



ECHO

Environmental influences
on Child Health Outcomes

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Study Summary

Do chemicals that break down slowly in the environment affect how long it takes to become pregnant?

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Who sponsored this study?

This research was supported by the Environmental influences on Child Health Outcomes (ECHO) program, Office of The Director, National Institutes of Health. Individual authors were additionally supported by the National Institutes of Environmental Health Sciences, Diabetes and Digestive and Kidney Diseases, and Alcohol Abuse and Alcoholism.

Why was this study needed?

Some human-made chemicals can cause problems with the reproductive system. Many studies have looked at whether these chemicals affect how long it takes to get pregnant. How long it takes to become pregnant is a sign of a couple's reproductive health and can be a sign that they need to seek fertility treatment. Our review compares the results of past studies to see if there are consistent patterns for particular types of chemicals. It also identifies chemicals that need further research.

Who was involved?

This review includes all papers published in English on this topic from January 1, 2007 to August 6, 2019. Our search looked at 28 articles. These articles used data from 19 different studies. The studies took place in North America, Europe, and East Asia.

What happened during the study?

We searched five science libraries and found more than 4500 articles that could possibly fit our topic and narrowed them down to the 28 articles discussed in our paper. We read each article carefully, gave it a score based on its quality, and pulled out the most important information. This included whether the chemicals the paper looked at affected how long it took to get pregnant, and if so, by how much. We then put that information into tables. Finally, we looked at whether or not results were consistent, especially among high-quality studies. We then drew our conclusions.

What were the study results?

The strongest evidence points to a connection between human-made chemicals called polychlorinated biphenyls and a longer time to get pregnant. These chemicals used to be used in electrical and hydraulic equipment. Even though production of these chemicals stopped in the late 1970s, we are still exposed to them through soil, water, and building materials. Another group of chemicals called organochlorine

pesticides do not seem to affect the time it takes to get pregnant. We still need more research on brominated flame retardants, found in furniture, clothing, and other household products, and per- and polyfluoroalkyl substances, found in non-stick cookware and stain-resistant fabrics. Many of the newer chemicals in these categories have not yet been studied.

Impact

This review shows that some long-lasting chemicals may increase the time it takes for couples to get pregnant. This can be stressful and lead couples to seek expensive fertility treatment. Although many of the chemicals covered in our review are no longer made or used in the US, they can last for years—even decades—in the environment and in our bodies. Therefore, they can still affect our health. We need more research on newer chemicals that have been invented to replace dangerous ones. We also need to figure out exactly how these chemicals interfere with healthy reproduction. For example, there may be times in life, such as puberty, when being exposed to them may be especially damaging. The ECHO Program is an important resource for answering these questions.

What happens next?

This is the second review that this team of authors has written on chemicals and time to pregnancy. Our next paper will look at whether different types of air pollution affect how long it takes to get pregnant.

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