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Pneumonia linked to pollution

McMaster study shows poor air quality can drastically raise risk of hospitalization for seniors

JOANNA FRKETICH
The Hamilton Spectator

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A pioneering McMaster study has proved air pollution can put seniors in the hospital with pneumonia.

A team led by infectious disease expert Dr. Mark Loeb found evidence that prolonged exposure to pollutants in car exhaust fumes and industrial air pollution more than doubles the risk of seniors being hospitalized for pneumonia, a lung infection that is a leading cause of illness and death in the elderly.



"This is the first time that air pollution has been very tightly linked as a risk factor for pneumonia hospitalization," said Loeb about the four-year study being published next week in the American Journal of Respiratory and Critical Care Medicine.

"It shows that air pollution has a major impact on people's health. ... When people think of restricting emissions, this is an important piece of information."

Respiratory specialist Dr. Martin Kolb agrees the findings are significant, saying until now there has been sparse data to prove what doctors have long suspected.

Air pollution is known to impair the function of white blood cells and surface cells in the lungs that help the body fight infections such as pneumonia.

"It confirms beliefs from before with a much more vigorous scientific approach," said Kolb, research director of Hamilton's Firestone Institute for Respiratory Health. "This study really shows that these two pollutants ... are bad not only for chronic lung disease but also for diseases like pneumonia."

Environmentalist Lynda Lukasik hopes studies such as this one will force policy makers to take notice.

"For far too long, we haven't been paying enough attention," said Lukasik, executive director of Environment Hamilton.

"We're living in a city where the reality for us is that we do have a lot of neighbourhoods close to the industrial core. We have a lot of neighbourhoods close to roads."

"We just finished constructing an expressway through a valley with residential housing on either side," Lukasik continued.

"We've got situations here where there are potential human health implications because of where our residential neighbourhoods are located. We need to understand and we need to push to make sure we're taking steps to minimize exposures."

Loeb's team, which included researchers from McMaster, Health Canada, the University of Alberta and the University of California, Berkeley, studied 345 Hamilton seniors hospitalized for community-acquired pneumonia and compared them to 494 randomly selected seniors living in the same neighbourhoods between July 2003 and April 2005.

Annual average levels of nitrogen dioxide, sulfur dioxide and fine particulate matter of less than 2.5 micrometres were estimated at participants' addresses using data from air-quality monitoring stations and land-use regression models.

"There are fairly strong gradients of air pollution in Hamilton," Loeb said. "There are pockets of high exposure and other areas where there is low exposure. With that variability, it makes it a good place to be able to study this."

The researchers, funded by the Canadian Institutes of Health Research, concluded sulfur dioxide didn't send seniors to hospital with pneumonia. But nitrogen dioxide and the fine particulate matter more than doubled their risk of being hospitalized with the respiratory condition.

Next, Loeb wants to study what genetic factors make some people more susceptible to the air pollution than others.

"Part of the impact of the air pollutants that we're looking at on the lung would involve part of the immune system, so there might be genetic predispositions to how people handle air pollutants," Loeb said.

"Some people might be more predisposed to a negative effect than others."

jfrketich@thespec.com

905-526-3349

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