



Airborne tire particles linked to allergic reactions

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By Alan Bavley, Associated Press*

Atop the roof of Children's Mercy Hospital in Kansas City, Mo., Jay Portnoy may be finding an explanation for why asthma cases are multiplying around the world.

From his rooftop collection instruments, Mr. Portnoy, the chief of allergy and asthma at the hospital, takes daily samples of Kansas City's air.

Mixed among the pollen grains, mold spores and particles of sand he counts under a microscope are ragged black specks. Like most scientists who study air samples, Mr. Portnoy had assumed these were just bits of soot.

Now there is strong evidence that these specks are something far more menacing -- tiny fragments of rubber from tires, created by the wear and tear of ordinary driving.

Researchers say tires, principally radials, spew billions of these particles into the atmosphere every day.

That is alarming, they say, because latex, the key ingredient of rubber, can trigger severe, even fatal, allergic reactions and aggravate allergic reactions to other substances.

Many of these airborne particles are so small they can be inhaled deeply into lungs. That makes them a potential threat to people susceptible to asthma.

"Radial tires are great, but if they're making us sick, we'd better do something about it," Mr. Portnoy said. "It's a concern, because asthma is an epidemic and it's getting worse."

A spokesman for the tire industry said he was unaware that scientists were beginning to look at tire particles as a potential health hazard.

"We never heard of this as an issue before," said Peter Pantuso of the Rubber Manufacturers Association in Washington. "At no time was any assumption made that there was any (allergic) reaction from tires."

The particles were first identified as bits of tires by a group of researchers at the Allergy Respiratory Institute of Colorado in Denver. They published their findings early this year.

"This stuff gets up there from roads. There's literally tons of it in the air," said P. Brock Williams, a molecular biologist who led the Denver team and now works at IBT Reference Laboratory in Lenexa. "The bad part is, it's very small and that makes it very respirable."

Mr. Portnoy and Mr. Williams said the discovery of airborne latex might offer at least a partial explanation for the worldwide rise in asthma cases, a medical mystery that has puzzled doctors for two decades.

Since the late 1970s, asthma cases and deaths from asthma have increased steadily in the United States, particularly in urban areas. Similar increases have been reported in other countries, including England and Australia.

The increases have persisted despite improved treatments and drugs and as environmental regulations have cleared away much of the air pollution in U.S. cities.

"Everyone will tell you there's no consensus about what is causing this," said Mary White, an epidemiologist at the Centers for Disease Control and Prevention in Atlanta. "There are a lot of theories: poverty, access to health care, living conditions among the poor, deteriorating housing."

Although living conditions vary from country to country, one thing they have had in common, Mr. Portnoy and Mr. Williams suggest, is increasing car traffic and greater use of radial tires. Radials are

more likely to produce airborne particles than the older bias ply tires.

Mr. Portnoy, who is collaborating with Mr. Williams on additional research, added tire fragment counts to his daily mold spore and pollen counts in August, making Kansas City the first metropolitan area to routinely monitor levels of these particles.

His preliminary findings, which he will present this week to the annual meeting of the American College of Allergy, Asthma and Immunology in Dallas, point strongly to tires as the source of this airborne material.

Particle levels in Kansas City rise on weekdays both in the morning and in the evening, coinciding with rush-hour traffic, Mr. Portnoy found. On weekends, when traffic slackens, levels tend to be low.

So far, laboratory experiments conducted by Mr. Williams and by researchers in California have shown that airborne tire particles do react to antibodies taken from people with latex allergies. This is a sign that the particles could provoke an allergic reaction.

But scientists have yet to demonstrate that these particles actually cause allergic reactions in people.

That will be among Mr. Portnoy's next tasks.

To do that job, Midwest Research Institute has created a sophisticated collection device that literally vacuums particles out of the air. It will provide Mr. Portnoy with enough of the material to conduct skin tests on people to see whether the particles provoke an allergic response.

Many doctors are willing to accept the possibility that latex in the atmosphere can cause allergies because they already have seen allergic reactions in hospitals among people who breathe in the dust from latex gloves and medical equipment.

Researchers estimate that 2 percent of hospital workers have asthma caused by this dust.

"Is it plausible that environmental exposure of the population to latex could promote asthma? Yes, I think it's plausible," said Lee Newman, a physician specialist in environmental diseases at the National Jewish Center for Immunology and Respiratory Medicine in Denver.

"For my money, latex particles are every bit as allergy-provoking as mold spores. There are patients and staff for whom just walking into a hospital can cause a rash or asthma."

Mr. Williams frequently encountered the black specks on his microscope slides while studying air samples in Denver. But he doubted the accepted wisdom that these were fly ash, the soot from furnaces and boilers.

"There's no fly ash in the air unless you're near a major manufacturer," he said. "It looked like rubber to me. You can get to a microscope with microtweezers and pull it apart, and it snaps back."

Using laboratory tests, Mr. Williams, John Selner and other researchers compared the chemical composition of black specks taken from air samples with that of a latex glove and of particles Mr. Williams shaved off a tire with power tools. The three were identical.

"People had been ignoring this stuff on slides. What Williams and Selner were bright enough to do was to study what it was," said Timothy Sullivan, a professor of medicine at Emory University in Atlanta. "They presented compelling evidence that these were radial tire fragments."

California researchers have followed Mr. Williams' lead by conducting antibody tests of tire particles gathered from a freeway intersection and from a year's worth of air samples collected at the California Institute of Technology.

They also determined that the particles had the potential for causing allergic reactions.

"Our findings are quite similar to what he (Williams) found," said Michael Glovsky, medical director of Huntington Memorial Hospital's asthma and allergy center in Pasadena.

Over the same period that asthma rates have been rising, radials have virtually replaced bias plies as the standard tire for cars and trucks.

A survey by Goodyear Tire and Rubber Co. found that 44 percent of auto tires sold in North America in 1976 were radials. By 1989, radials accounted for 94 percent of sales.


Radials provide longer tread life and better fuel economy than bias-ply tires. But they also wear differently, Mr. Williams said.

Bias plies leave behind bits of rubber large enough to fall by the side of the road. Studies show that radials create particles small enough to become airborne.

"The irony of it, these (tires) are products that make our lives better and safer," Mr. Williams said.

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