FP COMMENT

JUNK SCIENCE: WEEK TWO

TERENCE CORCORAN

Pollution death summit

What happens at a summit attended by only one person? Ontario Premier Dalton McGuinty must know by now. He organized Shared Air Summit 05, an event held on Monday and billed as a meeting of leaders from Ontario and the Great Lakes states on the subject of cross-border air pollution. The only U.S. political figure to make an appearance, New York Governor George Pataki, Fed-Exed a canned video on the greatness of the Empire State's air-quality record. Perhaps Mr. Pataki, a Republican, had advance warning that one of Mr. McGuinty's grand schemes is to form common cause with U.S. air pollution lawsuits launched by New York Attorney-General Eliot Spitzer, a Democrat gunning for Mr. Pataki's job.

So it turned into a one-man summit, which probably suited the immensely self-satisfied and increasingly sanctimonious Mr. McGuinty just fine. The main objective of the summit seemed less a matter of forging new deals with border states and more an attempt to seal Mr. McGuinty's reputation among Ontario NGOs as a caring environmentalist, even an extreme environmentalist. NGO reps in the audience beamed as the Premier unctuously recited a sermon sprinkled with pieties and poetry from Shelley.

But there was no poetry in the main backdrop to the summit: a series of junk science reports on the horrors of smog. First, Toronto Public Health produced a paper that claimed to show thousands of deaths from air pollution and weather. On average over the last 50 years, 1,047 people allegedly died prematurely due to air pollution and extreme hot or cold weather. Comparable numbers were produced for Montreal, Ottawa and Windsor. Looking forward, the study claimed global warming could double the number of deaths by 2080.

A few days later the Ontario Medical Association cranked out bigger numbers. Using different techniques, it claimed 5,800 premature deaths in Ontario due to smog this year. The death toll could rise to 10,000 by 2026. Among people over the age of 65, the annual deaths would jump to almost 9,000 from 4,800.

HOW MANY SPEAKERS WOULD WAVE THE LIMBS OF THE PREMATURELY DEAD?

Still another study, from the province, claimed industrial smog from Canadian and U.S. sources caused 4,881 premature deaths. The numbers don't fit together all that well, which should be a clue that the science in these reports isn't all it's cracked up to be. Even the *Toronto Star*'s reporters were beginning to smell a science rat. "Smog death statistics murky: Bad air is said to kill 822 a year in city, but health officials can't name a victim."

Interesting problem: Three times as many people die of air pollution in Ontario each year as the number of U.S. soldiers killed in Iraq over four years, but no body bags in Ontario.

Still, the big numbers set the stage for the summit. The only drama was how many speakers would wave the limbs of the prematurely dead during their presentations as justification for whatever ideas they were pushing.

David Suzuki opened the conference with his standard anti-economy themes and became the first to use the 5,800 death toll number as one more reason to urge the government to ban SUVs. He was followed by Mr. McGuinty, who cited the death toll as justification for plans to shut coal power plants and subsidize ethanol in gasoline.

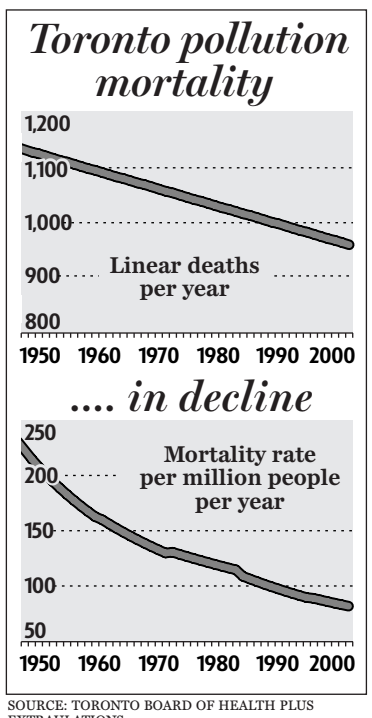
Ontario's chief medical officer, veteran science scaremonger Sheela Basrur, used the death numbers in a speech that served no purpose except to regurgitate death numbers and review her version of the health effects of pollution. "Pollution," she said, "is comparable to long-term exposure to second-hand smoke." Since the science behind the second-hand smoke hazard is a statistical fabrication, that's not much of a risk statement. But then, Ms. Bazrur was just warming to her long-held position: "For some pollutants, such as ozone and fine particulate matter, there may in fact be no known safe levels."

When the lead health officer in the largest province in the country announces that there may be no known safe levels of air pollution, public policy-making is at risk of falling into extreme hands. If the target is zero, then the policy range can know no limits. Initiatives proposed in the name of pollution control already reach to every corner of the economy. Land-use planning, industrial strategies, tax policy, subsidies, regulations on individual behaviour, transit controls, lifestyle controls, mandates for this practice and penalties for others — the list of plans and ideas is endless.

How much bad policy can you build on a foundation of hyped death statistics? Few ideas would get much support without the sensational mortality claims produced by the government-employed scientists. Are these claims valid? To find out, FP Comment commissioned three experts in the field to look at two of the studies produced in the days prior to the summit, the *Toronto Summary Report: Influence of Weather and Air Pollution on Mortality in Toronto*, and *The Illness Costs of Air Pollution* report from the OMA.

Brief versions of their comments appear on this page. To the degree that the studies can be examined — the information and data in both lacked full scientific disclosure — they are filled with doubtful methods and conclusions. The Toronto Board of Health headline number, that 1,047 people annually died prematurely on average between 1954 and 2000, is little more than a meaningless distraction. The fact is that pollution declined dramatically in Toronto over the period. Even if one assumes a link between pollution and premature death, the death rate — the number dying as a proportion of the population — from such pollution would have fallen (See table above). Despite the scary stats, pollution and pollution-related deaths, if they are happening, have been in decline.

The idea that pollution levels will rise in the decades ahead is also just a scare tactic. As the old fleet of cars on our roads retires, auto emission levels will continue to decline. Industrial and energy plants are getting cleaner by the year. Unless some government creates fresh pollution risk, by artificially boosting ozone-causing ethanol, for example, the outlook is for better, cleaner air. In which case, Mr. McGuinty can cancel Shared Air Summit 06.



SOURCE: TORONTO BOARD OF HEALTH PLUS EXTRAULATIONS

In their smog studies, the OMA and Toronto Public Health have crossed the Rubicon from science to fear-mongering and political activism

Smog and mirrors

JOEL SCHWARTZ

According to a recent report by the Ontario Medical Association, nearly 6,000 Ontarians die each year from air pollution and tens of thousands more are sent to hospital. But the OMA was able to manufacture its scary death toll only by ignoring weaknesses in studies that supported its predetermined conclusions and excluding countervailing evidence.

Rather than providing a sound basis for Canada's public health policies, the OMA has shown what happens when health experts choose the warm glow of feel-good activism over critical thinking about the real factors than affect human health and welfare.

Researchers have known for decades that very high air pollution levels can kill. Thousands died during the 1952 "London Fog," when pollution soared tens of times higher than the highest levels experienced in Western countries today.

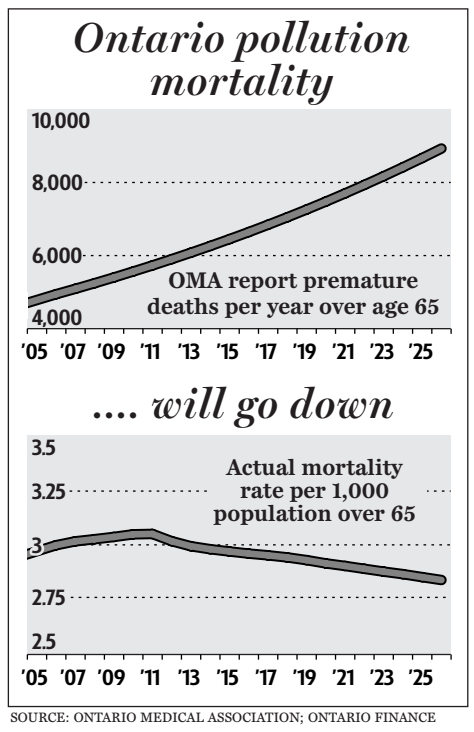
Nowadays, air pollution is far too low to cause obvious acute increases in mortality, and doctors can't tell if any particular death was caused by air pollution. Instead, the evidence for air pollution health effects comes from statistical analyses that try to tease out any effects of air pollution from a thicket of other health-related factors, such as weather, diet and physical activity.

Based on these statistical studies, the OMA claims about 5,800 Ontarians will die prematurely this year due to air pollution, rising to more than 10,000 in 2026. The OMA attributes most of the deaths to long-term exposure to fine particulate matter (FPM), based mainly on a study known as the American Cancer Society (ACS) study. The ACS study followed hundreds of thousands of Americans for 16 years and looked for correlations between FPM levels and risk of death.

Although the study reported that higher FPM was associated with greater mortality risk, the OMA ignored the study's biologically implausible results. For example, the ACS study reported that FPM kills men, but not women; those with no more than a high school education, but not those with at least some college; former smokers, but not current or never smokers; and people who say they are moderately active, but not those who say they are sedentary or very active. Results like these indicate the study hasn't uncovered a genuine cause-effect relationship.

The OMA also ignored a separate long-term study of 50,000 veterans with high blood pressure. Although this group should have been more susceptible to air pollution than the general population, the study reported no mortality risk due to long-term exposure to FPM or other pollutants.

The OMA attributes about 1,800 deaths each year to daily fluctuations in air pollution levels. However, studies of air pollution and daily mortality have their own statistical challenges. British scientists recently evaluated uncertainties in these studies' statistical models, fortuitously with Toronto data. With a combination of scientific and British understatement, they concluded "statements of the form: 'ozone has no effect on mortality' receive [the] most support from the data." They drew similar conclusions for other pollutants. Weather was the only factor with a statistically significant relationship to mortality.



SOURCE: ONTARIO MEDICAL ASSOCIATION; ONTARIO FINANCE

The OMA claims air pollution will cause 17,000 hospital admissions and 60,000 emergency room visits this year. But similar methodological concerns apply here as well. The OMA was also once again selective about which studies it used for its estimates. For example, for ozone pollution OMA sources its estimates to a California Air Resources Board review of ozone health effects. But CARB's review excluded several studies that failed to find any harm from ozone exposure. Data on asthma attacks should also create skepticism about the ostensible health effects of air pollution. Hospital visits for asthma are lowest in July and August when air pollution is highest.

The OMA asks the wrong question and obfuscates the answer to the right one

After creating thousands of fictional cases of death and disease, the OMA compounds its transgressions by making it appear that air pollution health risks will increase in the future. For example, the OMA estimates that among people over 65, air pollution deaths will rise from about 4,800 in 2005 to 8,900 in 2026. This gives the impression of an 85% increase in the risk of dying from air pollution. What the OMA fails to mention is that the total number of people over 65 will also increase — by almost a factor of two according to Ministry of Finance projections. If the population rises by 95%, but pollution deaths rise by only 85%, then the risk of dying from air pollution must decrease with time — just the opposite of what the OMA implies (See table above).

Health professionals normally talk about disease trends in terms of age-adjusted rates, rather than absolute numbers. This nets out any trends in the size and age of a population, revealing real trends in health risks. The OMA might respond that its report is about trends in the health care costs of air pollution, which requires an estimate of absolute numbers of deaths and hospitalizations, rather than just rates. But such a claim would still be specious. All else equal, all needs will increase with an increasing population, as will the total aggregate income available to provide for those needs. The policy-relevant question is what will happen to the age-adjusted per-capita health care costs of air pollution. The OMA's own estimates imply these costs will decrease, but the OMA report asks the wrong question and obfuscates the answer to the right one.

Unlike current air pollution levels, extreme weather clearly does kill. Toronto Public Health (TPH) estimates that heat killed an average of 120 Torontonians per year between 1954 and 2000. Based on this past relationship, and presumed global warming in the future, TPH projects a tripling of heat-related deaths by 2080. TPH also claims increasing temperatures will increase air pollution.

Like the Ontario Medical Association, TPH reports only changes in the absolute number of deaths, rather than age-adjusted rates. But TPH's results suffer from more serious flaws. Even if we assume that temperatures will rise substantially in the future, past experience suggests that heat-related mortality will nevertheless decrease. Between the 1960s and 1990s, average summer temperatures rose nearly 1 C in U.S. cities, but the risk of dying from extreme heat declined 75%. The improvement was due to better health care, better warning systems and, most critically, increased availability of air conditioning. TPH doesn't discuss trends in heat-related mortality in Canada but they are likely similar to the United States.

TPH is also wrong about future air pollution. Already-adopted requirements will eliminate most remaining pollution emissions over the next few decades. For example, Environment Canada estimates that the average automobile and diesel truck will be more than 80% cleaner in 25 years, due to progressively tougher emission standards adopted in the last decade. All else being equal, higher temperatures are associated with higher ozone levels. But large upcoming declines in ozone-forming emissions ensure that, at worst, any climate change that does occur will merely slow the rate of improvement. For fine particulate matter, the prognosis is even rosier. Much FPM is "semi-volatile" material that evaporates as temperature rises. As a result, to the extent global warming occurs, it will reduce FPM levels.

The formulation of sound environmental and energy policies depends on the input of doctors and scientists who can think deeply and objectively about the real factors that affect people's health and welfare. Unfortunately, with their tendentious and misleading analyses, both the Ontario Medical Association and Toronto Public Health have crossed the Rubicon from science and critical thinking to fear-mongering and political activism.

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Speculative 'results'

LAURA GREEN

The Ontario Medical Association (OMA) report is not very detailed or highly referenced.... The "results" in the OMA 2005 report are speculative and, from the toxicologic point of view, highly unlikely to be accurate, even approximately.

As you may have noted, the predictions of premature deaths include deaths "attributable" to five ordinary pollutants (ozone, fine particulate matter, carbon monoxide, sulfur dioxide, and nitrogen dioxide) at ordinary ambient air concentrations in Ontario. Importantly, there is good reason to believe that none of these pollutants in fact cause death at such small concentrations in air. For example, sulfur dioxide is a toxic compound, of course, but it, like all compounds, follows the laws of dose-response, such that workers and other people can safely breathe small levels for a lifetime without harm to their health....

Only by testing the hypothesis that pollutants at current levels cause serious disease or death with other techniques and other lines of inquiry could one learn about cause and effect. These other studies indicate that it requires massive exposures of ordinary PM or other pollutants to actually cause serious disease or death in people or laboratory animals, so the "signal" is highly unlikely to be real, and so not likely to form a reliable basis for public health policy.

Regarding the Toronto Public Health report ... it contains even more untested (or untestable) assumptions than the OMA report, but is more correct in at least one sense, which is its assigning cause and effect to extremes of temperature and risk of mortality. Of course, people with ready access to air conditioning in the summer and heat in the winter typically avoid such risks, but those without can face real risks of hypo- or hyperthermia.

The notion that small increases in current levels of outdoor air pollution will cause death or serious disease is highly unlikely to be correct.

Laura Green is president of Cambridge Environment Inc., Cambridge, Mass.

Limited relevance

LISE TOLE

The health damages of air pollution in the Ontario Medical Association study are derived from a software package (ICAP) accessible from the OMA Web site. The user-friendly software says little about how it works to derive estimates. It's basically a black box.

The explanation of the economic damages assessment is very poor. The methods have many shortcomings that affect resulting economic damage estimates. Due to the large amount of uncertainty, researchers usually present a range of values, but only one estimate is presented for each measure here. It is unclear what actual economic coefficients have been used to derive these results, what methods have been used to translate the health outcomes into monetary values, and how discounting issues have been handled.

Moreover, the reliability of these estimates must be called into question because they are derived from questionable health-impact estimates. Because these latter studies do not sufficiently consider issues related to model uncertainty, the point estimates they report are most likely highly unreliable. We find in our own study of Toronto (and for cities in Canada) that when model uncertainty is accounted for in the analysis, measures of uncertainty become so large that the hypothesis that air pollution has no effect on health is not implausible.

Regarding the Toronto Board of Health report, as I stressed in a *Financial Post* article last year, due to the great amount of uncertainty involved, simply presenting results of numbers of people affected based on point estimates ... is highly misleading. Our research has shown that when model uncertainty is taken into account, the use of such point estimates to calculate and predict changes in health with changes in weather and pollution is extremely undesirable. For this reason, the resulting numbers may have limited (if any) relevance for policy-makers.

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