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Rise in ground ozone levels linked to increase in deaths

By **LEE BOWMAN**, Scripps Howard News Service
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A small increase in ground-level ozone levels, but still well below government thresholds, was linked to an increase in deaths the following week in large cities across the country, according to a new study.

The risk of death was similar for adults of all ages and slightly higher for people with respiratory or heart problems, researchers from Yale and Johns Hopkins universities report in *The Journal of the American Medical Association*.

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While many other studies have linked short-term exposure to ozone to decreased lung function, worsening of respiratory conditions and increased rates of hospital admission and emergency-room visits, research into ozone and death rates has been inconclusive.

The new study, published Wednesday and funded by the Environmental Protection Agency and the National Institute for Environmental Health Sciences, looked at ozone levels and death rates in 95 large cities between 1987 and 2000.

"This was one of the largest ozone studies ever conducted," said Michelle Bell, the study's lead author, who began the project at Hopkins' Bloomberg School of Public Health and is now an assistant professor at Yale.

The researchers looked at the total number of noninjury-related deaths and at heart and respiratory mortality in each urban area, using data from the National Center of Health Statistics. Air-pollution data came from the EPA. The scientists took into account variables such as weather, seasonal conditions and other air pollution in evaluating the impact of ozone.

"The study provides strong evidence of short-term effects of ozone on mortality," said Francesca Dominici, an associate professor of biostatistics at Hopkins and senior author of the study.

The team found that an increase of 10 parts per billion in weekly ozone levels was associated with a 0.52 percent daily increase in deaths the following week. They found that cardiovascular- and respiratory-related deaths increased by 0.64 percent with each 10 ppb increase in ozone the week before.

The average daily ozone level for the cities in the survey was 26 ppb. EPA regulations require that ground-level ozone levels not exceed 80 ppb in any eight-hour period.

The researchers estimate that a 10 ppb reduction in average daily ozone levels would save nearly 4,000 lives a year in the 95 cities of the survey.

"This actually underestimates the total impact of ozone on mortality, because it only captures the impact associated with high ozone levels in the past few days," Bell said.

She also suggested that by driving less, taking public transportation, cutting energy use and staying indoors on hot days when ozone levels are high, people could reduce ozone-related mortality.

"Our study shows that ground-level ozone is a national problem, which is not limited to a small number of cities or one region," Dominici said.

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