

Clearing the air in office buildings

Air ventilation systems must meet standards

BY ETHAN MINOVITZ

If Dan Herbenyk didn't have to deal with a permanent marker again, he'd be very happy. So might the many other office workers who are sensitive to the writing implement

"Some markers have volatile materials associated with air quality emissions," says Herbenyk, manager of the Vancouver office of SENES Consultants Ltd., which provides air quality assessments.

At first blush, permanent markers might not appear to be a major factor in occupational health. But add carpets, photocopiers and just about anything else found in an office building, and associated concerns related to air quality soon appear.

The Workers' Compensation Board of B.C. detailed 10 sections devoted to indoor air quality within its province-wide Occupational Health and Safety Regulation, which took effect April 15.

The new rules require employers to ensure that air ventilation systems meet a standard established by the American Society of Heating, Refrigerating and Air Conditioning Engineers "or other standard acceptable to the board." Preventive maintenance is required.

What brought indoor air quality issues to the fore? Several air testing and management specialists indicate the 1970s energy crunch was a big contributor.

"Buildings are often sealed to conserve energy. But a lot of indoor pollutants are volatile organics emitted by, for example, glues in carpets and binders in wallboard," observes Herbenyk. "These often can build up to quite high levels indoors and the volatiles can be emitted over 20 to 25 years."

However, Herbenyk says poor air can often be blamed simply on a lack of clean air being circulated. "If you bring in fresh air from the outside in the winter, you have to heat cold air coming in, so it's

more efficient to keep the existing air inside. But is it better to lock such contaminants as carbon dioxide in the building?" he asks.

Alex Douglas Jr. of Vancouver-based K.D. Engineering, which specializes in indoor air quality testing and analysis, said inside-outside ventilation ratios are difficult to measure, but it's easier to gauge amounts of carbon dioxide, which people breathe out in varying amounts.

About half of air quality problems can be blamed simply on bad ventilation, said Douglas. However, a photocopier room can give off dust, and if not properly ventilated, can still emit it even if the building is leased again and changes use, he said.

Tom Cotton, a principal with Levelton Associates, a Richmond-based engineering firm which probes air quality, also sees the energy crunch as a watershed in air standards. Many office buildings had a lot of natural ventilation before then, he says. Following the crunch, builders increased their reliance on mechanical systems, which made structures relatively airtight for conservation purposes.

While there's no easy answer to improving air quality, he said the design of new buildings and ongoing maintenance can both provide solutions.

The office computer explosion has literally heated up the office, said Cotton. "Everybody has a PC on the desk and it has an impact on the ventilation system. When it's hot outside, the system needs to cool inside. In winter, that's not a problem: you'd simply open up the fresh air intake. But if the ambient temperature is quite warm, you would do a lot of air recirculation instead." The only option, Cotton says, may be to modify the ventilation system.

Theodor D. Sterling and Associates

Ltd. of Vancouver offers mechanical system and ventilation audits.

Sterling's proudest achievement is its proactive partnership with VanCity Credit Union. Before the credit union occupied its headquarters, completed in 1995 at one of Vancouver's busiest intersections, it asked Sterling to study the building thoroughly.

"Part of VanCity's objectives was to build an energy-efficient building with high standards," said president Elia Sterling. "We measured mechanical systems and air quality the day after it was constructed, then dealt with some issues just before it was occupied — and evaluated air quality after it was."

The news was good: "off-gassing" (emissions) from computers and photocopiers was not a problem and the ventilation and filtration systems were working well. For the first two years, Sterling and Associates evaluated the building quarterly; now it not only conducts semi-annual checks (in several locations on each floor), but is also doing evaluations for all of VanCity's branches.

The company's air quality management program made it a finalist for BOMA's PINNACLE Award this year.

At 5 a.m. every day, the headquarters is "purged" in a 100 per cent fresh air exchange. "While indoor carbon dioxide limits are usually 800 or 1,000 parts per million, we can usually limit it to 500 or 600 when it's 500 ppm outside," said Jeremy Trigg, manager of VanCity's facilities department.

"While we haven't measured productivity, we have measured sick days and have found them to be well under the average. I'd like to think that we've contributed to that," said Trigg. ■

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