

## Bad air drifts across Pacific

**ROB CARSON; The News Tribune**

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According to Dan Jaffe, we're not only wearing exports from China, we're breathing them.

Studies by the University of Washington researcher show a startling amount of made-in-China pollution rides to America on the jet stream and ends up in our lungs.

"Just a few years ago, no one dreamed that pollutants could make it thousands of miles from China," Jaffe said. "Now it's clear that they do."

He and his team of researchers at the UW's Bothell campus have shown that "Asian puffs" of bad air carry mercury, carbon monoxide, aerosols, hydrocarbons and nitrogen oxides 6,000 miles across the Pacific Ocean, adding significantly to the toxins in our air and water.

The levels are high enough to pose serious health risks. In a study Jaffe co-authored this year, he calculated 1,460 metric tons of mercury, a powerful neurotoxin, blew out of China last year – twice as much as previously thought.

Scientists now believe Asia contributes as much as a third of all airborne mercury deposited in the United States.

Jaffe and his team do some of their sampling on Cheeka Peak, a 1,500-foot promontory on the Makah Indian reservation on the tip of the Olympic Peninsula. The station was established 15 years ago by researchers who assumed it would be an ideal place to establish a baseline of clean air, scrubbed during transit across the Pacific.

Jaffe discovered that was not the case. Intrigued by studies showing windborne dust from Africa was ending up on other continents, he wondered whether the same might be true for Asia.

His landmark 1999 study, "Transport of Asian Air Pollution to North America," opened the eyes of government regulators and scientists around the world. It since has become a standard reference in the field, having been cited more than 160 times in scientific literature.

In addition to Cheeka Peak, Jaffe's research team collects samples on top of Mount Bachelor in Oregon and in aircraft flights.

The flights are proving to be useful, Jaffe said, because it is now clear that the pollutants are transported at altitudes up to five miles.

Jaffe's team uses specially designed instruments that capture air and run it through spectrographs and other sophisticated equipment, enabling them to "fingerprint" China's pollutants and distinguish them from local sources.

Mercury has garnered the most public attention – and most federal funding – because of its proven health effects.

Inhaling mercury has harmful effects on the nervous, digestive and respiratory systems, and the kidneys.

But it's part of a larger picture, Jaffe said.

"Mercury, ozone, particulates ... They're all important in different ways," he said. "The ozone trend is very important."

It seems reasonable to assume that most of the pollution would drop at the first landfall on the West Coast, but that is not the case.

"Every pollutant is different," Jaffe said.

A recent cloud of especially bad Chinese air, tracked by research stations throughout the United States, deposited more dust and pollutants on Atlanta and Salt Lake City than it did on the Pacific Northwest.

"Now we know it's out there," Jaffe said, "the question is, 'So what?'" And, for policymakers, "What do we do about it?"

Those questions are complicated by the difficulty of assessing health risks. While inhaling mercury is a proven hazard, most of our exposure comes from food, especially some species of fish.

Whatever the current risk from China's exported air, it is certain to get worse as China's new industrial revolution continues. Automobile emissions are a particular concern.

"Right now, one of every 100 people in China own cars," Jaffe said. "If that goes to, say, one in every 10 people, that's 100 million more cars. Several car makers have announced they expect to sell more cars in China than the United States. It's just phenomenal."

China's heavy use of coal is equally worrisome. Three-quarters of China's electricity is produced by coal-fired power plants, which spew out tons of mercury and sulfur oxides.

That is unlikely to change soon. China currently burns about 2 billion tons of coal a year. According to China coal industry representatives, an additional 50 million tons of coal will be needed next year and an additional 500 million tons by 2010 to meet the growth in demand.

Still, Jaffe said, it is important to keep matters in perspective.

America is still the world's worst emitter of carbon dioxide from burning fossil fuel, he notes. About 40 percent of U.S. carbon dioxide emissions come from fossil fuel power plants.

And, while airborne pollution from China is a serious problem, Jaffe said, "Most of the pollution in Seattle and Tacoma is our pollution."

"We can't go pointing our fingers at other countries," he said. "They're not doing anything we didn't do. They're basically following our model of development."

And, he notes, "America's pollution makes it to Europe, and this is of concern there."

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