Breathing Easier

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Few things are as important as the air we breathe. Yet the simple act of breathing is so easy to take for granted—until something goes wrong.

For many Canadians, air pollution is more than a hazy, brown annoyance; it's a noxious stew that is making us sick and claims thousands of lives every year.

The statistics paint an alarming picture. Canada's Environment Commissioner has said smog kills more Canadians than car accidents, breast cancer, prostate cancer, or melanoma.[1] The federal government has said up to 16 000 Canadians die prematurely of smog-related health problems every year.[2] In 1997, the World Health Organization and the World Resources Institute estimated that annually nearly 700 000 deaths are related to air pollution and that about 8 million avoidable deaths will occur worldwide by 2020. And it's not just a human toll—in Ontario alone, smog costs more than a billion dollars a year in hospital admissions, emergency room visits, and absenteeism.[3]

Hundreds of reports consistently showing that short- and long-term exposures to air pollution and ozone affect death rates, hospitalizations, complications of asthma and bronchitis, days of work lost, restricted activity days, and lung damage in children and adults.

A study by the Ontario Medical Association last year reported that for every death from air pollution—about 1900 in that province last year—there are an additional 5.1 hospital admissions, 6.8 emergency room visits, and more than 24 000 minor illness days.[4]

Canada has one of the highest asthma rates in the world. Asthma affects about two million Canadians and a growing number of sufferers are children. Asthma is now the most common chronic disease in children, and the leading cause of hospital admissions. Between 1980 and 1990, for example, hospitalization of young children in Canada for asthma increased by 28 percent among boys and 18 percent among girls.[5] Recent statistics show that between 10 and 18 percent of Canadian children have asthma, with variation across regions.

No one knows for sure what is behind the sudden surge in asthma among young children. The causes are varied and hard to pin down. Genes and environmental factors certainly play a role. But recent studies also show a strong link between high levels of air pollution and the triggering and aggravation of asthma attacks.

One study found that ozone smog causes inflammation of the upper airways of normal, healthy children at concentrations well below the current health standard.[6] A study of primary school children in the Netherlands showed the temporary decrease in pulmonary function due to particular air pollution was about 5 percent, while about 700 cases of asthma were aggravated daily.[7]

Common air pollutants slow children's lung development over time, according to the University of Southern California Children's Health Study.[8] The researchers showed that as children grow, those who breathe smoggier air tend to lag in lung function growth behind children who breathe cleaner air. Children with decreased lung function may be more susceptible to respiratory disease and may be more likely to have chronic respiratory problems as adults.

Worried about worsening air pollution, the David Suzuki Foundation has joined forces with the British Columbia Medical Association, the Ontario College of Family Physicians, and several Quebec medical associations to press for clean air. More than 22 000 doctors are taking part in the ongoing public awareness campaign to warn their patients about the health dangers of global warming and air pollution.

"Air pollution can be deadly for some. However, all of us are affected by low levels of pollutants," says Dr. Jim Lane, chair of the British Columbia Medical Association's Council on Health Promotion. "When we consider the high human cost of air pollution—more asthma, bronchitis, allergies, and premature death—the price of prevention seems low indeed."

Dr. Lane notes the association's concerns about the overlooked link between air pollution and climate change.

"Global warming will worsen summer smog and continue to erode Canadians' health unless we take preventive action," he says.

A critical point about climate change and air pollution is that the same human activities—burning fossil fuels for heat and energy—are the major cause of both problems. Burning fossil fuels such as wood, coal, oil, natural gas, and diesel gasoline releases tiny airborne particles that contribute to air pollution. Burning these fuels also releases carbon dioxide—the main greenhouse gas responsible for global warming.

As the global climate changes and the atmosphere warms, air pollution is expected to worsen because heat and sunlight are critical factors in the production of smog. That's why many experts say it's crucial to solve the

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problems of global warming and air pollution together.

"The same actions that can reduce the long-term buildup of greenhouse gases—reductions in burning of fossil fuels—can also yield powerful, immediate benefits to public health by reducing the adverse effects of local air pollution," according to a study in a recent issue of *Science*.[9]

Under the terms of the Kyoto Protocol on global warming, Canada has committed to reducing greenhouse gas emissions to 6 percent below 1990 levels by 2012. Ottawa recently announced it will ratify the agreement into law by 2002. Although it would seem an international agreement on global warming would have little to do with improving local air pollution, the Kyoto Protocol is the most comprehensive opportunity to help clear the air. Tackling the challenges of climate change and air pollution will require strong public policies aimed at significantly reducing both greenhouse gas and air pollutant emissions. The only effective way to reduce these emissions is by substantially reducing the consumption of fossil fuels. That's why the Kyoto Protocol is so important.

We know that when action is taken, public health improves. For example, when Atlanta put strict driving rules in effect for the 1996 summer Olympics, air pollution dropped and so did the number of children seeking treatment for acute asthma. Fleets of buses and public transit around the clock resulted in a drastic reduction in the amount of vehicle exhaust during the 17 days that Atlanta hosted the Olympics. One study showed asthma-related emergency visits and hospitalizations decreased by about 40 percent. Ozone dropped by almost 30 percent during the Olympics, and asthma attacks among children in the city plummeted dramatically—by 42 percent. The number of children who required hospital stays fell by 19 percent.

"Efforts to reduce downtown traffic congestion in Atlanta during the Olympic Games resulted in decreased traffic density, especially during the critical morning period," concludes the report published in the *Journal of the American Medical Association* this year. "This was associated with a prolonged reduction in ozone pollution and significantly lower rates of childhood asthma events. These data provide support for efforts to reduce air pollution and improve health via reductions in motor vehicle traffic."[10]

A study prepared for Boston's Clean Air Force in 2000 estimates that reducing emissions from older coal-fired power plants in the United States could provide substantial benefits to public health, including the avoidance of more than 18 000 deaths, 3 million lost work days, and 16 million restricted-activity days each year.[11]

Efforts to promote cleaner and less carbon-intensive sources of energy have both long-term and short-term benefits. Reducing greenhouse gas emissions will reduce the pollutants that affect human health. In addition, if climate change is curbed, then the smog problems that result from higher temperatures can also be reduced.

Not only is reducing our fossil fuel emissions good for our health, it's good for the economy. Economists have estimated that the health benefits due to improving air quality in Canada amount to 8 billion dollars over 20 years. Energy efficiency measures that cut emissions also cut costs and will create more jobs than new energy production projects.[12]

However, every day that policies to reduce fossil fuel emissions are postponed, deaths and illness related to air pollution will increase. Canada needs to implement practical strategies quickly to encourage more efficient, less polluting technologies. For the health of our children, we can't afford *not* to control air pollution.

Notes

1. Statement from Canada's Environment Commissioner, report to the House of Commons (fall 2000).
2. Government of Canada Submission, US EPA Proposal on Transboundary Air Pollution, (March 16, 1998).
3. Commissioned by the Ontario Medical Association, *The Illness Cost of Air Pollution Study* (Toronto: Ontario Medical Association, June 27, 2000), available at <www.oma.org/phealth/icap.htm>.
4. See note 3.
5. R.E. Dales et al., "Prevalence of Childhood Asthma Across Canada," *International Journal of Epidemiology* 23 (August 1994), pp. 775–81.
6. Frischer et al., "Ambient Ozone Causes Upper Airway Inflammation in Children," *American Review of Respiratory Disease* 148 (1993).
7. D. Houthulis et al., "Health Impact Assessment of Exposure to Particulate Air Pollution in The Netherlands," conclusions presented at the 1995 Annual Conference of the International Society for Environmental Epidemiology and the International Society for Exposure Analysis. Noordwijkerhout, The Netherlands, Aug. 30 to Sept. 1, 1995.
8. University of Southern California's Children's Health Study, started in 1991, scheduled to end in 2002. A team of University of Southern California researchers will have followed 5000 children at 52 schools in grades 4, 7 and 10 over the course of the study.
9. Luis Cifuentes et al., "Hidden Health Benefits of Greenhouse Gas Mitigation," *Science Magazine* 292 (August 17, 2001), p. 5533.
10. M.S. Friedman et al., "Impact of Changes in Transportation and Commuting Behaviors During the 1996 Olympic Summer Games in Atlanta on Air Quality and Childhood Asthma," *Journal of the American Medical Association* 285:7 (February 2001), p. 897.
11. Abt Associates Inc. "The Particulate-Related Health Benefits of Reducing Power Plant Emissions" (Boston, Massachusetts: The Clean Air Task Force, 2000).
12. "Comparative Analysis of Employment from Air Emission Reduction Measures" (Drayton Valley, Alberta: The Pembina Institute, 1997).