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## Suspected Hormone-Changing Chemical Found in Air Near Factories

As concerns mount over people's exposure to the plasticizer bisphenol A in everyday products, it's also contaminating the air near facilities that make it

October 14, 2014 | By [Brian Bienkowski](#) and [Environmental Health News](#) |

As concerns mount over people's exposure to the plasticizer bisphenol A in everyday products, it's also contaminating the air near manufacturing plants: U.S. companies emitted about 26 tons of the hormone-disrupting compound in 2013.

Although research is sparse, experts warn that airborne BPA could be a potentially dangerous route of exposure for some people. Of the 72 factories reporting BPA emissions, the largest sources are in Ohio, Indiana and Texas, according to the Environmental Protection Agency's [Toxics Release Inventory](#).

No one has measured what people in nearby communities are exposed to. But the exposures are likely to be localized and smaller than other sources of BPA.

BPA breaks down quickly in the environment. But it also can attach to particles that infiltrate lungs, said Bruce Blumberg, a University of California, Irvine, biology professor.

"Inhalation of compounds is a big exposure route that most people do not usually consider for BPA," he said.

BPA, used to make polycarbonate plastic, food can linings and some paper receipts, is found in almost all people tested. Low doses can alter hormones, according to animal tests, and exposure has been linked to a wide range of health effects in people, including infertility, cardiovascular disease, obesity and cancer.

In the only [study of its kind](#), Japanese researchers reported that BPA was ubiquitous in the atmosphere worldwide. They suspected the emissions came from the manufacturing and burning of plastics.

In the United States, chemical manufacturing accounted for 54 percent of the BPA air emissions, while metal manufacturing and metal fabricating accounted for 21 and 20 percent, respectively, according to the EPA database. In addition, U.S. companies in 2013 reported



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releasing 3,313 pounds of BPA to surface waters, the EPA database shows.

The amount of BPA emitted into the air has been dropping in recent years. Although the number of companies reporting BPA emissions has remained about the same over the past decade, in 2013 the total tons declined 41 percent from 2012 and almost 66 percent from 10 years ago.

Kathryn St. John, a spokesperson for the American Chemistry Council, which represents chemical manufacturers, said the data don't reflect what people in surrounding communities might be exposed to. Factors such as the proximity of people to the plants and whether the emissions are continuous or intermittent are important when determining people's exposures.

St. John added that there is "no evidence that inhalation exposures are of concern." Studies have not provided any information on what happens to BPA if inhaled, such as whether it is absorbed in the lungs and if absorbed, whether it is metabolized.

But Wade Welshons, an associate professor at the University of Missouri who studies endocrine-disrupting compounds, said airborne BPA could be absorbed through the lungs as well as the skin.

Both and inhalation and skin absorption "would deliver more BPA to the blood than an oral exposure," he said.

Blumberg and Welshons said since these routes would bypass metabolizing organs such as the intestines and liver, airborne exposures may be more dangerous than food exposures.

"The liver is a great organ for metabolizing substances, lungs are for absorbing, not for metabolizing," Welshons said.

No one has investigated the potential health effects of inhaling BPA. Regulatory agencies only consider oral doses when analyzing potential effects, Blumberg said.

Several communities with the biggest BPA emitters are also home to large volumes of other toxics from industrial plants.

Deer Park, Texas, had 4,100 pounds of BPA and 2.8 million pounds of other air toxics in 2013, while Defiance, Ohio, had 6,600 pounds of BPA and 387,454 pounds of others, according to the industry reports filed with the EPA. Freeport, Texas, home to a Dow Chemical plant, had 905 pounds of reported BPA air emissions last year and an additional 1.74 million pounds of other toxics.

Compared with exposure from consumer products such as polycarbonate plastic and food cans, there has been little concern about airborne BPA. "But this lower concern level is based on relatively little data," said Laura Vandenberg, an assistant professor of environmental health at the University of Massachusetts Amherst who studies health effects of BPA. "This is something I would say is not discussed in-depth on our field but it should be."

There isn't a lot of research on what happens to BPA when it's released into the air. BPA degrades fairly quickly, but it also can attach to dust particles, Vandenberg said.

[Researchers tested](#) for BPA in the dust of homes, dorms and labs at and around Murray State University and the University at Albany in 2011. They estimated that, while diet is still the major exposure route, people's BPA exposures through dust are about the same as the low concentrations that cause health problems in lab animals. It's not clear how the BPA got into the dust; it could have been from indoor sources.

Sudan Loganathan, who led the study while a student at Murray State University, said the estimated daily exposure for people through dust was low compared with food exposure. But, she added, "when you look at the average dust intake for adults and then infants, this is more of a concern for infants. They are on the floor, and there's more hand-to-mouth contact."

Blumberg said air quality monitoring should expand to test for BPA.

"There are a lot of people studying inhalation exposure with things like particulate pollution, ozone and other major components of

exhaust, but not much at all when it comes to chemical exposure like BPA,” Blumberg said. “That’s a big open area right now.”

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