

22. The Little Hocking That Could: Community Exposure to Perfluorooctanoate

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Summary

In 2002, environmental researchers at the University of Pennsylvania learned that residents living in the area of the Little Hocking Water Association District (LHWAD) in southeastern Ohio were experiencing significant exposures to perfluorooctanoic acid (PFOA or C8) from a production facility in nearby West Virginia. Despite the EPA's recognition of C8 as a probable carcinogen and expressions of concern that it may also delay childhood development, concerned residents of the relatively low-income community in southeastern Ohio struggled to get the attention of policymakers and regulators.

In response, the University of Pennsylvania, the local community through the Decatur Community Association, and local physician Hong Zhang formed a partnership which obtained funding from the NIEHS to conduct an independent CBPR study to determine: (1) if levels of C8 were elevated in the blood of LHWAD residents; (2) whether the source of C8 was from air, water, or elsewhere; and (3) if there were any short-term health effects.

The partnership studied a stratified random sample of 343 residents from 169 households in the LHWAD using a questionnaire, blood tests for C8 levels and for biomarkers of possible short-term health effects that had been observed in animal testing of C8, and developed a unique community-first communication model to disseminate the results.

The study found that C8 levels in residents were far above normal, highest in children and the elderly, and identified residential drinking water as the major source of exposure. While no short-term health effects related to C8 were found, the initial study was not designed to address long-term effects such as cancer or developmental delays.

In late 2006, the partnership performed a follow-up study of approximately 65 percent of the original participants. Over 90 percent had made some change in their water supply, and C8 levels had fallen an average of 25 percent. The community was empowered by the research findings. The findings were subsequently used to help protect other communities.

Highlighted Impacts

Outputs

Newsletters

Throughout the study, periodic newsletters were sent to each of the approximately 4,500 households in the LHWAD. When study results became available, they were disseminated, along with recommendations, to avoid exposures through the newsletter. Newsletters were also supplied to attendees at community meetings.

Website

A website was developed to highlight details of the study, announcements, community advisory committee meeting minutes, the newsletters, study results, and answers to frequently asked questions. Community stakeholders regularly visited the site.

Presentations at community meetings

Project leaders gave presentations at quarterly community advisory committee meetings throughout the project. These meetings were open to the public, and were attended by as many as 40 residents in addition to the committee members.

The study results were presented in the local high school auditorium

Over 400 people attended, including TV and media, the local member of the U.S. House of Representatives, and other officials. Study physicians also offered private meetings and a toll-free number for community members with health questions they preferred to keep private.

Presentations to authorities and scientific meetings

Study results were presented to several different government agencies, including NIEHS, the EPA, state-level officials in multiple states, the Ohio Health Department, as well as international groups also concerned with C8 contamination of water sources. Furthermore, results were shared at several national scientific meetings. A poster focusing on the study presented at the EPA Science Forum won a first place award.

Publications

The project has resulted in six publications in peer-reviewed journals. These publications have been cited in over 150 scientific publications. In 2007 and again in 2010, publications from the study were awarded the Alfred G. Kammer Merit in Authorship Award from the American College of Occupational and Environmental Medicine for the best scientific paper in the previous year in *Occupational and Environmental Medicine*.

Outcomes

Increased availability of clean drinking water

A recommendation generated from the study encouraged residents in the water district to consider an alternate drinking water source (e.g., bottled water) if their primary residential water source contained C8. On the day the results from the study were released, the DuPont Corporation provided free bottled water to all residents of the LHWAD—initially by reimbursement for water purchases and later through home water delivery. Over 78 percent of water district households participated. In addition, although not as a direct result of this study, a new water filtration system was introduced to the public water supply to remove all C8 two years after the results were made public.

Increased awareness of exposures and influence on changes in drinking water consumption behavior

A follow-up study revealed that awareness of the initial study findings influenced approximately 95 percent of follow-up study participants to make some change in their water consumption behavior in an effort to lower exposure to C8. Within 15 months of the release of the initial study findings, approximately 88 percent of participants had shifted to using bottled water. A significant majority made the change within three months of the announcement of the initial study results. Another 8 percent adopted other measures to reduce exposure to C8.

Reduced C8 levels in blood

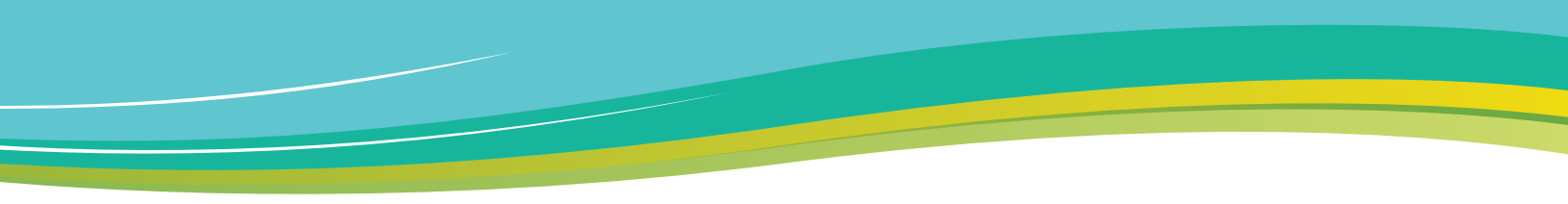
The follow-up study found C8 levels in the blood of participants averaged 26 percent lower than they were originally.

Community-first communication method serves as a model for other studies

The community-first communication method developed during this study has been adopted as a model for other ongoing community-based research, including research looking at exposures through consuming seafood contaminated as a result of the Gulf oil spill.

Study results serve as a basis for policy development in communities across America

Study findings served as the basis of a consent decree between the EPA and the DuPont Corporation to provide bottled drinking water to residents in other communities with C8 levels greater than 0.5 parts per billion in their drinking water. The findings have been used by several states, including Minnesota and New Jersey, to set new or revise safe drinking water standards for C8.



The Seventh Community Campus Partnerships for Health Award

The Decatur Community Association and The University of Pennsylvania received the prestigious Community Campus Partnerships for Health Award in 2008. This international award recognizes partnerships striving to overcome root causes of health, social, and economic inequalities. This award has helped promote the partnership's methods and success internationally.

Biomonitoring data awareness inspires research on the approach

Several other research groups are currently studying the methods used and the results achieved in an effort to better understand how community awareness of biomonitoring and other data can lead to exposure reduction and policy changes.