

Exposure to BPA in the womb linked to wheezing and poorer lung function in children

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Madrid, Spain: Pregnant women exposed to higher levels of the commonly used chemical bisphenol A (BPA) are more likely to have children who suffer with wheezing and poorer lung function, according to research presented at the European Respiratory Society International Congress.

BPA is one of a group of chemicals called phenols that are used in the manufacture of food containers, cans, plastic bottles, toys and some types of paper. Previous research suggests that phenols can interfere with hormone signals in the body.

The new research examined [pregnant women's exposure](#) to various phenols and found that the majority of women in the study had detectable levels of BPA in their urine. Children born to women with higher levels of BPA were more likely to have smaller [lung](#) capacity and to experience wheezing.

The study was presented by Alicia Abellan, a predoctoral researcher at the Barcelona Institute for Global Health (ISGlobal), a centre supported by the "la Caixa" Foundation. She said: "Phenols are chemicals that we are continuously exposed to in our daily lives and BPA is the most commonly used phenol.

"Phenols are known to be 'endocrine disruptors', which means they can interfere with the hormone system and consequently alter many essential body functions, including the respiratory and immune systems.

"When babies are still in the womb, they are especially vulnerable to these substances because they have not yet established the ability to remove toxic substances, and their respiratory and immune systems are still developing."

Ms Abellan and her colleagues studied 2685 pairs of mothers and their children who were already taking part in one of eight large European research projects. Levels of the mothers' exposure to BPA and other phenols were gauged from a urine sample taken during pregnancy. The children's lung function was measured when they were aged between six and ten years. Questionnaires were also used to determine whether children suffered with wheezing.

The results showed that 79% of the pregnant women had detectable quantities of BPA in their urine. Other less commonly used phenols, such as bisphenol S and bisphenol F, were also found but in fewer women. Researchers discovered that women with higher levels of BPA were 13% more likely to have children who suffered with wheezing. They also found that a doubling of BPA in a mother's [urine sample](#) corresponded with an estimated 5ml decrease in a child's lung capacity.

The researchers say their results are strengthened by the fact that they collated data from eight different European studies including a large number of participants. However, they say a potential weakness of the work is that they had to rely on measurements of phenols from just one or two urine samples per woman, which only gives a snapshot of recent exposure.

Ms Abellan said: "Our research doesn't tell us exactly how the two are linked, but previous research in animals has shown that prenatal exposure to BPA can stunt the developing lungs and have an impact on the [immune system](#). It could be that these chemicals interact with hormone signals in the growing baby and alter the correct development of the immune and the respiratory systems.

"Currently, there is no general consensus regarding a safe level of exposure to phenols, but recently the EU general court classified BPA among the list of 'very high concern' chemicals."

Ms Abellan and her colleagues plan to continue this work by analysing BPA exposure and its effects on different wheezing patterns across childhood, as well as studying the effects of the other phenols that they found in lower concentrations.

Professor Daiana Stolz, from University Hospital Basel, Switzerland, is Chair of the European Respiratory Society Education Council and was not involved in the study. She said: "This research suggests that exposure to BPA in the womb may lead to small but measurable differences in children's lung function. These effects might not have much impact on children who are otherwise healthy, but they are very important when we consider the health of a whole population.

"Policy makers and clinicians should be aware of the role that these commonly used chemicals might play in the very earliest stages of a baby's development and the impact that could have on our population's health at later stages of life, as we know that having lower lung function in early life makes people more prone to developing chronic lung diseases like COPD.

"Further investigation is needed to confirm the link between [phenol](#) exposure and respiratory effects, as well as more research to assess the mixtures of chemicals in our environment and their effects on respiratory health."

More information: Abstract no: OA4969, "Prenatal exposure to phenols and lung function, wheeze, and asthma in school-age children from 8 European birth cohorts", by Alicia Abellan et al; "Early origins of respiratory diseases and later life consequences" session, 15.30 hrs CEST, Tuesday 1 October, room N101+102.

Provided by European Lung Foundation

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