of Germany thirty-eight percent of all allergic diseases are caused by sensitivities to molds (Schata *et al.* 1988). Building studies in Australia, Canada, Hong Kong, New Zealand, Spain, Switzerland, the U.K. and the U.S. have uncovered similar problems with sick buildings.

• • • • •

Symptoms versus Cause

Because it is easy to see and smell, tobacco smoke dissipated in the air is a *prime indicator* of poor ventilation. Anti-smoking activists often blame tobacco smoke for all of their symptoms and foster this mistaken perception to argue for smoking prohibitions.

But visible tobacco smoke accumulation in a building is merely one symptom of the much larger problem — inadequate ventilation. Symptom, not cause.

"By far, the most pervasive and consistent cause [of sick building syndrome] appears to be inadequate ventilation."

concluded the author of a study reported in the Journal of Occupational Medicine (*Sterling et al. 1988*). A German investigator found that one typical source for mold exposure is air conditioning equipment (*Elixmann 1989*). In Australia, researchers found dead rats and seagulls, insects, growing fungi, mold and bacteria in air-conditioning equipment.

• • • • •

“Microbe Soup”

Dirty air-conditioning systems were found to contain what one researcher described as microbial soup. In other cases, contaminated air cooling water towers introduced bacteria into ventilators and fresh air intake ducts sucked in vehicle exhaust from parking garages.

Fumes and chemicals from photocopiers, duplicators, computers and other office machines also add major pollutants to office air. Synthetic carpets and wall coverings — often treated with disinfectants, pesticides and detergents — produce irritating gases. New construction materials give off noxious fumes. If the air is recycled to further save energy rather than refreshed from outdoor sources, these pollutants become concentrated.

• • • • •

Mistaken Perceptions

Although many workers surveyed initially believed tobacco smoke was causing their discomfort, the facts do not support their mistaken perceptions. Tobacco smoke has been implicated in only 2% of the buildings surveyed in a major study by the U.S. National Institute of Occupational Safety and Health (*Melius 1986*).

“Prohibition of smoking has not been shown to have any measurable effect on either indoor air quality or associated health and comfort symptoms of sick building syndrome, reported a Canadian study (*Sterling et al. 1988*).

• • • • •

Solution

- Investigate staff complaints about indoor air quality.
- Analyze the design, operation, maintenance and control of the building’s ventilation system.
- Identify the problems through technical assessment and make necessary corrections.
- Maintain a “quality” program of monitoring to assure all employees have acceptable air quality.

Opening these windows of opportunity can let the fresh air of common sense and courtesy into the smoking controversy.

References

1. Burge S, Hedge A, Wilson S, Bass JH, Robertson A. Sick Building Syndrome: A Study of 4373 Office Workers. *Ann. Occup. Health*, 31: 493-504, 1987.
2. Eliottmann JH. Filter einer Lufttechnischen Anlage als Ökosystem und als Verbreiter von Pilzallergenen. *Dustri Verlag, München-Deisenhofen*, 1989.
3. EPA/600/6-88A & B. *Indoor Air Quality in Public Buildings*. Vol. I & II, 1988.
4. Melius J, Wallingford K, Keenlyside R, Carpenter T. *Indoor Air Quality — The NIOSH Experience*. *Ann. Am. Conf. Gov. Ind. Hyg.*, Vol 10, 1984.
5. Schata M, Jorde W, Hartenstein W. *Ergebnisse epidemiologischer Untersuchungen allergischer Erkrankungen*. *Schw. Rundschau Med. Praxis*, 77: 884-898, 1988.
6. Sterling TD, Collett CW, Sterling EM. *Environmental Tobacco Smoke and Indoor Air Quality in Modern Office Work Environments*. *J. Occup. Med.* 29: 57-62, 1987.