

Impacts of E-waste Exposure on Maternal and Fetal Health

Ashley Choi, Nadrat Chowdhury¹, Christine Crute², Ellea Lamb, Julia Murphy, Angela Pham, Aneesha Raj, Yan Sun², Connie Xiong², Amy Zhao, Liping Feng³
¹ Pratt School of Engineering, ² Nicholas School of the Environment, ³ Duke OBGYN

BACKGROUND

Electronic waste import and recycling sites are prevalent in China, and exposure to harmful waste compounds may have detrimental effects on maternal and fetal health.

Taizhou, China is one of the largest e-waste processing sites worldwide.

China has recently established e-waste recycling policies, but their enforcement has yet to be evaluated.



PROJECT GOALS

POLICY TEAM

- Analyze Chinese policies relating to e-waste regulation and disposal
- Survey community attitudes towards e-waste recycling in Taizhou
- Communicate findings in written policy brief

HEALTH TEAM

- Assess Taizhou community exposures with silicon wristband methodology
- Measure chemical profile in cord blood samples
- Design laboratory tests to investigate e-waste exposure on pregnancy

CONCLUSIONS

★ Gaps in national policy implementation affect local community interactions with e-waste

★ Low exposure levels of damaging chemicals suggest that the removal of an e-waste site in 2018 decreased risks for the Taizhou community

ACKNOWLEDGEMENTS. We are thankful to Dr. Heather Stapleton for conducting wristband analysis and providing feedback, and to Dr. Kathinka Furst, Dr. John Ji, and XiuXiu Zhang for advising the policy projects.

A MULTITIERED APPROACH: FINDINGS

Institutional Level

China's Circular Economy Promotion Law (2008) was a national effort to manage e-waste.



Despite a ban, individual actors continue to import foreign waste.

National policies have failed to impact change in local settings, which jeopardizes community health.

Community Level

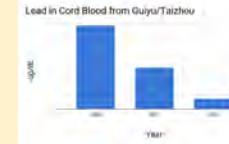


Residents benefited economically from the industry yet also potentially faced health consequences of e-waste exposure.

Residents who lived in an abandoned e-waste site were highly aware of its remaining issues.



Individual Level



Low current-day exposure levels of heavy metals and flame retardants follow decreasing levels of lead in cord blood over time.

