

Podcast Transcript: Protecting Communities from Lead Exposure

[Theme music]

Ashley Ahearn (AA): You're listening to Environmental Health Chat – a show from the National Institute of Environmental Health Sciences that explores the connections between our health and our world.

I'm Ashley Ahearn.

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The city of Philadelphia has a deep industrial history, and that could be affecting public health there, today.

Dr. Marilyn Howarth is the director of the Community Engagement Core of the NIEHS-funded Center of Excellence in Environmental Toxicology at the University of Pennsylvania. She is also the co-director for the Translational Research Core of the Philadelphia Regional Center for Children's Environmental Health.

Marilyn Howarth (MH): We at one time in Philadelphia had the largest number of smelters of any other city. And smelters melt rock and then extract the lead. But there's a lot of lead left still in the refuse that sort of comes out of a smelter. And so, they tended to be very polluting of their immediate adjacent areas.

AA: Lead is a known neurotoxin that can be particularly harmful to children if they're exposed during important phases of their development.

But you won't *just* find lead in areas where smelters once operated. For many years it was widely used in paint and water pipes. If your house was built before 1978 there could be lead in the older layers of paint.

MH: So, we had concerns from the start, that our industrial past has led to a lot of lead in the soil and also the places where we have had housing for over 100 years, those homes would really have had many coats of lead paint.

AA: And that lead – whether it's from smelter refuse or old chipped paint – can get into the soil. It can contaminate children's play areas and community gardens. In fact, according to data from the city of Philadelphia, people there show elevated blood lead levels at more than double the national average. In some neighborhoods of the city, up to 12% of children under the age of 3 have elevated levels of lead in their blood.

MH: And in a city like Philadelphia, where we have a very high rate of poverty, people are not spending their money repainting the outsides of their homes when they have more pressing issues where their funds are going. And children play outside. And we know that some of them eat soil, and some of them don't wash their hands while they're putting their hands in their mouth. And so, there's lots of reasons why children would be exposed.

AA: Dr. Howarth is part of a team of researchers trying to gain a better understanding of lead exposure rates in Philadelphia and engage the community and public leaders in solving the problem.

It's called the Lead Index and Mapping Project and it was started by Dr. Howarth's colleague at the Center of Excellence in Environmental Toxicology, Dr. Richard Pepino. He worked with a group of his students at the University of Pennsylvania to gather soil samples in neighborhoods near the university. That sampling effort has expanded to prioritize broad community engagement. Dr. Howarth and her colleagues hold informational workshops around Philadelphia and the surround area where community members can gather samples themselves and bring them in for analysis.

MH: And we would test the soil samples. And all the while they were waiting, we would give them materials around lead and where people can be exposed to it. We had information about paint, water, and soil, and then talked with them about what their soil levels actually meant.

AA: More than 3,800 community members have shared their samples and, using their map, Dr. Howarth and her colleagues have been able to create a powerful visual representation of the lead levels in their community that continues to expand its reach as more people learn how to contribute samples.

MH: We've put instructions online. And we offer it to anyone in Philadelphia, if they would like to collect soil using those instructions and send it to us or have us pick it up, we'd be happy to do that and test it for them. And not only will they have the information, but we'll have the benefit of adding it to our data map.

AA: Using the map, Dr. Howarth and her team were able to overlay their soil sample data with blood lead level data from the Philadelphia Department of Health. They also included sociodemographic information for various zip codes within Philadelphia to find hot spots for lead in soil and in people's blood. And sure enough, they found them.

MH: And in those higher elevated blood lead level neighborhoods, zip codes actually, we find that there's a higher percentage of poverty, there's a higher percentage of minority populations and in particular, black children. And these were zip codes in North Philadelphia and West Philadelphia, in particular. Unfortunately, these are zip codes that had previously been known to the Philadelphia Department of Health, because they really do have elevated blood lead levels in these areas. And they also are the areas of greatest poverty.

AA: But there was one surprise that the map revealed that could present an opportunity to better protect people. Dr. Howarth and her team also overlaid home ownership rates on the map.

So, you might think, neighborhoods where more people own their homes than rent would perhaps indicate more affluent neighborhoods and therefore less chipping old paint...

MH: But actually, that is not what we found. We found that owner-occupied residences were of greater risk in Philadelphia. And one of the reasons for this is Philadelphia has a very strong history of home ownership. There were times in Philadelphia's history when our row homes were really quite affordable for people. And so, when they were purchased, say two generations ago, they now have been handed down in families. And as they're handed down, unfortunately, the poverty rate has increased.

AA: Family members may be able to hold onto these homes, but they may not be able to afford to maintain them.

MH: And so, therefore, there may be a greater likelihood that there will be peeling lead paint, both inside and outside the homes, adding to the soil [lead] content, and also adding to the elevated blood levels for children indoors.

AA: Another factor that could contribute to higher lead exposure in these neighborhoods? Gentrification. Many old homes in lower-income neighborhoods of Philadelphia are being torn down to make way for new buildings, and that, Dr. Howarth says, is a major concern when it comes to lead exposure.

MH: Demolitions cause tremendous amounts of dust. Imagine a building loaded with lead paint – and other things, but lead paint – being demolished. There are big clouds of dust. The correct way to do a demolition is actually to have someone literally spraying water on that dust as the dust is being created, so that it will become entrained in the water and fall to the ground and not move off site.

AA: Dr. Howarth says policymakers need to require more stringent safety measures for demolitions – like spraying water on the site to reduce dust and keep the lead from drifting into neighboring yards. But those regulations also need to be enforced.

MH: The demolition regulations in Philadelphia are not as robust as they could be. And the enforcement is not as robust as it could be, in part because we have had so many demolitions happening over the last 10 years or so.

AA: But Dr. Howarth is not giving up the fight. She and her colleagues continue to hold workshops for residents across the city where people can bring samples in for analysis and learn about the risks they may be facing.

MH: To these families, we say that there are things that can be done and we do work with them on some of those individual interventions that they can do, but also connect them to resources that are available in the city through health care and, and really have them recognize that there are some strategies that are more impactful than others.

AA: Dr. Howarth also recommends using a wet mop or sponge on surfaces in the home to reduce dust and pick up lead particles and paint chips that children may come into contact with while playing.

Drinking water should also be regularly tested and if lead levels are high, there are some things people can do. By running the water for 3-5 minutes before drinking it or making your baby bottle you can flush out the water in which lead has accumulated.

The Lead Index and Mapping Project has been an important tool to get the attention of policymakers and public leaders, alike. Dr. Howarth and her colleagues have presented their findings to city and state officials in order to push for more blood lead testing in young children, as well as regulations that could require rental properties to be lead safe and water filters to be installed in schools and other public facilities.

MH: I think the way to do it is to think through smaller types of intervention. And so intervening in schools around filters for drinking water for children. That is a narrow scope, but it's a meaningful and very impactful scope. Intervening on owner-occupied homes that have peeling lead paint that are impacting their children. That is something that can be tackled city by city or

even state by state. I think that is really the way to achieve policy change on lead, it's in small increments.

AA: At the end of the day, Dr. Howarth sees lead exposure as a solvable problem. Lead may hang around in the environment, but there is much we can do to protect ourselves and our loved ones – we just have to take the steps, both on the individual and policy levels, she says.

MH: I believe that over the next couple of decades we will reduce lead poisoning dramatically. I believe that the kinds of funding that are beginning to come to communities that need it to remediate lead poisoning, they are coming. And as we increase the knowledge of communities and residents, I think that they share that knowledge with others. And I think if we can get additional policy to increase the awareness of the need for blood lead levels and some policy that actually requires remediation in places that are known hazards for children, I think that we will make major strides in tackling lead poisoning in this country.

[Music comes up]

AA: I'm Ashley Ahearn. Thanks for listening to Environmental Health Chat.