

# MN FEET Study: Community Report



Mercury, lead and cadmium are chemicals in our environment that can harm people's health. When women are pregnant, these chemicals can affect babies' brain development. Minnesota Family Environmental Exposure Tracking (MN FEET) was a study with the Minnesota Department of Health (MDH), HealthPartners Institute and SoLaHmo Partnership for Health & Wellness at Minnesota Community Care (formerly known as West Side Community Health Services). We measured these chemicals in women and their newborn babies to learn more about how to protect families from these chemicals.

## About MN FEET

We asked pregnant women who planned to give birth at Regions Hospital or Abbott Northwestern Hospital to be in the study. Women were from Asian, East African, Latino and White communities. We asked women from these groups because of communities' concerns and information from other studies that they may have more of these chemicals in their bodies than women from other communities. Seventy percent of all the women we asked agreed to be in the study. Some ethnic groups had more women in the study than others.

Women who agreed to join the study answered phone survey questions. Then, when they had their babies, they gave a urine sample and a small amount of blood from their baby's umbilical cord. Blood and urine samples were tested by the MDH Public Health Laboratory.

### Women in MN FEET

- 779 women answered survey questions: 323 Latina women, 226 White women, 145 Asian women, 85 East African women.
- 408 women gave blood and/or urine samples: 156 Latina women, 141 White women, 83 Asian women, 28 East African women.
- Over half (63%) lived in Ramsey County. Women were from 11 different Minnesota counties.
- 98% of Latina women, 36% of East African women and 20% of Asian women answered their survey questions in a language other than English.

## What We Found

### LEAD

Adults can come in contact with lead through fixing up older homes that have lead-based paint, some jobs and hobbies, and some products like glazed ceramics with lead.

We tested 395 women for lead in their babies' cord blood. Most women had low amounts of lead in their babies' cord blood. Compared to women from Asian, Latino and East African communities, White women had the lowest lead levels in their babies' cord blood. Women whose babies had more lead in their cord blood were not born in the U.S., spoke a language other than English on their survey, had lower household incomes and had less education.

Two women had high levels of cord blood lead, with more than 5 micrograms of lead per deciliter of blood. For the women with high levels, people from their local public health agencies helped them lower exposures.

### CADMIUM

Smoking cigarettes is the main way adults come in contact with cadmium. We tested 395 women for cadmium in their babies' cord blood. Cadmium was only found in three women. Only 4 % of women said they were cigarette smokers.

### MERCURY

We tested mercury in urine and babies' cord blood. These tests gave different information about how women came in contact with mercury because mercury comes in different forms.

- Inorganic mercury is found mostly in skin lightening products, light bulbs and old thermometers. Mercury in urine is most often inorganic mercury.
- Organic mercury is found mostly in fish. Mercury in cord blood is most often organic mercury.

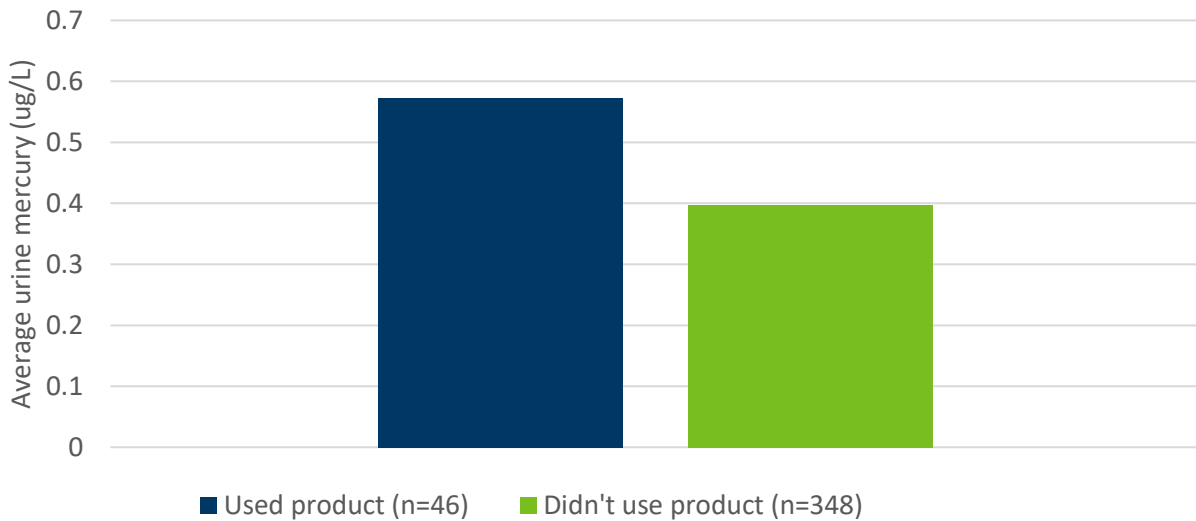
## Mercury from skin lightening products



Skin lightening products may have mercury in them. Mercury cannot be seen, felt, smelled or tasted. Mercury is usually not listed on the label, even if it is in the product. Selling skin lightening products that have mercury is illegal in the U.S.

We tested 396 women for mercury in their urine. Women who used a skin lightening cream in the past had more mercury in their urine than women who did not use a cream (see Figure 1). This was especially true for Asian and East African women in the study.

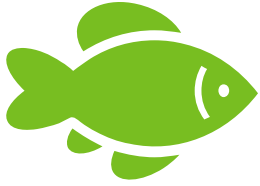
Figure 1. Urine mercury and using a skin lightening product



Nine women had high levels of mercury in their urine, with more than 5 micrograms of mercury per liter of urine. We called these women and learned how they were coming in contact with mercury. We also visited six women at their homes with the help of staff from St. Paul-Ramsey County Public Health and the Minnesota Pollution Control Agency. We found that most of these women came into contact with mercury by using skin lightening products. Home visits found and removed skin lightening products that were putting mercury into the air, which the whole family was breathing. Of these nine women, six were Hmong and three were Latina. All nine women spoke Hmong or Spanish in their survey, and were born outside of the U.S.

The number of East African women in MN FEET was small so we do not know about exposures in this community. But, among all women in the study, East African women had the second highest mercury in their urine after Hmong women. We know from our survey and from talking with community members that using skin lightening products is common and may be putting East African women in danger of high mercury levels.

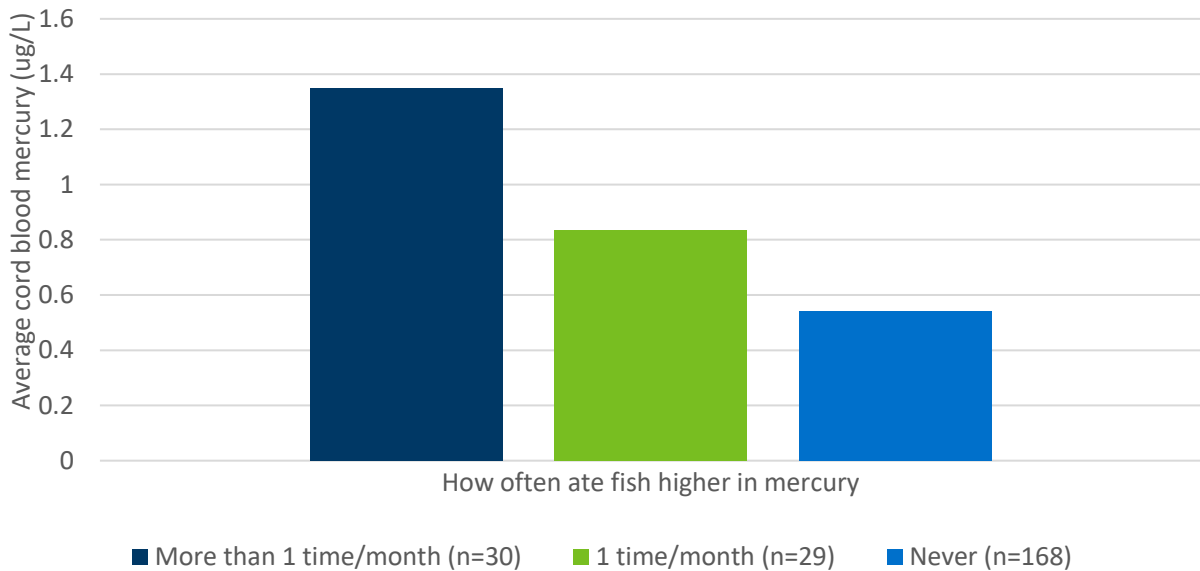
## Mercury from eating certain fish



There are more benefits of eating fish than risks if we choose fish that is low in mercury and other chemicals. Choosing which fish to eat and how often to eat it is important. Following the MDH fish eating guidelines keeps mercury exposures low.

We tested 395 women for mercury in their babies' cord blood. Women who ate fish more often had more mercury in their babies' cord blood than women who ate fish less often. In particular, women who ate more fish with higher levels of mercury – Walleye, Northern Pike, Bass, White Bass or King Fish – had the most mercury in their babies' cord blood (see Figure 2). This was especially true for Asian women in the study.

Figure 2. Cord blood mercury and eating fish higher in mercury



Compared to other ethnic groups, Asian women, and especially Hmong women, had the most mercury in their babies' cord blood. Women from other Asian groups also had more cord blood mercury than other groups.

Nine women had high levels of mercury in their babies' cord blood with more than 5.8 micrograms of mercury per liter of blood. We called these women and learned about their fish eating habits. We shared MDH fish eating guidelines with them. Most of these women said they ate fish with higher mercury – Walleye, Northern Pike, Bass, White Bass or King Fish – more than once a month. The MDH guidelines advise pregnant women and children to eat these fish once a month or less. All nine women with high levels of mercury in their babies' cord blood were Hmong women. Five spoke Hmong in their survey, and seven were born outside the U.S.

## Main Take-Aways

- Women in the study who used skin lightening creams in the past had more mercury in their urine. Follow-up with women with high urine mercury found that skin lightening products were the main reason their urine was high. Home visits found that these products were putting mercury into the air the whole family was breathing.
- Women in the study who ate more Walleye, Northern Pike, Bass, White Bass or King Fish had more mercury in their babies' cord blood. Follow-up with women with high cord blood mercury found that most of them ate these fish more than once per month.
- Asian women in the study, and especially Hmong women, had the highest levels of mercury. This was true for mercury in urine and cord blood. Some Hmong women in Minnesota may have high mercury exposures from using skin lightening products with mercury *and* from eating fish higher in mercury.
- Using skin lightening products may also be putting Latina and East African women in danger of high mercury levels.
  - Some Latina women in MN FEET had high mercury in their urine. At least one woman with high mercury had used skin lightening products.
  - East African women in MN FEET had the second highest mercury in their urine after Hmong women. However, the small number of East African women in the study limited what we learned about exposures in this community.
- Exposures to lead and cadmium were less of a concern for women in this study.



## How We Are Using What We Learned and Next Steps

MN FEET results are helping us take action and shape programs to protect women and children from mercury, lead and cadmium. Families, communities, health care providers, health agencies and policymakers can use this information in different ways:

- MN FEET showed that some women from communities in Minnesota have levels of mercury that could harm their babies' development. We need to continue to work with these communities to help them have less contact with mercury.
- The study gave us more information about important ways mercury is getting into women's bodies. Existing programs give advice about eating fish low in mercury. We need to do more work to be sure women know that some skin lightening products have mercury.
- MN FEET showed that we need to focus on women who speak languages other than English and who were not born in the U.S. Knowing more about the women with high mercury will help us find the best ways to work with them to be safe from mercury.

MDH is planning follow-up work to better involve East African women and see if other Minnesota women come in contact with chemicals that can harm their children's health.

## You Can Take Action

### DO NOT USE SKIN LIGHTENING PRODUCTS

- **Choose Health, Avoid Skin Lightening information sheet**  
(<https://www.health.state.mn.us/communities/environment/skin/docs/gpfs.pdf>)
- **List of skin lightening products tested**  
(<https://www.health.state.mn.us/communities/environment/skin/docs/testedprds.pdf>)

### EAT LOW-MERCURY FISH FOLLOWING MDH GUIDELINES

- **MDH Fish Consumption Guidance**  
(<https://www.health.state.mn.us/fish/>)
- **Choose Your Fish**  
([ChooseYourFish.org](http://ChooseYourFish.org))
- **Information and videos in Hmong and languages other than English**  
(<https://health.state.mn.us/communities/environment/fish/nonenglish.html>)

### BE SURE YOUR CHILD GETS TESTED FOR LEAD

- **Minnesota Department of Health, Lead**  
(<https://www.health.state.mn.us/lead>)

***Please share this information with your friends and family!***

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