

# **Minnesota Department of Health Environmental Health Tracking and Biomonitoring Advisory Panel Meeting**

**JUNE 14, 2022**

1:00 P.M. – 3:30 P.M.

Via Microsoft Teams

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## Agenda Overview

DATE: 06/14/2022

### Welcome & Agenda

#### 1:00pm

Chair Lisa Yost will welcome attendees to the meeting. Panel members are invited to introduce themselves, and we welcome new member Jenni Lansing. Lisa will give an agenda overview.

### Legislative Update

#### 1:15pm

MDH Environmental Health Section Manager Jim Kelly will give a short overview of the recent legislative session. Panel members are invited to ask questions.

### Air and Health Update

#### 1:30pm

MDH Tracking Program Epidemiologist Kathy Raleigh will present on results from the recent MDH/MPCA *Life and Breath* report, as well as broader initiative goals and opportunities. Panel members are invited to ask questions.

### Healthy Kids Minnesota 2021: Recruitment Outcomes and Lessons Learned

#### 2:00pm

MDH Biomonitoring Program Epidemiologist Sheila Amenumey will present preliminary participation rates and information on refusals and ineligibles for Healthy Kids Minnesota 2021. She will also share lessons learned about program implementation as we look ahead to Healthy Kids Minnesota 2022.

#### 2:20pm Discussion

Questions for the Panel

- What is the panel's advice on how to increase participation among some demographic groups, such as African American families and those with lower family incomes, who were more likely to refuse participation?
- We were not able to involve many families because they did not feel that their child would be able to urinate. Does the panel have any suggestions for ways to reduce this barrier to participation?

- From the list discussed, which lessons learned should we prioritize to act upon for Healthy Kids Minnesota 2022?

## Healthy Kids Minnesota 2021: Elevated Case Follow-Up, Sharing Results with Participants

### **2:40pm**

MDH Biomonitoring Program Director Jessica Nelson will give a summary of completed follow-up with elevated cases of arsenic, manganese, and mercury from Healthy Kids Minnesota 2021, and plans to return full results to participants' families. This presentation will look ahead to implementation of Healthy Kids Minnesota 2022.

### **3:00pm Discussion**

Questions for the Panel

- Does the panel suggest any changes to our elevated case follow-up approach for Healthy Kids Minnesota 2022?
- From the list discussed, which lessons learned should we prioritize to act upon?
- What is the panel's advice as we proceed with results return to all families for Healthy Kids Minnesota 2021?

## Public Comments, Audience Questions, New Business

### **3:20pm**

Motion to Adjourn

### **3:30pm**

## Air and Health Update

Breathing polluted air creates or worsens numerous health conditions and can lead to early death. Although air quality in Minnesota meets current federal standards, environmental conditions are changing. For example, Minnesotans are experiencing a steady increase in seasonal smoke exposure from wildfires, triggering air quality alerts and heightening concerns about the health impacts of smoke and other air pollutants.

While all Minnesotans are susceptible to the health impacts of air pollution, these impacts do not affect all Minnesotans equally. Structural inequities formed through institutional systems like city planning, infrastructure, and policies have led to disparities in local source pollution. People living near high-traffic roads and heavy industry often have more exposure to air pollution than those who live, work, and gather in less-polluted areas. This unequal air pollution burden, together with higher underlying rates of lung, heart, and other health conditions among communities with more pollution exposure, can lead to disparate health outcomes.

The Minnesota Department of Health (MDH) and the Minnesota Pollution Control Agency (MPCA) work together on the intersection of air and health. We recently released two new data briefs on estimated annual health impacts of air pollution by ZIP code across the seven-county Minneapolis-St. Paul (Twin Cities) metro area and in three mid-sized cities in Greater MN:

- [Life and Breath: Metro](#) (updated 2022)
- [Life and Breath: Greater Minnesota](#) (2022)

## Healthy Kids Minnesota 2021: Recruitment Outcomes and Lessons Learned

### Background/Update

The first cycle of Healthy Kids Minnesota, funded through the CDC cooperative agreement, has ended. Together with our partners we measured exposures to chemicals of concern in preschool-aged kids. As indicated in previous updates, we work in one non-Metro and one Metro region of the state every year, partnering with Early Childhood Screening (ECS) programs at local public health agencies and school districts to recruit preschool-age children for testing. Our target goal is to reach 250 – 300 children per community in each program cycle.

Healthy Kids Minnesota 2021 included Southeast Minnesota and Minneapolis, and Healthy Kids Minnesota 2022 includes Northeast Minnesota and St. Paul (see map). Healthy Kids Minnesota 2021 started 8/17/2021 and ended 3/31/2022. In total, 453 children were recruited with urine samples collected. The MDH Public Health Lab (PHL) has completed all metals analyses for these urine samples.

The focus of this Advisory Panel update is to share participation outcomes, participant characteristics, feedback from our first cycle partners, and lessons learned implementing Healthy Kids Minnesota 2021. For other updates, see the following two sections.



### Recruitment and data collection

As a reminder, recruitment and data collection were conducted by our partners at ECS programs and local public health agencies. Financial contracts were enacted with each partner. For Healthy Kids Minnesota 2021, our partners were:

- Minneapolis Public Schools
- Fillmore County Public Health
- Rochester Public Schools and Olmsted County Public Health, working together in a unique collaboration to recruit children from Rochester Public Schools.

MDH staff conducted trainings for all partner staff involved in recruitment and sample collection. Training included all aspects of the recruitment process and study logistics, including the informed consent process, survey administration, data privacy, and sample collection and storage. We trained 13 staff at Minneapolis, 3 staff at Fillmore County, and 8 staff at Olmsted County and Rochester Public Schools.

A secured Healthy Kids Minnesota REDCap database was developed to collect consistent data across project sites. The database reduces administrative burden on biomonitoring staff and enhances capabilities to evaluate relationships between program measures and outcomes.

- As they go through the recruitment process, recruitment staff assign a unique participant ID and record consent information, signatures, refusals, ineligibilities, exposure survey responses, and gift card numbers in the database.
- Epidemiology staff upload laboratory data upon receipt from the PHL. Families of children with elevated results for mercury, arsenic, or manganese receive a call from the MDH-contracted-physician to discuss how the child is exposed to this chemical and how they can reduce the exposure. REDCap alerts the physician when laboratory results are elevated. The physician records information from the phone interview and any follow-up that occurs. (See the next section for more information on this process and outcomes.)
- Epidemiology staff set up a live update feature in REDCap which has been very helpful to the program administrators and our partner sites. With the live updates, data entry errors can be quickly assessed, captured, and addressed to ensure data entry quality.

## Participation and Recruitment Outcomes

### Families Approached and Recruited by Site

Our partners approached 922 families and successfully recruited 495 kids (453 with urine samples) in the reporting period, with recruitment continuing through the end of March 2022. Participation rates were relatively strong given the challenges we were facing. The overall participation rate was about 58%; the participation rate for children with urine samples was 53%. Participation outcomes by site is indicated in Table 1.

**Table 1. Families approached and recruited**

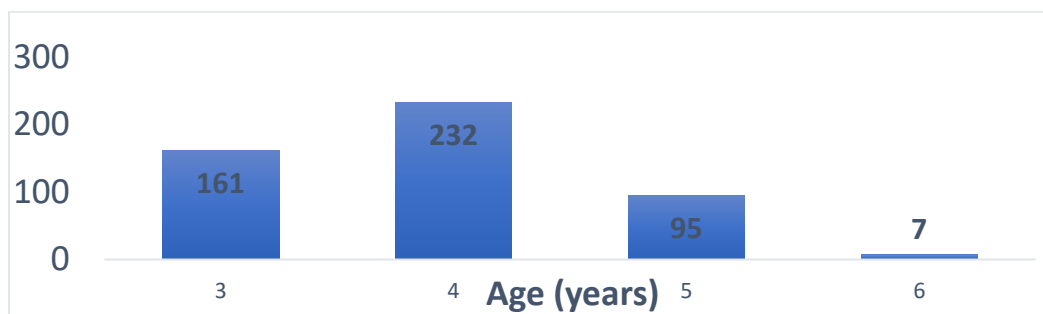
Site	Time frame	Approached	Recruited	Recruited/with samples
Minneapolis Public Schools	Aug. 2021 – Feb. 2022	567	323	299
Rochester Public Schools/ Olmsted County	Nov. 2021 – Mar. 2022	266	115	105
Fillmore County Public Health	Sept. 2021 – Mar. 2022	89	57	49

### Characteristics of Kids Recruited

- **Age:** ECS serves 3- to-6-year-old children. The majority (80%) of kids recruited were 3-4 years old; approximately 20% were 5-6 years old. See Figure 2 for the age distribution.



**Figure 2. Age of Kids Recruited**



- **Race/ethnicity:** Families whose children participated in the program came from various backgrounds. Of the 495 families who agreed to participate, 361 (73%) reported the child was white, 91 (18%) reported Black or African,<sup>1</sup> 29 (6%) reported Asian,<sup>2</sup> and 10 (2%) reported American Indian. Table 2 shows the breakdown by site. When asked about ethnicity, 14% reported they were Hispanic.

**Table 2. Participant Race\***

Race	Combined (N=495)	Minneapolis (N=323)	Rochester (N=115)	Fillmore (N=57)
American Indian	10 (2%)	9 (3%)	**	**
Asian <sup>2</sup>	29 (6%)	19 (6%)	10 (9%)	**
Black or African <sup>1</sup>	91 (18%)	71 (22%)	19 (17%)	**
White	361 (73%)	213 (66%)	92 (80%)	56 (98%)
Other race	37 (8%)	33 (11%)	**	**

\* Families of participants could select more than one race

\*\* Number too small to report

- **Family income:** For all recruitment sites, over 50% of children who participated had families who reported the highest income category (\$75,000 or more). Table 3 shows these results.

**Table 3. Family income**

Family Income	Combined (N=495)	Minneapolis (N=323)	Rochester (N=115)	Fillmore (N=57)
Less than \$25,000	49 (10%)	39 (12%)	6 (5%)	*
\$25,000 - <\$50,000	55 (11%)	37 (11%)	9 (8%)	9 (16%)
\$50,000 - <\$75,000	47 (9%)	22 (7%)	13 (11%)	12 (21%)
\$75,000 or more	302 (61%)	198 (61%)	73 (63%)	31 (54%)
Don't know	9 (2%)	*	5 (4%)	*
Refused	25 (5%)	17 (5%)	8 (7%)	*
Missing	8 (2%)	6 (2%)	*	*

\* Number too small to report

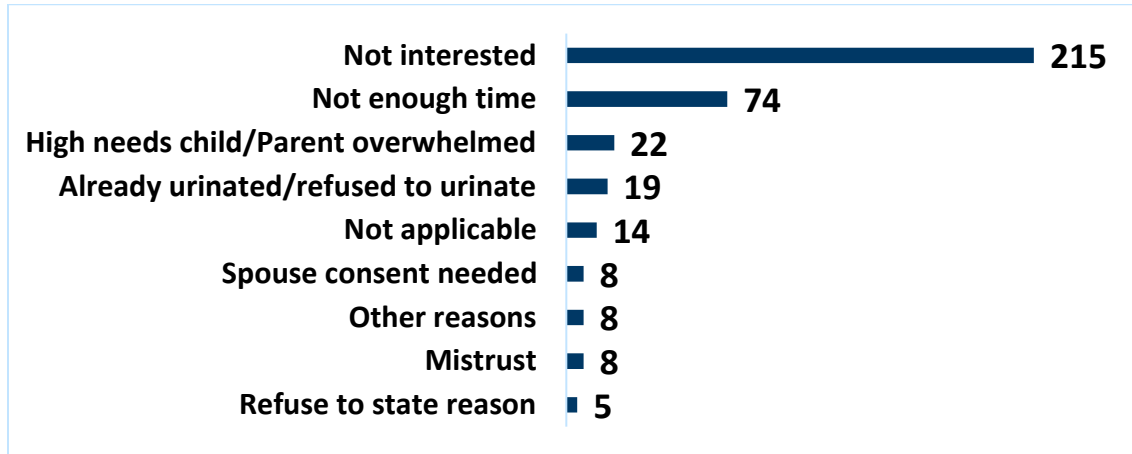
<sup>1</sup> The larger Black or African group included African American (n=37), East African (n=40), and other African (n=14)

<sup>2</sup> The larger Asian group included Southeast Asian (n=12), East Asian (n=13), and other Asian (n=7)

### Refusals and Ineligibility

Of the 922 families our partners approached to participate in the program, 336 refused to participate and 72 were ineligible. The reasons for refusal are shown in Figure 3. The majority indicated they were not interested in the program.

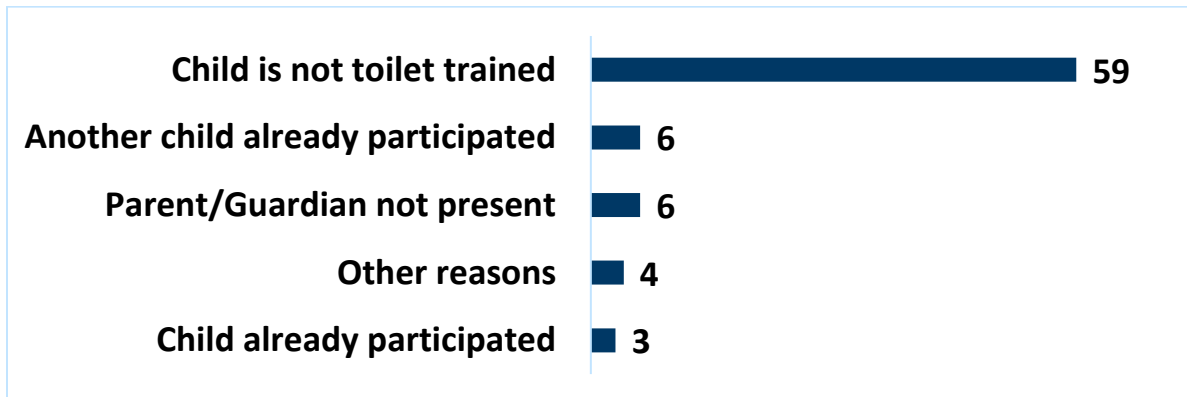
**Figure 3. Reasons for refusal to participate\***



\*Families could have more than one reason for refusal

There were various reasons for not being eligible (see Figure 4). The main reason for ineligibility was because the child was not toilet trained. Our partners told us they saw a lot of families with 3-year-olds who were not toilet trained but would have been willing to participate.

**Figure 4. Reasons for ineligibility\***



\* Families could have more than one reason for ineligibility

### Differences Between Participants and Non-Participants (Refusals)

We are analyzing demographic differences between families who chose to participate v. those who did not. Preliminary numbers indicate significant differences for some groups. For example, African American families were more likely to refuse compared to White families or East African families.

## Free Private Well Testing

We were able to offer free private well testing to families in partnership with Olmsted County's Southeastern Minnesota Water Analysis Laboratory (SEMWAL) and with funding from MDH Environmental Health. The free private well testing kits were offered to any family approached to participate in Healthy Kids Minnesota in Fillmore and Olmsted County.

Overall, 28 free water test kits were given out to families (24 in Fillmore County and 4 in Rochester/Olmsted). However, only 7 (5 from Fillmore and 2 from Rochester/Olmsted) kits were returned to SEMWAL for analysis.

## Evaluation and Continuous Quality Improvement

Throughout Healthy Kids Minnesota 2021, we engaged partners in various evaluation activities to help guide program management, planning, and implementation.

- Recruitment training attendees were asked to provide feedback on the training received. This helped us improve materials and delivery of subsequent trainings.
- Before recruitment started, we worked together with our partners to discuss the flow of program and how to integrate into their ECS processes. Using REDCap and regular check-in meetings, we collected program quality indicators to assess and track recruitment and sample collection progress on an ongoing basis. This allowed us to identify areas where process and quality improvements were needed.
- We worked together with partners to address issues identified and improve the quality of recruitment processes and sample collection protocols. For example, while investigating the cause of a low response rate for the initial period of recruitment at Rochester Public Schools ECS, we realized there were issues with the recruitment processes at the very onset of implementing the program. MDH Biomonitoring, Rochester ECS, and Olmsted County Public Health staff collaborated in various ways to improve these processes, and the participation rate increased from 30% to 50%.
- Another issue identified was a higher frequency of low urine volume compared to our 2018 pilot project. For 33 samples (10%), urine mercury analysis could not be run due to insufficient volume. It was challenging to communicate sample collection procedures to our partners given that we had two urine collection containers (a tube containing preservative for the mercury analysis and a urine cup for all remaining analyses) and partners had to use some judgment and volume estimation in deciding how to separate a limited urine sample between the two. Another factor is that, with COVID, families may be having their children use the bathroom at home more frequently before they come to appointments. We made improvements during the recruitment period, including updating our sample collection instructions to partners and modifying our IRB protocol to allow parents to get the urine sample before the full consent is complete if the child has to use the bathroom.
- We administered an exit survey to partners at the end of the recruitment period. The feedback helped us understand what worked, what did not work, and where we can improve as we move forward with Healthy Kids Minnesota 2022.

## Partner Feedback: Selected Quotes from Exit Survey

*“Initially I feel that there was some role and expectation confusion between partners that impacted recruiting numbers. After discussing this as a team and explaining each partner's role and the expectations for being part of this study, recruitment and work environment improved.”*

*“It was a pleasure to be part of such a wonderful program and opportunity for families. I had several families tell me they were so thankful for this study as they would otherwise not be able to have their child tested for all of these chemicals. Some families had real concerns about chemical exposure, and I feel this study was so important to them. Thank you for this opportunity to participate in this program.”*

*“While recruitment did not always go as planned, we were pleasantly surprised by how many families we were able to recruit. Families we talked with were grateful for the opportunity to have their child screened for exposures, and even families who opted not to participate in the whole project were very thankful for the well water test kits.”*

*“As the nurse in Early Childhood screening, I feel as though it was important for me to attend the initial meeting. It seemed like this was discouraged and so I was not present. I would emphasize that most screeners and especially the nurse needs to be present. We may not be doing the majority of the biomonitoring steps, but it is still good to know what is going to be taking place.”*

## Lessons Learned from Implementing Healthy Kids Minnesota 2021

Feedback provided by Healthy Kids Minnesota 2021 partners through our ongoing quality improvement process has helped us gather valuable information to improve future program cycles. The following lessons were identified:

1. Many ECS programs do not screen during the summer months and smaller school districts often offer screening twice per year, usually in the fall and early winter. This limits the timeframe during which we can recruit children.
2. Training all staff involved in the ECS process – even those not directly recruiting potential participants – would be helpful moving forward.
3. When local public health is our recruitment partner, it is still important to engage and share information with the school district.
4. Each recruitment site is unique in its screening process, and specifics of the flow of recruitment will need to be worked out at each site – there is no “one size fits all.”
5. We need to continue good communications about the importance of adequate urine volume. Reminding parents not to have their child urinate before their ECS appointment may help.

6. We need to work with partners and develop new strategies to increase recruitment among certain demographic groups, such as African American families and those from lower family income groups.
7. We need to work with partners and develop new strategies to encourage families to return their private well test kits. Asking partners to follow-up with families could help.

## Questions for Advisory Panel

- What is the panel's advice on how to increase participation among some demographic groups, such as African American families and those with lower family incomes, who were more likely to refuse participation?
- We were not able to involve many families because they did not feel that their child would be able to urinate. Does the panel have any suggestions for ways to reduce this barrier to participation?
- From the list discussed, which lessons learned should we prioritize to act upon for Healthy Kids Minnesota 2022?

## Healthy Kids Minnesota 2021: Elevated Case Follow-Up, Sharing Results with Participants

### Overview

As discussed previously with the Advisory Panel, we have established “follow-up levels” for a small subset of chemicals – urine concentrations that trigger a rapid response protocol for participants. We have follow-up levels for three urine metals: arsenic, mercury, and manganese. These chemicals were selected because they have more established concern regarding specific health effects and have a clear exposure reduction intervention/message. Exceedance of these follow-up levels indicates that an unusual exposure has occurred and should be followed up on to try to reduce exposure. It is not a level that necessarily indicates a health concern.

For the three chemicals with follow-up levels, the MDH PHL reports results to epidemiology staff on a shorter timeline (within 30 days of sample collection), results are entered into REDCap, and we initiate our rapid response protocol. This involves a phone call from our contracted family physician to share their child’s results, answer questions, ask the parent follow-up questions about possible sources of exposure, and discuss ways to prevent exposure. Depending on the chemical that is elevated, it will also trigger appropriate public health follow-up, i.e., offering well water testing for arsenic and manganese or a home visit for mercury contamination.

If the family/parent is interested, the physician offers to contact the child’s health care provider and discuss the results. The physician offers the family the possibility of doing a urine re-test if they have concerns or ask about this. The physician’s phone call is followed by a mailing to the family with any relevant exposure reduction resources (such as information on private well testing and arsenic in rice).

### Follow-up levels

- **Urine arsenic:** Results with total arsenic >15 mcg/L will be speciated (organic arsenic is primarily from fish consumption and not a health concern).
  - Follow-up level is inorganic arsenic >20 mcg/L.
  - We are continuing to explore whether a health-based exceedance value for inorganic arsenic in children exists.
- **Urine mercury:** We have a 3-tiered approach established through our clinical urine mercury testing projects.
  - Follow-up level is >5 mcg/L. In the general population, normal urine mercury levels should be <5 mcg/L. Anything higher indicates likely exposure to inorganic mercury.
  - At levels >25 mcg/L, symptoms may be present though are unlikely, and a toxicologist or environmental specialist should be consulted. At levels >100 mcg/L, acute health effects are possible, and a toxicologist should be consulted as soon as possible through Minnesota Poison Control.

- **Urine manganese**
  - Follow-up level is  $\geq 1.5$  mcg/L.
  - This value represents the 95th percentile from our 2018 Healthy Rural and Urban Kids project. We know that urine manganese is not an ideal biomarker (hair and nails are preferable). However, manganese is an important chemical of concern due to private well contamination in some parts of the state. MDH has worked extensively to encourage private well testing for manganese, with a particular concern about exposures in infants. Results from our 2018 project showed that the Minnesota kids tested had higher urine manganese than we would expect based on children in NHANES.

## Elevated cases in Healthy Kids Minnesota 2021

### Arsenic

- Out of 38 samples that were speciated for arsenic, only three were above the follow-up level for inorganic arsenic of 20 mcg/L.
- Re: risk factors, none of these cases drank private well water at home, so this is not considered a likely source. For all three cases, frequent rice consumption was mentioned.
- After speaking with contract physician and biomonitoring staff, all three families decided to change rice consumption habits and get a urine re-test. For the two urine re-tests completed so far, urine levels have dropped significantly (from 29.3 to 3.8 mcg/L in one case, and from 24.9 to 2.95 mcg/L in the other).
- Families expressed confusion about why they had not heard about this issue with rice in the past, and frustration with the lack of information on types of rice available for local purchase.

### Manganese

- Nine participants were above the follow-up level for manganese.
- In one of the cases, the parent mentioned there was fecal matter present in the urine sample. A urine re-test showed a non-detect manganese level.
- For the remainder of the families, the contract physician's conversations with parents ruled out the main risk factors we were concerned about for elevated arsenic: private well water consumption and a caregiver job or hobby involving metals. As part of this conversation and follow-up communication, we stressed that the exposure therefore was likely through diet, and exposure that we are not concerned about. We reiterated that we are conducting the follow up to be sure there are not potentially harmful exposures happening other ways, i.e. through private well water or metal/welding hobbies or jobs. With the exception of one family, this message seemed to reassure parents and they did not request a urine re-test.

### Mercury

- One participant had a result above the follow-up level for mercury.

- The family agreed to a home visit to assess for mercury contamination and collect urine samples from additional family members. The home visit was conducted by staff from the MPCA, Minnesota Poison Control, and the City of Minneapolis. This resulted in the identification of an extremely high mercury exposure in a family member of the child participant. Working with an environmental/occupational health physician at Minnesota Poison Control, this individual has been referred for medical assessment. Contamination of the washing machine and clothing were discovered. A follow-up home visit was conducted to further assess home contamination and collect a urine re-test from all family members present. Beauty products containing mercury were also removed from the home, with the family's agreement.

## Lessons learned from elevated case response

Based on reflections from our contract physician and program staff, we have identified these lessons learned from our experience with Healthy Kids Minnesota 2021:

1. Offering families a re-test for a urine result about the follow-up level is a very useful addition to the program. It is an important check for parents trying to reduce their child's exposure, and we have worked out the logistics to make this happen smoothly and with minimal inconvenience to the family. We will consider offering this to all families whose children have results above follow-up levels going forward.
2. It was difficult to connect and share information with the child's health care provider when the family requested this. We sent emails and left messages, but it was difficult to know if the information was received. Particularly as we move to doing more re-tests, it is important to effectively communicate information with providers.
3. The majority of follow-up cases and calls were for manganese, and calls did not identify any risk factors that needed follow-up. The message to families was slightly nuanced, but the calls generally went well, and the message seemed to make sense and reassure families that there was not a problem that needed to be addressed. The identification of a high result likely due to fecal contamination was an important reminder to stress this issue in staff training.
4. The conversations with families about arsenic levels and rice consumption were more challenging because families were frustrated and confused that they had not heard about this before. While we have relatively good exposure prevention advice to offer re: types of rice to select and preparation methods, some of this information may be outdated, particularly around arsenic content of types of rice available locally.
5. An ongoing challenge with biomonitoring is that we do not have health-based thresholds for specific outcomes in children, i.e., these are not clinical tests. We had success in reiterating the message that the child's result was higher than expected and we want to work with the family to reduce the exposure, but this message can be frustrating for families who want to know about specific health effects. Going forward, we will consider sending a short letter to families whose children have results above the follow up level in advance of the phone call from the physician to reiterate this message.



## Sharing Results with Participants

We will send all results to families via mail in three different mailings, depending on when laboratory analyses are complete. All results will be sent within one year of sample collection. Soon after mailing, families whose children's results are notably elevated will receive a phone call from staff to discuss the results and ask questions. They will be offered the opportunity to speak with the program physician or the Principal Investigator.

In developing our results return packets for families, we are taking a community-based approach. There is national interest in creating effective ways to deliver this complex information. As we prepare for the first results mailing for Healthy Kids 2021 (results for metals, to be sent in late June/early July), we are working with a graphic design firm to visually refine our materials. Once results are sent and families have had time to review the materials, we plan to call families of children recruited by our partners at Minneapolis Public Schools (MPS) who opted in to be contacted again. Working with MPS, calls will be made by multilingual staff who will administer a brief survey to gather feedback on those materials. The sample will be stratified not only by cultural group, but by other variables such as family income and maternal education. Following the gathering of these data we plan to work with a vendor specializing in visualizing complex scientific concepts and data. We will base design and content on feedback gathered and take an iterative approach to subsequent results mailings. Our hope is to create materials that are responsive to community feedback and thus more accessible. The materials created through this process for Healthy Kids Minnesota 2021 will be used for future program cycles.

## Questions for Advisory Panel

- Does the panel suggest any changes to our elevated case follow-up approach for Healthy Kids Minnesota 2022?
- From the list discussed, which lessons learned should we prioritize to act upon?
- What is the panel's advice as we proceed with results return to all families for Healthy Kids Minnesota 2021?

## MN Biomonitoring Updates

### Healthy Kids Minnesota 2022

Healthy Kids Minnesota 2022 will be moving to two new regions: St. Paul and Northeast Minnesota. We have a number of promising partnerships in development, and plan to begin recruitment in late summer/early fall 2022.

- St. Paul Public Schools (SPPS): We have had good meetings with SPPS and are working on a draft financial contract.
- Northeast Minnesota: In this seven-county region, we have met with local public health leaders from six counties to share that the program is coming to their region, learn more about how ECS works in the area, discuss a possible partnership with local public health or school districts, and hear about concerns around children's environmental health. Our local public health colleagues have been very generous in connecting us with school districts and other local partners. New for this program cycle, we hope to also partner with local schools of nursing to help staff the program.
- Tribal nations: There are three tribal nations in the Northeast region. We are working with our MDH Tribal Liaison and local public health colleagues to meet with these governments, share information about the program, and discuss the potential for partnership. We presented to the Tribal and Urban Indian Health Directors Meeting in February.

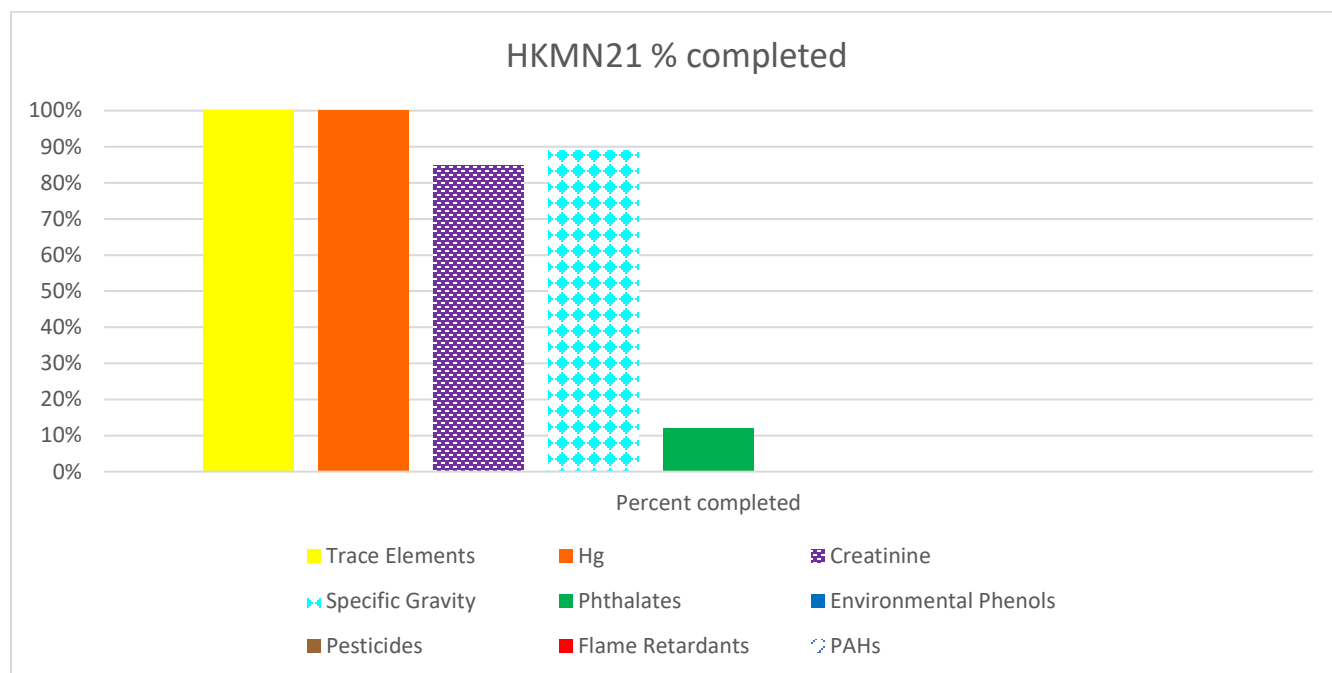
### Healthy Kids Minnesota Laboratory Update

453 samples have been collected and received by the PHL for Healthy Kids Minnesota 2021. The figure below shows the percent of those samples that have been analyzed for each of the methods in the Healthy Kids Minnesota program.

100% of the samples have been analyzed for mercury and trace elements (i.e. urine metals). Samples that had total arsenic >15 ug/L were flagged for arsenic speciation; there were 38 samples in this category and all of them have been completed.

Creatinine and specific gravity are used to normalize concentrations of analytes for urinary dilution; 85% and 89% of these analyses have been completed, respectively.

The method for urinary plasticizer metabolites (phthalates) has recently been completed and validated, and analysis of samples has begun. So far 55 samples have been analyzed.

**Figure 5. Percentage of completed laboratory analyses**

The analysis of Healthy Kids Minnesota samples for pesticides and environmental phenols will begin shortly. Method development for flame retardant metabolites will be completed later this summer and then sample analysis for those metabolites and PAH metabolites will begin.

## Healthy Rural and Urban Kids Project Results Sharing

The Healthy Rural and Urban Kids Community Report summarizing project findings was released in January 2022.

- The Community Report and summary are available on the [MDH website](#), along with [translated information sheets](#) on ways that families can reduce exposures in kids.
- After participants were mailed a copy of the Community Report and partners were informed, MDH issued a news release along with accompanying social media posts: [MDH, local communities team up to study Minnesota children's chemical exposures](#), February 9, 2022).
- There was some media coverage, including stories on Minnesota Public Radio ([Study Finds Patterns of Chemical Exposure in MN Children](#), April 20, 2022) and the Detroit Lakes Tribune ([Becker County was part of a study to check for chemicals in preschoolers. Here's what was found](#), March 2, 2022).
- Staff are presenting results at conferences (see below) and meetings with various stakeholder groups.

## Conference Presentations

- Jessica Nelson (MDH), Suad Salad (Minneapolis Public Schools), and Iftu Hunte (Minneapolis Public Schools) presented a plenary session on *Healthy Rural and Urban Kids Project: Implementation, Results, Next Steps* at the Minnesota Environmental Health Association Spring Education Conference on May 12, 2022 in Walker, MN.
- Jessica Nelson (MDH), Andrea Amico (NH Testing for Pease), Kathleen Bush (NH Division of Public Health Services) presented a breakout session, *The Juice is Worth the Squeeze — Demonstrating the Value of State Biomonitoring Programs*, at the Association of Public Health Laboratories Annual Conference on May 18, 2022 in Cleveland, OH.

## MN Tracking Updates

### Portal updates recently launched

- Life and Breath reports and maps
- Mid-sized cities
- Glossary
- Birth defects query

### Portal updates launching soon

- [Childhood obesity](#)
- [Heart attack hospitalizations and ED visits](#)
- [Birth defects query](#)
- [County profiles – new interface](#)

County profiles were recreated using the software Tableau, which was widely adopted by the agency during the COVID-19 response to visualize data. In addition to visual data representation, benefits of the use of Tableau include:

- Ability to allow for one chart to show many different data
- More interactive, user driven, mobile friendly
- Easier to update, can dynamically update charts with new data
- Includes data download options

### New interface design

[Download all county data](#)

### Minnesota Public Health & Environmental Data by County


The Minnesota Department of Health collects data on key indicators for public health and environmental categories across Minnesota counties. Use this dashboard to view information about these indicators by county. If you'd like to analyze the data yourself, we have provided a link at the top of the page to download the raw data. For the privacy of our citizens, some rates have been flagged as "unstable" or "suppressed" if the sample size was too small. These data should be interpreted with caution.

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**Select a Category:**

- [Air Quality](#)
- [Birth Outcomes](#)
- [Cancer Incidence](#)
- [Childhood Lead Exposure](#)
- [Hospitalizations & ED Visits](#)
- [Immunizations](#)
- [Oral Health](#)

### Air Quality



Air pollution can cause harmful respiratory and cardiovascular effects, including asthma, pneumonia, bronchitis, and heart attacks. The severity of these effects varies depending on the pollutant, level of exposure, and individual susceptibility. \*Measurements correspond with the specific locations of air quality monitors, not entire counties.


**Select a County:**  
 Select a County:

**Select an indicator for Air Quality:**  
 Fine particles, average annual concentration

You're viewing Hennepin County Air Quality indicators

Indicator	Notes	County	State	Units	Year
All-cause attributable death rate (25 plus)	*age-specific rates per 100,000	961.6	1102.9	per 100,000	2011-2015

You're viewing Fine particles, average annual concentration (µg/m<sup>3</sup>) by county  
 To highlight Hennepin county click here.



## Section Overview: Other Information

This section contains documents that may be of interest to panel members.

- Upcoming Advisory Panel meeting dates
- Environmental Health Tracking and Biomonitoring Advisory Panel Statute
- Advisory Panel roster
- Biographical sketches of Advisory Panel members
- Biographical sketches of staff

## Upcoming Advisory Panel Meeting Dates

Advisory Panel meetings in 2022/2023:

October 11, 2022

February 14, 2023

June 13, 2023

Unless otherwise announced, these meetings will take place from 1-4 pm at

The American Lung Association of Minnesota

490 Concordia Avenue

St Paul, Minnesota

## 144.998 ENVIRONMENTAL HEALTH TRACKING AND BIOMONITORING ADVISORY PANEL STATUTE

Subdivision 1. **Creation.** The commissioner shall establish the Environmental Health Tracking and Biomonitoring Advisory Panel. The commissioner shall appoint, from the panel's membership, a chair. The panel shall meet as often as it deems necessary but, at a minimum, on a quarterly basis. Members of the panel shall serve without compensation but shall be reimbursed for travel and other necessary expenses incurred through performance of their duties. Members appointed by the commissioner are appointed for a three-year term and may be reappointed. Legislative appointees serve at the pleasure of the appointing authority.

Subd. 2. **Members.** (a) The commissioner shall appoint eight members, none of whom may be lobbyists registered under chapter 10A, who have backgrounds or training in designing, implementing, and interpreting health tracking and biomonitoring studies or in related fields of science, including epidemiology, biostatistics, environmental health, laboratory sciences, occupational health, industrial hygiene, toxicology, and public health, including:

(1) At least two scientists representative of each of the following:

- (i) Nongovernmental organizations with a focus on environmental health, environmental justice, children's health, or on specific chronic diseases; and
- (ii) Statewide business organizations; and

(2) At least one scientist who is a representative of the University of Minnesota.

(b) Two citizen panel members meeting the specific qualifications in paragraph (a) shall be appointed, one by the speaker of the house and one by the senate majority leader.

(c) In addition, one representative each shall be appointed by the commissioners of the Pollution Control Agency and the Department of Agriculture, and by the commissioner of health to represent the department's Health Promotion and Chronic Disease Division.

Subd. 3. **Duties.** The advisory panel shall make recommendations to the commissioner and the legislature on:

- (1) Priorities for health tracking;
- (2) Priorities for biomonitoring that are based on sound science and practice, and that will advance the state of public health in Minnesota;
- (3) Specific chronic diseases to study under the environmental health tracking system;
- (4) Specific environmental hazard exposures to study under the environmental health tracking system, with the agreement of at least nine of the advisory panel members;
- (5) Specific communities and geographic areas on which to focus environmental health tracking and biomonitoring efforts;
- (6) Specific chemicals to study under the biomonitoring program, with the agreement of at least nine of the advisory panel members; in making these recommendations, the panel may consider the following criteria:



- (i) The degree of potential exposure to the public or specific subgroups, including, but not limited to, occupational;
  - (ii) The likelihood of a chemical being a carcinogen or toxicant based on peer-reviewed health data, the chemical structure, or the toxicology of chemically related compounds;
  - (iii) The limits of laboratory detection for the chemical, including the ability to detect the chemical at low enough levels that could be expected in the general population;
  - (iv) Exposure or potential exposure to the public or specific subgroups;
  - (v) The known or suspected health effects resulting from the same level of exposure based on peer-reviewed scientific studies;
  - (vi) The need to assess the efficacy of public health actions to reduce exposure to a chemical;
  - (vii) The availability of a biomonitoring analytical method with adequate accuracy, precision, sensitivity, specificity, and speed;
  - (viii) The availability of adequate biospecimen samples; or
  - (ix) Other criteria that the panel may agree to; and
- (7) Other aspects of the design, implementation, and evaluation of the environmental health tracking and biomonitoring system, including, but not limited to:
- (i) Identifying possible community partners and sources of additional public or private funding;
  - (ii) Developing outreach and educational methods and materials; and
  - (iii) Disseminating environmental health tracking and biomonitoring findings to the public.

Subd. 4. **Liability.** No member of the panel shall be held civilly or criminally liable for an act or omission by that person if the act or omission was in good faith and within the scope of the member's responsibilities under section 144.995 to 144.998.

## Environmental Health Tracking & Biomonitoring Advisory Panel Roster as of June 2022

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Chronic Disease and Environmental  
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MDH ENVIRONMENTAL HEALTH TRACKING AND BIOMONITORING

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representative

VACANT SEATS  
Minnesota Senate appointee  
Minnesota House of Representatives  
appointee

## Biographical Sketches of Advisory Panel Members

**Jay Desai** is the Manager of the Chronic Disease and Environmental Epidemiology Section within the Division of Health Promotion and Chronic Disease at MDH. The Section includes the Environmental Epidemiology, the Minnesota Cancer Reporting System, and the Sickle Cell Data Collection program. It also includes the Long-Term Surveillance of Chronic Disease and Disabilities Annex, a program designed for response and recovery in emergency situations such as the COVID-19 epidemic. Jay received his Epidemiology doctorate from the University of Minnesota, is a chronic disease epidemiologist, and has worked in academic research and public health practice at the University of Minnesota, HealthPartners Institute, and the Minnesota Department of Health since 1993. He has a strong interest in diabetes, diabetes prevention, obesity, cardiovascular disease, chronic kidney disease, gout, cancer prevention, sickle cell disease, their underlying behavioral risk factors, and social determinants of health. He is also interested in implementation science and health equity. At MDH Jay spent 16 years as the epidemiologist for the Minnesota Diabetes Program. At HPI he worked on primary care clinical decision support; using EMR's for diabetes, cardiovascular disease, and obesity surveillance; diabetes prevention in low income individuals, and HPV vaccination in underserved communities. Jay is also a standing member of the NIH Healthcare and Health Disparities study section.

**Kristie Ellickson** joined the Minnesota Pollution Control Agency in 2007 after completing her PhD at Rutgers University and postdoctoral work at both Rutgers and the University of Wisconsin-Madison. Prior to her academic pursuits, she was a U.S. Peace Corps volunteer in the country of Panama. As a graduate student and postdoc she conducted research on trace metal speciation and bioavailability in a variety of environmental matrices. Her work at the MPCA includes the incorporation of cumulative risk and impact assessment principles into regulatory risk, the review of human health risk assessments for large permitted facilities, and she has been the lead investigator on an EPA community-scale air toxics grant targeting passive and active air sampling for Polycyclic Aromatic Hydrocarbons in an urban and rural environment.

**Tom Hawkinson** is the Senior Industrial Hygienist for Stantec Consulting Services Inc. (formerly Wenck Associates) in Golden Valley, Minnesota. He completed his MS in Public Health at the University of Minnesota, with a specialization in industrial hygiene. He is certified in the comprehensive practice of industrial hygiene and a certified safety professional. He has worked in EHS management at a number of Twin Cities based companies, conducting industrial hygiene investigations of workplace contaminants and done environmental investigations of subsurface contamination, both in the United States and Europe. He has taught statistics and mathematics at both graduate and undergraduate levels as an adjunct and is on faculty at the Midwest Center for Occupational Health and Safety, which is a NIOSH-sponsored education and resource center at the University of Minnesota's School of Public Health.

**Sarah Kleinschmidt** is an epidemiologist with more than 20 years of experience in population-based epidemiologic research and infectious disease clinical trials. She joined the 3M Company in 2016 and serves as an epidemiologist within the Corporate Occupational Medicine Department where she evaluates the health experience of employee groups. Prior to joining 3M, Dr. Kleinschmidt was an occupational epidemiologist for DuPont in Wilmington, DE and taught epidemiology at the University of Delaware as an Adjunct Instructor. She has also held research positions at the University of Iowa, Illinois Department of Public Health, and Southern

Illinois University School of Medicine. She earned a B.S. and M.S. in biology from the University of Illinois at Springfield, and a M.S. and Ph.D. in epidemiology from the University of Iowa with specialized training in both infectious disease and occupational epidemiology.

**Jenni Lansing** is the Sr. Environmental Research Analyst for the Minneapolis Health Department – Environmental Programs. She has been with the City for 10 years and during that time her work has included community air monitoring, pollution reduction projects with businesses, and drinking water protection at transient noncommunity water systems. Ms. Lansing has a B.S. in Fisheries and Wildlife Conservation Biology from the University of Minnesota - Twin Cities and a M.S. in Environmental Sciences from the University of Colorado.

**Zeke McKinney** is a board-certified Occupational and Environmental Medicine (OEM) physician who works at the HealthPartners Clinic in St. Louis Park, MN. He is additionally board-certified in Public Health & General Preventive Medicine, Clinical Informatics, and Lifestyle Medicine. He completed all of his medical training here in Minnesota. His professional interests are in preventing work-related illness/injury, improving data-driven decision-making in clinical contexts, environmental toxicology, health equity, environmental justice, public safety medicine, managing complex impairment/disability, and increasing the health literacy of patients and communities. He practices clinical occupational and environmental medicine in the Twin Cities, and he is one of few clinicians in Minnesota who evaluates work and community-related environmental toxicologic exposures. He is the Minnesota physician contact for the Pediatric Environmental Health Specialty Units (PEHSU), a national resource for environmental medical information in partnership with ATSDR and CDC.

**Jill Heins Nesvold** serves as the National Director of Lung Health for the American Lung Association. Her responsibilities include program oversight and evaluation related to asthma, chronic obstructive lung disease (COPD), influenza, and quality improvement. She holds a master's degree in health management and a short-course master's degree in business administration. She has published extensively in a variety of public health areas.

**Ruby Nguyen** is an assistant professor at the University of Minnesota School of Public Health Division of Epidemiology & Community Health. She received her PhD in Epidemiology from Johns Hopkins University. Ruby's research focuses on maternal, child and family health; the etiology of reduced fertility; pregnancy-related morbidity, and infertility and later disease. Currently, Ruby is conducting a longitudinal study examining the role of endocrine disrupting chemicals in child development. From 2016-2017, Ruby was Co-Principal Investigator of a statewide prevalence study investigating violence against Asian women and children.

**Cathy Villas Horns** is the Hydrologist Supervisor of the Incident Response Unit (IRU) within the Pesticide and Fertilizer Management Unit of the Minnesota Department of Agriculture. She holds a Master of Science in Geology from the University of Delaware and a Bachelor of Science in Geology from Carleton College and is a licensed Professional Geologist in MN. The IRU oversees or conducts the investigation and cleanup of point source releases of agricultural chemicals (fertilizers and pesticides including herbicides, insecticides, fungicides, etc. as well as wood treatment chemicals) through several different programs. She has worked on complex sites with Minnesota Department of Health and MPCA staff, and continues to work with interagency committees on contaminant issues. She previously worked as a senior

hydrogeologist within the IRU, and as a hydrogeologist at the Minnesota Pollution Control Agency and an environmental consulting firm.

**Eileen Weber** is a nurse attorney and Clinical Associate Professor Ad Honorem at the University of Minnesota School of Nursing (active retiree status). She founded the Upper Midwest Healthcare Legal Partnership Learning Collaborative. She earned her Doctor of Nursing Practice degree in Health Innovation and Leadership in 2014 from the University of Minnesota. She earned her RN diploma from Thomas Jefferson University Hospital in Philadelphia, PA, her BSN summa cum laude from the University of Minnesota, and her JD in the founding class of the University of St. Thomas School of Law in Minneapolis. Her clinical experience and past certifications have largely been in urban critical care and emergency nursing. She has served as vice-president of the Minnesota Nurses Association, earning awards for political action and outstanding service. She represented nursing on the Minnesota Health Care Commission, was a regular editorial writer for the St. Paul Pioneer Press and an occasional op-ed contributor for the Star Tribune. She founded Friends of Grey Cloud and worked with environmental leaders at the local, regional, state and national levels to protect Lower Grey Cloud Island from harmful development and to conserve the Grey Cloud Sand Dune Prairie. She has extensive experience in legislative lobbying, community activism, and political campaign management. Her scholarly work is focused on the intersection of law, public policy, and interprofessional healthcare practice and education.

**Lisa Yost** is a Principal Consultant at RAMBOLL ENVIRON, an international consulting firm. She is in their Health Sciences Group, and is based in St. Paul, Minnesota. She completed her training at the University of Michigan's School of Public Health and is a board-certified toxicologist with expertise in evaluating human health risks associated with substances in soil, water, and the food chain. She has conducted or supervised risk assessments under CERCLA, RCRA, or state-led regulatory contexts involving a wide range of chemicals and exposure situations. Her areas of specialization include exposure and risk assessment, risk communication, and the toxicology of such chemicals as PCDDs and PCDFs, PCBs, pentachlorophenol (PCP), trichloroethylene (TCE), mercury, and arsenic. Lisa is a recognized expert in risk assessment and has collaborated in original research on exposure issues, including background dietary intake of inorganic arsenic. She is currently assisting in a number of projects including a complex multi-pathway risk assessment for PDDD/Fs that will integrate extensive biomonitoring data collected by the University of Michigan. She is also an Adjunct Instructor at the University of Minnesota's School of Public Health.

## Biographical Sketches of Staff

**Sheila Amenumey** is currently the Biomonitoring Epidemiologist at MDH. Sheila collaborates with the Biomonitoring Program Director and key stakeholders leading the various biomonitoring projects including Healthy Kids Minnesota, the statewide project focused on children's environmental health. She completed her MPH in Maternal and Child Health and PhD in Water Resources Science (Water Quality Hydrology Emphasis) at the University of Minnesota. Prior to her work with the biomonitoring program, Sheila worked with the Maternal and Child Health Section at MDH. Her role as the Maternal and Child Health Epidemiologist involved leading and collaborating with external partners in conducting program evaluation across multiple federal adolescent health grants, and assisting them in monitoring program outcomes and achievement of their health and education goals for the youth they serve. Before coming to MDH, Sheila conducted water quality research at the University of Minnesota to determine the impact of agriculture on water quality.

**Carin Huset** has been a research scientist in the Environmental Laboratory section of the MDH Public Health Laboratory since 2007. Carin received her PhD in Chemistry from Oregon State University in 2006 where she studied the fate and transport of perfluorochemicals in aqueous waste systems. In the MDH PHL, Carin provides and coordinates laboratory expertise and information to program partners within MDH and other government entities where studies require measuring biomonitoring specimens or environmental contaminants of emerging concern. In conjunction with these studies, Carin provides biomonitoring and environmental analytical method development in support of multiple analyses.

**Tess Konen** graduated from the University of Michigan's School of Public Health with a master's degree in Occupational Environmental Epidemiology. She completed her thesis on the effects of heat on hospitalizations in Michigan. She worked with MN Tracking for 2 years as a CSTE Epidemiology Fellow where she was project coordinator for a follow-up study of the Northeast Minneapolis Community Vermiculite Investigation cohort. She currently is an epidemiologist working on birth defects, pesticides, and climate change, and is developing new Disaster Epidemiology tools for MDH-HPCD.

**Jessica Nelson** is Program Director and an epidemiologist with MN Biomonitoring. She works on design, coordination and analysis of biomonitoring projects, and has been the Principal Investigator for the Healthy Rural and Urban Kids, MN FEET and PFAS studies. Jessica received her PhD and MPH in Environmental Health from Boston University School of Public Health where her research involved the epidemiologic analysis of biomonitoring data on perfluorochemicals. Jessica was the coordinator of the Boston Consensus Conference on Biomonitoring, a project that gathered input and recommendations on the practice and uses of biomonitoring from a group of Boston-area lay people.

**Jennifer Plum** is the Program Manager for MN biomonitoring, currently on a temporary leave of absence as a Supervisor in the MDH COVID response section. She studied Community Health Promotion while earning her MPH from the University of Minnesota. Prior to joining MDH in December 2019, Jennifer worked with WellShare International, Little Earth of United Tribes, and the U of M Department of Epidemiology and Community Health. She has also been a part



of the Health Equity Leadership Network. Jennifer is passionate about health equity, health literacy and community engagement. She is working to connect environmental epidemiology and biomonitoring efforts to community members while coordinating biomonitoring activities.

**Kathy Raleigh** is an epidemiologist for MN Tracking. She completed her PhD in Environmental Health at the University of Minnesota's School of Public Health and her MPH in Environmental and Occupational Health at the University of Arizona. She has worked on a variety of environmental health projects including: pesticide exposure in children, occupational asthma, mercury exposure in women and children, and occupational exposure to PFOA. Prior to coming to MN Tracking, Kathy was working on maternal and child health projects both internationally with USAID and, more recently, at MDH. She will also be working on the coordination and collection of hospital discharge data, including heart disease and asthma surveillance projects for MN Tracking with a focus on health disparities.

**Blair Sevcik** is an epidemiologist with MN Tracking at the Minnesota Department of Health, where she works on the collection and statistical analysis of public health surveillance data for MN Tracking. Prior to joining MN Tracking in January 2009, she was a student worker with the MDH Asthma Program. She received her Master of Public Health degree in epidemiology from the University of Minnesota School of Public Health in December 2010.

**Jessie Shmool** supervises the Environmental Epidemiology Unit at MDH and is the Principal Investigator for the Environmental Public Health Tracking program. Jessie received her MPH from the Mailman School of Public Health at Columbia University and DrPH from the University of Pittsburgh, where her training and research focused on exposure assessment, GIS and spatial statistics, community-engaged research methods, and environmental health disparities. Prior epidemiology studies have examined social susceptibility to air pollution exposure in chronic disease etiology and adverse birth outcomes.

**Lynn Treadwell**, Minnesota Public Health Data Portal Coordinator, is an experienced digital communications leader with a solid understanding of websites and application development, social media and digital marketing communications in the health and government sectors. Lynn brings over 10 years of experience in developing optimized online user experiences and digital communications to the position. She will provide stewardship to Minnesota's public health data portal focusing on audience understanding and interactive development best practices. Lynn has an AAS in graphic design, attended the School of Journalism at University of Minnesota and has a mini-Master's in Marketing from St. Thomas University.