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Full Effects of WTC Pollution May Never Be Known

By **Laurie Garrett**
 Staff Writer

The air that hovered over New York in the months after the collapse of the Twin Towers contained an unprecedented combination of chemicals, scientists said yesterday. As such, they said it may be impossible to forecast the longterm health impact.

The scientists, from a host of government and university laboratories, gathered yesterday for the first time to compare findings about the dust, debris and polluted air in the aftermath of 9/11, in a conference at the annual meeting of the American Chemical Society.

The picture that emerged from various presentations depicted an unprecedented chemical event that evolved minute-by-minute, throwing a stew of compounds into the air. Researchers said one molecule they detected had never been found in air before.


The plume of dust was marked by a mixture so complex that the content varied centimeter by centimeter, researchers said.

Fires at Ground Zero smoldered for three months and reached temperatures as high as 1,800 degrees, creating what one scientist characterized as a "chemical factory" that brewed new compounds. One effect was a sort of mini-ozone hole phenomenon, in which chlorinated compounds scavenged hydrogen and other atoms off neighboring molecules, transforming them into volatile gases.


"The fact that the plume did not stay in one direction means the exposures to people were intermittent," said Paul Lioy of the Environmental and Occupational Health Sciences Institute of the University of Medicine and Dentistry in New Jersey. "Here it was, a catastrophic event. Initial exposures were basically a blackout -- exposures people will, cumulatively, never see in a lifetime again.

"The problem we have now is we don't know the longterm, lifetime, health consequences. We just don't know." The scientists in attendance were experts in air pollution, atmospheric modeling, dust chemistry and other sciences that


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
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
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
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
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can help explain what was in the plume, where the plume went, and how it changed over time.

A degree of disagreement was apparent. Thomas Cahill, an air pollution expert from the University of California in Davis, said that starting on Oct. 3, 2001, air monitored a mile north of Ground Zero showed "unprecedented ambient levels" of fine particulate matter, sulfur, acidic aerosols, heavy metals and other dangerous compounds.

"I have sampled more than 7,000 samples of very fine aerosols for Kuwait [during the 1992 oil fires], China and so on," Cahill said, "and October 3 was the worst."

But NYU environmental science expert George Thurston said that most of the pollutants measured were normal for New York. Thurston's group started collecting air samples on Sept. 28 from NYU's Downtown Hospital, five blocks northeast of Ground Zero, and comparative samples from northern New Jersey and eastern Greenwich Village. He said that by October, the fires and dust contributed only a third of New York's pollution, and by January it had no real impact.

Most scientists did not agree. The EPA's Joseph Pinto used optical density analysis of videos and photos shot on 9/11 to determine the wavelengths of light scattering to determine what chemicals and debris were present.

"What I'm coming up with really should be viewed as lower limits," Pinto said. "You can see clear enhancement, one hundred to a thousand-fold, in pollution levels due to the World Trade Center."

Lioy's group is creating three-dimensional models of the plume and debris movement, minute by minute. The intense heat of Ground Zero blew the plume upwards, creating a "loft effect", he said, which actually protected New Yorkers from the worst of the chemical onslaught, though it also lifted the gases and particles over Manhattan and dropped them on Brooklyn and Sandy Hook, N.J. U.S. Census Bureau data are being added to the computer model, creating a neighborhood-by-neighborhood picture of human exposure that the researchers hope will help health officials determine locales at risk for longterm health problems.

Several groups found that the levels of key pollutants in the first three weeks after 9/11 exceeded those the EPA found in Los Angeles during a major smog event in 1993.

One molecule, described by the EPA's Erik Swartz, was present at levels "that dwarfed all others": 1,3-diphenylpropane. "We've never observed it in any sampling we've ever done," Swartz said. He said it was most likely produced by the plastic of tens of thousands of burning computers.

Roger Clark of the U.S. Geological Survey's Colorado laboratory led a team that provided the first strong pollution data for the White House, delivered on Sept. 17.

Clark's team repeatedly flew over New York City collecting a criss-cross data set on readings and collected the first dust samples and submitted them for analysis in the USGS's lab. Their report said hotspots were burning at temperatures of up to 1,800 degrees. And their asbestos analysis found some dust samples contained up to 20 percent asbestos.

The next day the White House announced that Ground Zero operations would shift from rescue to recovery mode, because the heat level precluded the possibility of survivors remained beneath the rubble.

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