

Workplace BPA exposure increases risk of male sexual dysfunction

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High levels of workplace exposure to Bisphenol-A may increase the risk of reduced sexual function in men, according to a Kaiser Permanente study appearing in the journal *Human Reproduction*.

The five-year study examined 634 workers in factories in China, comparing workers in [BPA](#) manufacturing facilities with a control group of workers in factories where no BPA was present. The study found that the workers in the BPA facilities had quadruple the risk of erectile dysfunction, and seven times more risk of ejaculation difficulty.

This is the first research study to look at the effect of BPA on the male reproductive system in humans. Previous animal studies have shown that BPA has a detrimental effect on male reproductive system in mice and rats.

Funded by the U.S. National Institute of Occupational Safety and Health, this study adds to the body of evidence questioning the safety of BPA, a chemical made in the production of polycarbonated plastics and epoxy resins found in [baby bottles](#), plastic containers, the lining of cans used for food and beverages, and in dental sealants.

The BPA levels experienced by the exposed factory workers in the study were 50 times higher than what the average American male faces in the United States, the researchers said.

"Because the BPA levels in this study were very high, more research

needs to be done to see how low a level of BPA exposure may have effects on our reproductive system," said the study's lead author. De-Kun Li, MD, Ph.D., a reproductive and perinatal epidemiologist at Kaiser Permanente's Division of Research in Oakland, Calif. "This study raises the question: Is there a safe level for BPA exposure, and what is that level? More studies like this, which examine the effect of BPA on humans, are critically needed to help establish prevention strategies and regulatory policies."

The researchers explained that BPA is believed by some to be a highly suspect human endocrine disrupter, likely affecting both male and female reproductive systems. This first epidemiological study of BPA effects on the male reproductive system provides evidence that has been lacking as the U.S. Food and Drug Administration, and various U.S. government panels have explored this controversial topic.

This study is the first of series of studies that examine the BPA effect in humans and are to be published by Dr. Li and his colleagues.

The study finding, Dr. Li also points out, may have implications of adverse BPA effects beyond male [sexual dysfunction](#). Male sexual dysfunction could be a more sensitive early indicator for adverse BPA effects than other disease endpoints that are more difficult to study, such as cancer or metabolic diseases.

For this study, researchers compared 230 workers exposed to high levels of BPA in their jobs as packagers, technical supervisors, laboratory technicians and maintenance workers in one BPA manufacturing facility and three facilities using BPA to manufacture [epoxy resin](#), in several regions near Shanghai, to a control group of 404 workers in the same city from factories where no BPA exposure in the workplace was recorded. The factories with no BPA exposure produced construction materials, water supplies, machinery, garments, textiles, and electronics.

The workers from the two groups were matched by age, education, gender, and employment history.

Researchers gauged BPA levels by conducting spot air sampling, personal air sample monitoring and walk-through evaluations, by reviewing factory records and interviewing factory leaders and workers about personal hygiene habits, use of protective equipment, and exposures to other chemicals. A subset of workers also provided urine samples for assaying urine BPA level to confirm the higher BPA exposure level among the workers with occupational BPA exposure.

Researchers measured [sexual function](#) based on in-person interviews using a standard male sexual function inventory that measures four categories of male sexual function including erectile function, ejaculation capability, sexual desire, and overall satisfaction with sex life.

After adjusting for age, education, marital status, current smoking status, a history of chronic diseases and exposure to other chemicals, and employment history, the researchers found the BPA-exposed workers had a significantly higher risk of sexual dysfunction compared to the unexposed workers.

The BPA-exposed workers had a nearly four-fold increased risk of reduced sexual desire and overall satisfaction with their sex life, greater than four-fold increased risk of erection difficulty, and more than seven-fold increased risk of ejaculation difficulty.

A dose-response relationship was observed with an increasing level of cumulative BPA exposure associated with a higher risk of sexual dysfunction. Furthermore, compared to the unexposed workers, BPA-exposed workers reported significantly higher frequencies of reduced sexual function within one year of employment in the BPA-exposed

factories.

More information: Occupational exposure to [bisphenol-A](#) (BPA) and the risk of self-reported male sexual dysfunction. *Human Reproduction* journal. [doi:10.1093/humrep/dep381](https://doi.org/10.1093/humrep/dep381)

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