MaconTelegraph.com

Posted on Mon, Jun. 13, 2005

Studies: Warming trend could hurt asthma, allergy sufferers

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New research suggests global warming could leave Middle Georgians sneezing more as allergy and asthma cases increase.

A federal Department of Agriculture study shows that increasing carbon dioxide, a major greenhouse gas, causes individual weeds to produce more pollen earlier and longer. And a Duke University study indicates that 50 years from now, pine trees are likely to produce twice as much pollen because of rising carbon dioxide levels.

"Those people who are allergic are going to be in a world of hurt," said William Schlesinger, dean of the Nicholas School of Environmental and Earth Sciences at Duke. "I see this as a potential rather large health problem."

The result could be a double-whammy for Middle Georgians with respiratory illness, because timber, especially pine, dominates the rural economy, and Monroe County's Plant Scherer pumps carbon dioxide into the air around Macon.

Scherer, the largest coal-fired power plant in the country, in 2002 tied with Plant Bowen in Cartersville for producing more carbon dioxide than any other American power plant: 22 million tons a year. The government doesn't limit carbon dioxide emissions.

Macon allergist David Plaxico said he has already seen pollen production increase and last longer since he began practicing in Macon 24 years ago.

"It seems to start earlier, in mid-February, and run into December. Ragweed and pine pollen allergies are up because we don't really have winters any more," he said. "In the last five to 10 years I think global warming truly is affecting people."

About 7 percent of adults and 11 percent of high school students in Georgia have asthma, and about 120 Georgians a year die because of it, according to a 2003 report by the Georgia Department of Human Resources. Bibb, Peach and Laurens counties have more asthma-related hospital visits than the state average.

The state health department and the Centers for Disease Control are working on several studies now that may better define the relationship between air pollution and breathing problems, said Angela Blackwell, epidemiologist for the Georgia Division of Public Health.

Plaxico, who monitors pollen counts, said Macon's tree and grass pollen levels are now far higher than in the 1980s and early '90s.

Carbon dioxide sustains life by keeping the sun's heat from escaping the Earth's atmosphere. But as it increases, so does the temperature of the Earth.

Since the Industrial Revolution of the mid-1800s, carbon dioxide has increased by 35 percent because of human activity like burning fossil fuels, said Paul Epstein, associate director of the Center for Health and the Global Environment at Harvard Medical School.

Plants "breathe" carbon dioxide, so they grow more robust as it increases. However, studies show this benefits weeds more than food crops and other plants, Epstein said.

Ragweed in the city

The USDA study used carbon dioxide levels in Baltimore as an indicator of future conditions nationwide. Ragweed there, where carbon dioxide in the air is greater, produced 10 times more pollen than ragweed planted in the same soil in the nearby countryside, said USDA weed ecologist Lew Ziska. It also started producing pollen earlier in the year.

There is not only more urban pollen, but it's a greater irritant in cities because diesel engines produce fine particles that attach to pollen and deliver it deep into the lungs, Epstein said.

The EPA has identified Bibb County and the portion of Monroe County where Plant Scherer is located as having unhealthy levels of fine particle pollution.

In the past, scientists believed that carbon dioxide would not cause localized health problems. But Epstein said research is showing that city "heat islands" created by urban concrete and asphalt cause a dome effect, holding in carbon dioxide near factories and power plants.

"There's no reason to think that's not happening in smaller cities too," Epstein said. "This means local environmental

initiatives like tree-lined streets and public transportation all have local impacts as well as being a responsible use of energy."

Even though there is more greenery in rural areas, cities will bear the brunt of increased pollen levels, because soil disturbance during construction leaves the door open to opportunists like ragweed, Ziska said.

And weeds apparently receive more benefit from carbon dioxide than desirable plants. Ziska studied wheat to see if carbon dioxide would increase its seed production, but the most common varieties received little benefit.

As a result, global warming may cause weeds to crowd out plants needed for food and medicine, Ziska said.

Carbon dioxide could also change the nutritional value of plant foods, he said. In some plants, it increased omega 3 fatty acids, which reduce heart disease risk. But it also reduced protein content.

Pines in the country

Duke University grows a pine forest surrounded by a ring of towers jetting carbon dioxide into the air, mimicking the levels expected by 2050. Those pines produced almost twice as much pollen as others during heavy-growth years, said researcher Shannon LaDeau.

Usually, only the most dominant pine trees produce a lot of pollen, but all the pines grown in a carbon dioxide-rich area produced high amounts, LaDeau found. They also started producing pollen when they were younger and smaller.

"In areas where forestry is prevalent, allergies will go up," said LaDeau. "People who are already allergic tend to be sensitive to pine pollen. ... It can be devastating to people with respiratory health issues."

Tyler Proctor, 9, is one of them. Tyler, who is very sensitive to pine pollen, only began playing sports last year because he was always afraid he would have an asthma attack and that other kids would laugh at his inhaler, said his mother Emily Proctor of Warner Robins.

She would like more research into the asthma effects of global warming and ozone layer depletion.

LaDeau said it's unclear what the results of the Duke study might mean for the timber industry. More pollen means more seeds. But because the trees mature earlier, they might also die earlier, she said. And the additional carbon dioxide causes pines to grow at the same rate, instead of stronger trees outstripping weaker ones - a process that normally ensures the healthiest trees reproduce.

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