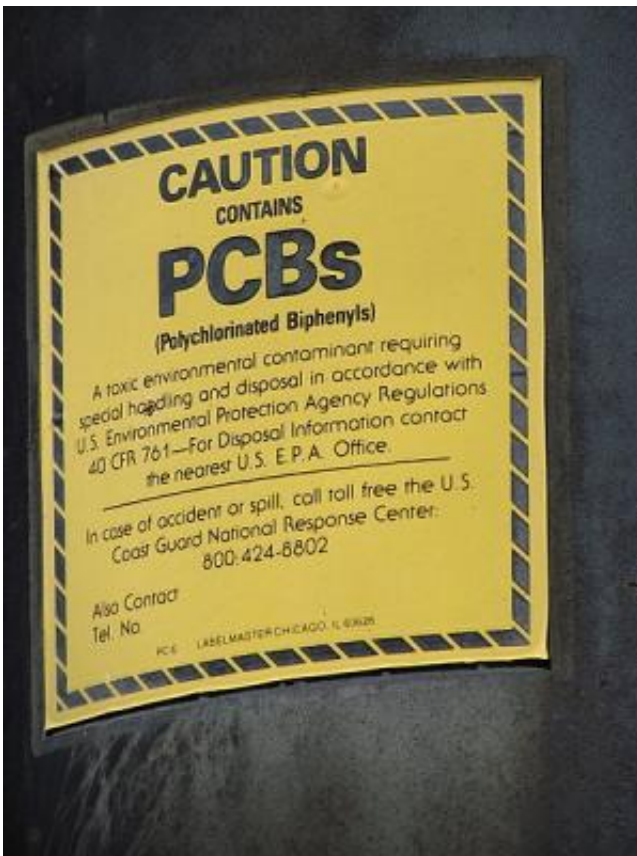


Endocrine-disrupting chemicals may raise risk of cognitive disorders in future generations, animal study finds

June 15 2023



PCB warning label affixed to a railroad signal power supply transformer dating from the 1930's at CP-SLOPE interlocking, west of Altoona, PA on the Norfolk Southern Pittsburgh Line. Credit: Sturmovich/Wikipedia

Adverse cognitive effects linked to polychlorinated biphenyls (PCBs) exposure, a type of endocrine-disrupting chemical (EDC), have the potential to be passed down through generations, according to an animal study being presented Thursday at ENDO 2023, the Endocrine Society's annual meeting in Chicago, Ill.

PCBs can mimic the effect of the hormone estrogen on the body, contributing to a variety of neuroendocrine, metabolic and reproductive problems.

"Endocrine-disrupting chemicals present in our food, air, water and personal products may cause cognitive-behavioral disorders like attention-deficit/[hyperactivity disorder](#) or overeating in future generations," said Emily N. Hilz, Ph.D., a postdoctoral fellow at the University of Texas at Austin.

To explore this further, Hilz and colleagues administered a common PCB mixture called Aroclor 1221 to pregnant female rats. The adults (n=40), their offspring (n=80), and their future grandchildren (n=80) were all tested on behavioral tasks to assess pleasure-seeking, ability to pay attention, and cognitive flexibility.

"The grandchildren of rats exposed to EDCs while pregnant performed significantly worse on these tasks, showing impaired cognitive function and increased pleasure-seeking," Hilz said. "This suggests EDCs program potential cognitive disorders or [behavioral problems](#) that only emerge in later generations."

Grandchildren of rats that were exposed to the PCB mixture were more interested in eating for pleasure, according to the results of the sucrose preference test. While all of the tested animals preferred the sucrose solution to water, the grandchildren of mothers exposed to the PCB mixture consumed more of the sucrose solution.

The same rats had an impaired ability to switch between tasks or learn new rules. However, only the male grandchildren were more likely to become fixated with a visual cue, which is common in disorders such as ADHD.

The PCB mixture impaired different aspects of cognitive behavior between male and female rats, depending on the life stage when they were exposed. It's not yet clear which biological systems might be driving this.

"Our findings suggest regulating EDCs in industrial and [consumer products](#) could reduce the prevalence of certain cognitive or behavioral disorders in the future," Hilz said.

Hilz is scheduled to present at the Society's ENDO 2023 endocrine-disrupting chemicals news conference at 10 AM Central on Saturday, June 17.

More information: Conference livestream at endomediastream.com.

Provided by The Endocrine Society

Citation: Endocrine-disrupting chemicals may raise risk of cognitive disorders in future generations, animal study finds (2023, June 15) retrieved 14 May 2024 from <https://medicalxpress.com/news/2023-06-endocrine-disrupting-chemicals-cognitive-disorders-future.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.
