Eye-Stinging Beijing Air Risks Lifelong Harm to Babies

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A woman and her daughter wear masks in Tiananmen Square on Jan. 23, 2013 in Beijing.

As doctors tended the patients snaking through the ground floor of Beijing Children’s Hospital last week, it wasn’t the raspy throats and watery eyes caused by the city’s acrid air that concerned Li Pu most. It was the potential for lifelong lung damage and behavioral changes.

Li, a pediatrician focusing on early childhood development, is finding evidence of the cumulative toxic effect that pollution is having on children. It suggests that the acute sickness triggered this year by some of Beijing’s worst smog-cloaked days may be a prelude of chronic illnesses, such as heart disease, decades later.

“Even if children are being exposed for a short period, it may still have a cumulative effect on them in the future,” Li said in an interview. “Beijing has seen a lot more days with serious smog since the start of January.”
Urban air pollution is a global problem. Researchers at Columbia University studying clogged air and pregnancy in New York found pollution reduced intelligence and increased the risk of behavioral problems when babies reached school-age. Still, Beijing is among the worst offenders. Air quality in the Chinese capital deteriorated beyond World Health Organization safe limits every day last month as smoke from coal-powered generators, factory emissions, car fumes, and dust amassed over the city of 20 million people.

The World Bank estimates China has 16 of the world’s 20 most-polluted cities. A U.S. Embassy pollution monitor showed air quality in Beijing reached hazardous levels for 20 days last month.

‘Frightening’ Levels

China’s State Council on Feb. 6 issued a timetable for stricter car fuel emissions standards to be adopted nationwide by the end of 2017, and required domestic oil refiners to upgrade their equipment to provide cleaner fuel to match the strictest European Union standards. Since Feb. 1, Beijing has required new cars to meet the higher standards, becoming one of the first cities in China to do so.

“Levels of the past few weeks are frightening,” said Susan Mango, a Harvard University microbiology professor, who has been debating whether to travel to China with her teenage son. “I worry about the damage the pollution could do to a child.”

Pollutants are especially dangerous for infants and children younger than 3 years as their organs are still developing, said Li, who is a senior consultant at New Century International Children’s Hospital, the private arm of Beijing Children’s Hospital. Admissions increase during days of serious air pollution, she said, adding that hospitalization rates for 2013 haven’t been released yet.

Dawn Queues

At Beijing Children’s Hospital, sick children and their parents began queuing before 6 a.m. on Jan. 31 after pollution reached “hazardous” levels for a fifth straight day. Within 30 minutes of the 8 a.m. opening of the hospital’s respiratory and ear, nose and throat clinics, 80 percent of the 137 consultation available were taken.

“I brought my son into the city center for only half a day and his face swelled up and he’s been feeling sick for the last three days,” said Wang Shuzhi, 34, who lives on the city’s outskirts, as she cradled her 3-year-old son. “Not enough is being done to cut the pollution.”

$112 Billion Cost

Foul air hastened the deaths of more than 8,000 people in Beijing, Shanghai and two other major Chinese cities last year, a report by Greenpeace and Peking University found. Labor and health-related losses linked to pollution cost the Chinese economy $112 billion in 2005, the Massachusetts Institute of Technology estimates.
Companies across Beijing have sought to protect the health of their current employees while facing the prospect of increasing difficulties in enticing staff to a city grappling with pollution levels that Li Keqiang, set to become China’s next premier, has said will take time to reduce.

Apple Inc., JPMorgan Chase & Co., Toyota Motor Corp. and Honda Motor Co. gave employees face masks, offered health tips and added oxygen-producing office plants last month.

Official measurements of PM2.5, fine airborne particulates that pose the largest health risks, rose as high as 993 micrograms per cubic meter in Beijing on Jan. 12, compared with WHO guidelines of no more than 25.

The daily average for January was 196 micrograms per cubic meter, compared with an average of 166.6 measured last year in 16 U.S. airport smoking lounges by the Centers for Disease Control and Prevention in Atlanta.

**Daily Cigarette**

“The high levels of air pollution that we are seeing in Beijing may be similar, in terms of excess risk, to smoking a cigarette or two per day,” said C. Arden Pope III, a professor at Brigham Young University in Provo, Utah, who studies the health effects of air pollution. There are “significant adverse health implications of having an entire population, including children, elderly, asthmatics” exposed to that level of pollution, he said in an e-mail.

Exposure to extreme levels of pollution “might cause more airway injury and inflammation,” said John Balmes, Professor of Medicine at the University of California in San Francisco. “If you have underlying heart or lung disease you have a particular risk of dying at those levels.”

Conversely, cleaner air added about five months to life expectancy in the U.S. over two decades, according to a study that Pope led in 2009.

Pregnant women who breath polluted air could produce children with reduced intelligence and behavioral problems such as anxiety, depression and a lack of attention in children assessed at the ages of 6 and 7, according to research by the Columbia Center for Children’s Environmental Health that followed 253 mothers and their offspring in New York City.

**Less Intelligent**

The group also studied the benefits of reducing exposure to coal-burning emissions in Chinese children living in a county in the western municipality of Chongqing. The center had followed children born before and after 2004, the year the local government shut down its sole coal-fired power plant to comply with emissions standards.

Children born when the plant was operating had more pollutant-related disruptions to DNA in their cord blood, smaller head sizes, and were less intelligent, according to results from the ongoing study that were published in the journal Pediatrics in 2008.
“That is a good news story illustrating the benefit of a policy to reduce pollutant emissions and improve air quality,” said Frederica Perera, the center’s director and a professor of public health at Columbia University, in an e-mail. Pollutants cause genetic mutations by damaging DNA.

**Nose Filter**

At the levels of pollution in Beijing last month, “it’s actually unhealthy for kids to be exercising outdoors,” said Balmes. “When you’re playing sports outside -- or just being a kid and being very active -- you get a high exposure to pollution because you’re breathing more per minute. Also, when you’re exercising, you breathe through your mouth instead of your nose, which has a filter.”

Zhong Nanshan, director of the Guangzhou Institute of Respiratory Diseases, was the government’s official specialist on severe acute respiratory syndrome, or SARS, during the deadly 2003 viral outbreak. Air pollution poses a greater health threat, he said in a Jan. 30 TV interview with official broadcaster CCTV.

“You can isolate SARS patients, but nobody can escape air pollution,” Zhong said. “The biggest harm to the body will come later.”

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