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

OCTOBER 13, 2020

3:00 P.M. – 4:00 P.M.

Via WebEx

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Upon request, this material will be made available in an alternative format such as large print, Braille or audio recording. Printed on recycled paper.

Contents

Agenda Overview

DATE: 10/13/2020

Welcome & Introductions

3:00pm

Chair Lisa Yost will welcome attendees to the meeting. Panel members are invited to introduce themselves. Lisa will give a brief overview of the agenda.

Air Monitoring to Support the Healthy Rural and Urban Kids Project: Brief Summary of Results

3:05pm

Advisory Panel member Kristie Ellickson of the Minnesota Pollution Control Agency will give an overview and summary of results from air monitoring conducted concurrently with the 2018 Healthy Rural and Urban Kids Project. Panel members are invited to ask questions.

Update: COVID-19 in Minnesota

3:30pm

Environmental Epidemiology Supervisor Jessie Shmool will give a brief update on the epidemiology of COVID-19 in Minnesota.

Biomonitoring Updates

3:45pm

Panel members are invited to ask questions about any of the written updates on biomonitoring program and laboratory activities.

Public Comments, Audience Questions, New Business

3:55pm

Motion to Adjourn

4:00pm

Biomonitoring Program Updates

Healthy Kids Minnesota

Healthy Kids Minnesota is our new statewide biomonitoring program that will systematically measure exposures to chemicals of concern in children, with funding through a cooperative agreement with the U.S. Centers for Disease Control and Prevention (CDC). Working in one non-Metro and one Metro region of the state every year, we will partner with Early Childhood Screening (ECS) programs at local public health agencies and school districts to recruit preschool-age children for testing. We will include 250 – 300 children per community in each program cycle. The first program cycle will begin in Southeast Minnesota and Minneapolis.

Since the June 2020 EHTB Advisory Panel meeting, we have concluded that it is not feasible to begin recruitment this year due to the ongoing COVID-19 response. Instead of conducting a shortened window of recruitment this fall, we have decided to delay recruitment by a full year and start recruiting kids in spring 2021. In addition to decreased staff capacity at MDH due to COVID-19 reassignments, our recruitment partners at local public health agencies and school districts have limited capacity to plan and implement the program at this time.

We have shared this update with our Project Officer and her team at the CDC. We also participate in regular calls with other funded states, all of whom are similarly readjusting their plans, to strategize about how to proceed with our biomonitoring work in the time of COVID-19. On the positive side, the delay will enable the MDH Public Health Laboratory (PHL) to make substantial progress on developing the new laboratory methods prior to sample collection (see laboratory update, below).

Healthy Rural and Urban Kids Project

Preliminary results for the 2018 Healthy Rural and Urban Kids Project were presented at the June 2020 Advisory Panel meeting. Since then, data analysis has continued, along with the sharing of preliminary findings with project partners to get their feedback and questions as we finalize analysis and move into summarizing results. We presented to over 20 staff at Minneapolis Public Schools ECS program in July and received very helpful questions and thoughts. In coordination with Kristie Ellickson of the MPCA, we continue to work on the GIS analysis. The PHL is finalizing results for the one outstanding pesticide analyte (see laboratory update, below). At this Advisory Panel meeting, Kristie Ellickson will present on air monitoring data collected by the MPCA concurrently with biomonitoring data.

Clinical Urine Mercury Testing Projects

Working with United Family Medicine, a community clinic in St. Paul, University of Minnesota Doctor of Nursing Practice (DNP) student Nimo Ahmed has been leading the implementation of our second urine mercury screening project as part of a Quality Improvement project for her degree. Similar to the project at Minnesota Community Care (presented at the February 2020 Advisory Panel meeting), this project screened prenatal patients for urine mercury and offered

follow-up for elevated results, including home visits (when possible given the COVID-19 situation). The project ran from March through August 2020. Nimo will summarize results and share them with MDH and clinic staff.

A new project is being planned by DNP student Lily Tamire. This project will be based at Community Health Service Inc., a community clinic in Rochester. Beginning this fall, it will conduct urine mercury screening for a wider range of patients – all adults over age 18 – during a 3-month window, offering follow-up for elevated results.

Conference Presentations

Staff participated in two panel sessions at the International Society of Exposure Science (ISES) 2020 conference. Jessica Nelson and Michelle Gin co-presented as part of the panel "Mercury adulterated skin creams; pervasive, elusive and dangerous," and Jessica as part of the panel "Identifying At-Risk Populations through Biomonitoring Investigations." Presentation abstracts are below. It was an excellent meeting, with a lot of biomonitoring content in particular.

Responding to skin lightening products in Minnesota: urine mercury testing and grant program.

J. Nelson, M. Gin, Minnesota Department of Health, St. Paul, MN.

The Minnesota Department of Health has responded to the growing public health concern around the use of mercury-containing skin lightening products in different ways, including through the implementation of two key activities. Minnesota Department of Health has conducted urine mercury testing in prenatal populations since 2017, paired with home visits for women who have elevated urine levels. This work has identified a number of elevated urine mercury cases linked with the use of skin lightening products, facilitated removal of products from homes, revealed that some Minnesota communities are at increased risk for mercury exposure, and integrated the issue into clinical practice in a novel manner. Additionally, the department currently administers a one time state appropriated grant program to raise public awareness and education on this topic in Minnesota.

Minnesota Healthy Kids Program

J. Nelson, C. Huset, S. Saravia, Minnesota Department of Health, St. Paul, MN.

The Minnesota Biomonitoring Program conducted the Healthy Rural and Urban Kids Project in 2018 to assess environmental exposures to preschool-age children in two Minnesota communities and determine whether inequities exist in children's exposure. Recruitment was conducted by partners at Early Childhood Screening (ECS) Programs in local public health agencies and school districts in three north-central Minnesota counties (Becker, Todd, and Wadena counties) and Minneapolis. ECS is a required, universal pre-kindergarten screening for children in Minnesota. A total of 232 children were recruited and provided a urine sample for analysis.

Urine samples were analyzed for five metals, eight pesticides and their metabolites, and eight air pollution metabolites. Results reveal important differences in exposure to these analytes between the urban and rural children in the project, and indicate that some groups of children may be having significantly higher exposures to some chemicals than others.

The Healthy Rural and Urban Kids Project is currently being expanded into Healthy Kids Minnesota, an ongoing statewide, population-based biomonitoring program focused on children's environmental health and health equity. The program will work with ECS partners in one non-Twin Cities Metro region and one Twin Cities Metro region each year, aiming to recruit 250-300 kids from each area. It will move recruitment systematically through different regions of the state over a 5-year period. Results will help inform families, address community concerns, and promote policies that reduce childhood exposures and create healthy neighborhoods and homes for kids.

Statewide biomonitoring can provide critical information to identify groups at risk for chemical exposure, and to inform and evaluate policies and programs that reduce exposures.

Biomonitoring Laboratory Updates

Non-CDC grant activities

The method development and validation for ethylene thiourea (ETU, the mancozeb metabolite) was completed over the summer and the Healthy Kids 2018 samples were analyzed. However, during the analysis, interferences at the report level made it difficult to be confident about those results. We have consulted with other labs and have purchased alternative chromatographic columns to attempt to get better resolution between the background interferences and the ETU peak. This work is ongoing.

Several projects for the CHEAR (Children's Health Exposure Analysis Resource) grant with the University of Minnesota were analyzed for per and polyfluoroalkyl substances (PFAS). Two of these projects have required modifications to our existing methods for PFAS. We have expanded the menu of PFAS included in the serum and plasma panel to include a more comprehensive suite of analytes, 15 (up from 7) in serum and plasma. We have also developed a method for the analysis of PFAS in breastmilk. We anticipate at least one publication from these efforts.

The methods for the analysis of toxic elements in urine have been consolidated to reduce the total number of methods needed to run the full panel on a single sample. Previously, two instruments and three methods were needed to complete the full panel of 19 elements. Now there is one method common to both instruments for all elements. Mercury, the 20th element, is still run separately.

Urine Mercury (Hg) exposure analysis: issues and coming solutions

Hospitals often follow a 24-hour collection procedure for urine Hg measurements. While this is in alignment with Clinical & Laboratory Standards Institute (CLSI) recommendations (*Control of Preanalytical Variation in Trace Element Determinations; Approved Guideline* (NCCLS document C38-A, 1997)), those recommendations were last updated in 1997 and are significantly out of date.

There are important issues with using a 24-hour urine collection for inorganic Hg exposures. The 24-hour collection procedure does not utilize any preservation method. Unless the urine is preserved with a sulfamic acid solution to sufficiently lower urine pH, the mercury evaporates quickly from collected urine, even if the urine is properly refrigerated between collection time points. The combination of the substantial time delay while the urine sample is collected and transported, combined with the lack of any preservation means that by the time the laboratory analyzes the sample, the measured Hg concentration is substantially underestimated.

CLSI document 38A is currently undergoing revision, and Lisa Strong is co-chair of that national committee. One of her areas of responsibility is leading the revision of the urine mercury recommendations. The primary recommendation will be to change the guidelines to recommend a single random urine collection with preservation for the assessment of acute

inorganic mercury exposure. The revised document is expected to become available in late summer/early fall 2021, after which the hospitals will require time for implementation.

CDC grant activities

The method development for phthalates has been delayed due to the PFAS method development activities described above. Despite that, some progress has been made on the method. A new instrument was obtained at the end of June and the initial development steps have begun using this instrument. Once the PFAS activities subside, we anticipate more progress in this area with a goal of PT participation by late winter.

MDH PHL previously analyzed environmental phenols in urine for the 2009 Riverside Birth Study. While this method is not entirely new to the lab, changes in instrumentation, staffing, and analytes of interest mean that this method development is essentially starting over. The method development over the summer to determine instrument acquisition parameters and optimize chromatographic conditions is complete and now the focus is the optimization of sample cleanup conditions.

The development for speciated arsenic in urine has been taking place throughout the spring and summer. This is a new method in this laboratory, substantially different from a previous arsenic speciation method that is no longer valid, with an increased number of analytes. The method is on the cusp of validation.

MN Tracking Program Updates

MN Public Health Data Access Portal updates launched recently

- Asthma data update
- Air quality – including embedded Tableau charts from MPCA
- Carbon monoxide poisoning data update
- Chronic obstructive pulmonary disease (COPD) data update
- Community Water Systems data update (see drinking water)
- Health insurance county-level data update (see population characteristics query)
- Heat-related illness data update

MN Public Health Data Access Portal updates launching soon

- Childhood lead exposure data update
- Immunizations: new query
- Heart attack data update

2021 Upcoming Advisory Panel Meeting Dates

Advisory Panel meetings in 2021:

February 9, 2021

June 8, 2021

October 12, 2021

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