Meeting Summary  
Minnesota Department of Health (MDH)  
Environmental Health Tracking and Biomonitoring Advisory Panel Meeting  
June 3, 2008  
1:00 p.m.-4:00 p.m.

Advisory Panel Members - Present  
Beth Baker (chair)  Debra McGovern  Daniel Stoddard  
Alan Bender  Susan Palchick  Samuel Yamin  
Cecilia Martinez  Gregory Pratt

Advisory Panel Members – Regrets  
John Adgate  Geary Olsen  Lisa Yost  
Bruce Alexander  David Wallinga

Welcome and introductions  
Beth Baker, chairperson, welcomed panel members to the meeting. She invited members and other participants to introduce themselves. She noted that today’s meeting would be devoted to progress reports, particularly from program staff dedicated to the environmental health tracking efforts. Beth reminded panel members of the policy for declaring conflicts of interest and asked for comments or concerns; none were offered.

Environmental Health Tracking: Overview and Background  
Jean Johnson, staff director of the Environmental Health Tracking and Biomonitoring (EHTB) Program, referred panel members to the overview of environmental health tracking presented in the background book. In a brief slide presentation, she summarized salient features from the environmental health tracking presentation at the October 2007 panel meeting. She cited the 2000 report of the Pew Environmental Health Commission calling for systematic surveillance of environmental hazards, exposures, and disease. She highlighted the establishment of CDC’s National Environmental Public Health Tracking Network, which currently awards grants to 16 states (not Minnesota) to begin the collection, integration, and dissemination of nationally consistent health and environmental data and measures (a.k.a. indicators). CDC’s efforts are aligned with directions outlined by the State Environmental Health Indicators Collaborative (SEHIC), sponsored by the Council of State and Territorial Epidemiologists (CSTE).

MN Statutes 144.995 – 144.998, the enabling legislation for our Environmental Health Tracking and Biomonitoring Program, call for Minnesota state agencies to develop an environmental health tracking system for Minnesota. At the October 2007 panel meeting, Jean had presented priorities for year 1: to develop, assess, and re-examine indicators consistent with those of CDC and CSTE/SEHIC. These efforts would lay a groundwork for priorities in year 2: to develop a strategic plan for Minnesota, make recommendations
for further study, report to the legislature, and develop a research plan with the University of Minnesota.

As described in the background book, environmental public health indicators are descriptive, summary measures derived from data gathered by pre-existing programs. These indicators are tools for surveillance which, when integrated together, enhance the accessibility and utility of information for decision making. At the national level, these indicators are intended to provide standardized methods for comparing public health and environmental data across multiple states and for building a comprehensive, national, public health surveillance system.

Environmental Health Tracking: Indicator Updates
Jean introduced the next speakers, to be providing updates on Minnesota’s efforts to pilot the indicators identified by CDC and CSTE/SEHIC. Program staff members are providing progress reports on the nine indicators listed below:

- air quality
- water quality
- childhood lead
- respiratory disease
- myocardial infarctions
- cancer
- carbon monoxide poisonings
- birth defects
- birth outcomes

Air quality, an environmental health indicator
Kari Palmer and Cassie McMahon, staff members in the Environmental Analysis and Outcomes Division of the Minnesota Pollution Control Agency (MPCA), presented their pilot project on air quality indicators. They examined the three indicators articulated nationally; these are:

- short term exposure to ozone
- short term exposure to PM\(_{2.5}\)
- long-term exposure to PM\(_{2.5}\)

A correction to the presentation in the background book, page 7, is that the indicator for short-term exposure to PM\(_{2.5}\), detailed in terms of days, should refer to 24-hour data collections rather than 8-hour collection periods.

Summaries of Minnesota data and a Minnesota-based assessment were provided in the background book. Kari described the limitations and challenges of using the nationally defined data sources to draw associations between air quality and exposure. She noted that the Minnesota Pollution Control Agency collects more detailed information that would probably be more informative for associating air quality with health outcomes.

Recommendations for next steps are to: (1) continue to align with the national indicators project because of consistency in inter-state comparisons and ease of implementation;
and (2) adjust for limitations in the national indicators by incorporating additional, Minnesota-specific indicators to balance a likely underestimation of exposure if using only the national measures.

Recognizing that the national measures only capture risks in counties that have air monitors, Alan Bender asked if subpopulations in counties lacking air monitors but spatially close to adjacent counties’ monitors are included in the modeling. Beth Baker asked if other indicators, beyond the three articulated nationally, have been examined. Kari responded to both questions by stating that this pilot study has been restricted to the national parameters.

**Water quality, an environmental health indicator**

Deanna Scher, research scientist with the MDH Environmental Health Division’s Health Risk Assessment Unit, referred the panel to the background book, which describes the national program’s indicators related to drinking water and her pilot project with Minnesota data. The indicators focus on community water systems, the violations of water quality standards by exceedances of regulated contaminants, and the routine contaminant levels. The initial focus of the national indicators is on arsenic, lead, nitrate, and specific disinfection byproducts. While the national drinking water content workgroup has established parameters for nationally consistent data and measures, it is still developing guidelines that affect data quality and interpretation. Deanna noted that the data sets have limitations; for example, only 80% of Minnesota’s population is served by community water systems. Another limitation is that the (preliminary) national guidelines accept data only from community water systems that are currently active, although data are captured for the past 10 years.

Deanna recommended that Minnesota continue to participate in discussions of the national workgroup, wait for the outcome of the national criteria on data quality issues (anticipated within a few months), and then decide if Minnesota would continue to follow the national network’s guidelines.

Susan Palchick asked for an elaboration about the inactive systems. Deanna explained that Minnesota has almost 1,000 active community water systems currently. According to the national workgroup, Minnesota’s data on 56 currently inactive systems, which were active at some point between 1999 and present, would be excluded. Susan also asked about limitations in interpreting data. Deanna replied that missing data due to infrequent sampling is common and that contaminant concentrations between sampling time-points might be imputed by straight-line connections between the time-points. Further, the population-based measures are of unknown accuracy because the population served by each water system is oftentimes assumed to be 2.6 people x the number of connections, which is only an average. In response to Susan’s question if the data set was different than data collected for compliance monitoring purposes. Deanna replied that the data reported by the state to CDC are more detailed than the summary, exceedance data that the state reports to the US EPA.
Greg Pratt expressed reservations about the national workgroup’s preliminary guidelines for data reduction and interpretation of contaminant levels. Deanna concurred that ascribing a value to concentrations below the minimum detection limit and ascribing values between sampling time points may confound the interpretation.

Samuel Yamin asked Deanna to bring forward a recommendation to the national drinking water content workgroup to include data from private drinking water wells. Because private wells are not monitored or regulated to the extent of community water systems, populations served by private wells could be potentially exposed to higher contaminant levels (particularly nitrates) and subject to relatively more adverse health effects. Samuel agreed with Deanna’s assessment that maximum contaminant levels, set by federal regulations, reflect a composite of factors, not just human health risk. Therefore, the Minnesota program could incorporate its health-based guidelines into its assessment, compare our Minnesota data before and after incorporating the health-based values, and advocate that the national workgroup also consider using health-based values.

**Respiratory disease, an environmental health indicator**

Wendy Brunner, epidemiologist with the MDH asthma program, reported on two sets of measures: (1) chronic lower respiratory disease and asthma mortality, and (2) asthma hospitalizations. The source data for the chronic lower respiratory disease and asthma mortality indicator will be the death records kept by the Minnesota Center for Health Statistics in MDH. Although this pilot has not been launched yet, it would probably involve presenting county-level data with data suppression rules to protect individual privacy. The literature shows that the rates of these indicators are associated with ambient air quality. On a related note, MDH staff members have an EPA grant to develop methods to link respiratory disease and air quality data to measure the impacts of pollution reduction strategies.

Wendy addressed the second set of indicators, i.e. asthma hospitalizations, described in the background book. The data source for the asthma hospitalizations is the Minnesota Hospital Association. Available data elements include age, sex, zip code, date of admission, and date of discharge. One limitation of the hospitalization data is that, because the data do not include identifiers, repeat hospitalizations (i.e. subsequent hospitalizations by the same individual) cannot be identified. The 2006 asthma hospitalization data were presented per day and aggregated per month. September and October had the highest rates, consistent with a presumed association with students returning to school and an associated increase in respiratory infections, which is a known trigger of asthma attacks for many people with asthma.

Susan Palchick asked if data for emergency department visits were captured. As a participant in the CSTE/SEHIC workgroup, Wendy is refining an indicator for asthma emergency department visits using hospital outpatient data. While these data are available in Minnesota, they are not available in all states.

In response to Samuel Yamin’s question about the unit of observation, Wendy explained that hospitalizations are reported by zip code of the patient’s residence (or zip code of
billing address) and deaths by county of residence. Beth Baker expressed concern for interpreting data on asthma hospitalizations. Such data would depend on whether asthma was listed as the primary diagnosis on the medical record. Moreover, individuals with high access to primary care would be more likely to avoid hospitalizations because they would be more actively involved in an asthma management program that avoids triggers and uses appropriate medications. Wendy concurred that the indicators for asthma hospitalization measure the burden on individuals whose asthma is not managed well. Nonetheless, several studies have found associations between asthma hospitalizations and poor air quality. Samuel recommended that MDH explore whether the Minnesota Hospital Association could provide access to asthma medication prescriptions as an indicator of respiratory disease incidents. In fact, the Minnesota Hospital Association does not collect data on medication use from hospitals. It was recognized that these types of managed asthma incidents may be a significant component of all asthma incidents and reflect the burden of poor air quality.

**Carbon monoxide poisoning, an environmental health indicator**

Mia Jewell, a student in the master’s program at the University of Minnesota’s School of Public Health, has been working with MDH staff in the Chronic Disease and Environmental Epidemiology Section to pilot the indicator for carbon monoxide poisoning, using Minnesota data. Mia described the national indicators for carbon monoxide poisoning, which are listed in the background book. Of the data sources that have been developed by CDC’s National Environmental Public Health Tracking Program, four are available in Minnesota: hospital discharge data, emergency department data, death certificate data, and Poison Control Center data (extracted from the Toxicall database). Mia highlighted the reduced data from Minnesota sources. She focused on the unintentional, non-fire related carbon monoxide poisonings as the ones of most public health concern.

Recommendations for next steps are to refine the national guidelines to enhance data quality and interpretation. Attention should be given to confidence intervals, spatial and seasonal analytical methods, and determining the completeness and accuracy of case ascertainment. In response to Susan Palchick’s question, Mia noted that the national guidelines allow for multiple counting of an individual experiencing a single event. For example, a call to the Poison Control Center and a subsequent hospitalization would result in two data captures. Therefore, guidance should be developed for assessing the level of overlap between data sources.

Beth Baker remarked that the Poison Control Center data are difficult to interpret. Calls under-represent burdens to the adult population, as the Poison Control phone number has been marketed primarily for response to children’s exposures. Calls over-represent carbon monoxide poisonings to children, as the Poison Control Center’s database may register a poisoning event based on circumstantial reports but lacking direct carbon monoxide measurements. Beth also advised caution in interpreting data on hyperbaric treatment, which is not a standard of care and is used unevenly throughout the state.
Susan Palchick inquired about the high-risk activities associated with unintentional, non-occupational, non-fire related poisonings. Mia replied that high-risk factors appear to be the operation of generators or gas heaters in enclosed spaces. Another contributor is the accidental inhalation of exhaust from boat engines and other small motors that burn fossil fuels. However, the more common sources of exposure are the incomplete combustion of fuels that are burned by improperly installed, maintained, or inappropriately used household appliances as well as the operation of motorized vehicles in a non-ventilated garage.

**Birth defects, an environmental health indicator**
Jeannette Sample, MDH epidemiologist in the Chronic Disease and Environmental Epidemiology Section, discussed progress on piloting Minnesota data using national guidelines for the birth defects indicator. Referring to materials presented in the background book, Jeannette noted that 1 in 33 babies is born in the U.S. with a structural defect. It is assumed that the causes are complex interactions between genetic predispositions and environmental factors, including possible maternal exposure to environmental hazards.

The Minnesota data source is the Minnesota Birth Defects Information System, which collects information from birthing hospitals in Hennepin and Ramey counties, accounting for half of all Minnesota births. The 2006 data set included 174 cases diagnosed with at least one of the defects selected for the national guidelines. Limitations on the data include the exclusion of babies without a matched birth certificate to ascribe maternal county of residence, the existence of an opt-out clause in Minnesota that allows parents to exclude their child’s identifying information from the information system, and the lack of population-based records before 2006. Jeannette recommended that the next steps for indicator development should address babies diagnosed with more than one birth defect. Because the unit of analysis is the child, not the defect, further classification of cases diagnosed with more than one defect would allow for the comparison of cases within more homogenous categories. CDC’s National Environmental Public Health Tracking Program has suggested cases diagnosed with more than one defect be classified as isolated, syndromic, or multiple congenital anomaly.

Alan Bender inquired about the cases in which the parents opted out of the Minnesota Birth Defects Information System. It was noted that personal identifiers (e.g. name and birth date) were removed, but other data elements for each case are retained in the system. For the 2006 data set, 18 cases have opted out. Although the numbers are small, no obvious bias in the types or severity of birth defects exists between the opt-out cases and the full data set.

**Birth outcomes, an environmental health indicator**
Jeannette Sample referred panel members to the background book for a list of the national indicators for birth outcomes. Pre-term and very pre-term births, low and very low birth-weight births, infant mortality, depressed women’s fertility rate, and unbalanced sex ratio at birth are measures of unhealthy fetal development. While the birth outcomes indicator has not been piloted in Minnesota yet, the data sources could be
Debra McGovern asked about associations of environmental exposures with adverse birth outcomes. Jeannette responded that associations in the scientific literature of air pollution exposure and pesticide exposure during distinctive periods in fetal development suggest that environmental hazards may contribute to the appreciable rise in recent years in pre-term births and low birth-weight births.

**Childhood lead, an environmental health indicator**

Referring to information provided in the background book, Jeannette Sample described the national indicators for childhood lead. Well-known sources of lead exposure in young children include lead paint in older houses, particularly those built before 1950. Most states have longstanding, early childhood lead surveillance programs. Elevated blood lead levels in young children have been associated with learning impairment and behavioral problems. No measurable blood lead level is considered to be safe. MDH staff members have not piloted these indicators using Minnesota data sources yet. The MDH Childhood Lead Poisoning Prevention Program staff may recommend refinements to the data sets to address cases in which the zip codes on the birth certificates differ from the zip codes listed at the time of the blood lead test.

**Cancer, an environmental health indicator**

The national indicators for cancer are the counts and incident rates of selected cancers. This indicator has not been piloted in Minnesota yet. One limitation of the Minnesota data source is that Minnesota’s Cancer Surveillance System reports only on a state level and not on a county level. Another limitation is that the data sets lack personal exposure information such as tobacco use, diet, sun exposure, and occupation.

Beth Baker asked about the rationale for the national program’s selection of particular cancers, which exclude prominent cancers such as colon cancer and prostate cancer. Jeannette responded that the national program chose particular types of cancer associated with possible environmental etiology. Alan Bender pointed out that acute lymphoblastic leukemia (ALL), a childhood cancer with an average latency of four years, is amenable to exposure linkage. By contrast, colon cancer and prostate cancer have latency periods of several decades. Alan noted that, moreover, many US citizens do not stay in one county for even ten years; therefore, any environmental exposure tracked by county of residence may be difficult to link to cancers with long latencies.

**Myocardial infarction, an environmental health indicator**

Although MDH staff members have not yet piloted this indicator, the national guidelines for myocardial infarctions, as measured by hospitalizations, seem to match well with accessible Minnesota data. The Minnesota Hospital Association provides epidemiologists
in the MDH Heart Disease and Stroke Prevention Program with data elements such as age, sex, zip code of residence, date of admission, and date of discharge. Incidents in which individuals suffer heart attacks but are not hospitalized would not be in the data set.

Environmental health tracking: Next steps and planning
Jean Johnson, speaking on behalf of the Minnesota Environmental Health Tracking and Biomonitoring (EHTB) Program, reported that staff members in MDH and the Minnesota Pollution Control Agency plan to complete the pilot studies for all nine indicators identified by CDC and CSTE/SEHIC. (These are described above.) Staff will continue to make recommendations for further refinement of the national indicators, data quality, and data interpretation.

EHTB staff members are seeking advice from the advisory panel with regards to submitting Minnesota data to CDC’s National Environmental Public Health Tracking Program. Advantages to submitting data to the national network include consistent comparisons between states; national aggregate sets may be more meaningful for measures that are rare at the state level; Minnesota’s program could benefit from alignment with a national effort. The chief disadvantage of keeping consistent with the national program is the diversion of resources away from Minnesota-specific objectives. As resources allow, the EHTB Program would like to pursue both paths: (1) participation in the national program, and (2) developing environmental health tracking measures that reflect Minnesota’s priorities.

In response to questions, Jean replied that CDC’s National Environmental Public Health Tracking Network is eager to receive Minnesota’s data submissions. One goal of the network has been to develop measures that would be sufficiently accessible to all states, particularly the 34 states that have not received CDC EPHT grants. Minnesota may demonstrate that, even without a CDC EPHT grant and using limited resources, state programs can contribute to the national network. Jean also described a bill that has been gradually gaining momentum in the US Congress to fund all state health agencies for environmental health tracking. If federal funds were to become available in the future, Minnesota would be very competitive.

Jean reported that the CDC’s national guidelines emerged from deliberations of the CSTE/SEHIC. At present, SEHIC is exploring a new content area: climate change. Future indicators might include morbidity and mortality arising from extreme weather events and vector-borne infectious diseases (e.g. Lyme and West Nile). Air quality measures may be expanded to include hazardous air pollutants and traffic exposure.

Over the next several months, EHTB program staff members plan to develop communications strategies and make data sets accessible to stakeholders. The program also plans to continue to build relationships with data stewards who collect and manage data on environmental health and public health. A new opportunity is to collaborate with MDH staff in the Community and Family Health Division to develop a surveillance...
system for autism spectrum disorders in Minnesota. Another intriguing possibility is to dovetail with the US National Institute for Occupational Safety and Health (NIOSH) in its pursuit of occupational health exposures, particularly (a) malignant mesotheliomas and (b) pesticide associated illness.

Alan Bender advised that the occupational arena would provide the EHTB Program with its biggest impact for using environmental health indicators to sustain the fledgling program and to improve public health. Al pointed out that the 2008 legislative session included significant discussion regarding mesothelioma and funded two research areas for a total of $5 million. Significantly, the discussions revealed a widespread interest in asbestos exposures in areas of Minnesota beyond the Iron Range. The energy invested in highlighting mesothelioma as a public health issue could serve the EHTB Program by providing a ready opportunity to demonstrate success.

In response to questions from fellow panel members, Al noted that Minnesota has about 70 diagnoses of mesothelioma a year, and most are outside of northeast Minnesota. Although the vast majority of cases are males, a recent increase in female cases may be a reflection of women’s presence in the workplace. The disadvantage of an extremely long latency period is offset by the extremely tight relationship between exposure to a particular hazard and a particular disease. A small cluster of mesothelioma cases has been associated with the Conwed facility in Cloquet, and another cluster appears in the Red Wing vicinity. If the EHTB Program were to uncover an historical or ongoing exposure, it would demonstrate the value of environmental health tracking. Beth Baker considered if the Minnesota legislature would be likely to fund such an effort, which clearly has value from epidemiological and human health perspectives.

Greg Pratt addressed Jean’s earlier question about whether the EHTB Program should continue to invest its resources into the national indicators projects and submit data to the National Environmental Public Health Tracking Program. He recommended that program staff submit data to the national network and also explore Minnesota-specific ideas. Greg likened the environmental health tracking program to a coarse sieve, which catches the really big linkages between environmental hazards, exposures, and diseases. Over time, the environmental health tracking system will evolve and improve, such that we will have the capability to catch less obvious links. Greg recommended that the EHTB Program staff should continue to build relationships with the existing programs that collect data for their own purposes. EHTB Program staff can sensitize the program partners as to this secondary use of their data and for the needed quality of the secondary data elements.

Michonne Bertrand, the staff liaison between the EHTB program and the advisory panel, invited the panel members to provide input on SEHIC’s emerging indicators for climate change and air quality. She also asked for suggestions for new, Minnesota-led areas to explore. Beth Baker cautioned that Minnesota might diverge only if the content area is distinctive to Minnesota.

Dan Stoddard complimented the program staff in putting its resources first into piloting the national indicators and in putting a small effort into distinctive Minnesota ventures.
He noted that the next big step is not defined yet, so the program should keep to its present paths until a vision statement is adopted.

Cecilia Martinez expressed her hesitation to recommend a specific indicator, as each affected community has unique issues. She advised the program staff to explore issues of concern to Indian Health Service. She recognized that climate change is of concern and that international efforts are substantial, but a distinctive role for Minnesota in developing indicators for climate change is questionable. Cecilia echoed Dan’s recommendation for the EHTB Program to develop a vision statement. The determinants of poverty, class, and race in tackling environmental health issues should be framed in the program’s strategic directions.

Susan Palchick asked for clarification about submitting Minnesota’s data to the National Environmental Public Health Tracking Program. Because the pilot data were analyzed to be congruent with the national guidelines, Susan commented that there seemed to be no compelling reason to withhold Minnesota’s data. Jean replied that the EHTB program staff agrees. The only hesitation is that the national workgroup for the water quality indicators is still refining its parameters. Once the methodology is finalized, the Minnesota program plans to submit the water quality data accordingly. Deanna Scher noted that some states have websites to communicate if or why its state program is presenting and interpreting its water quality data differently than CDC might in its presentation of national, aggregate data.

Al Bender advised that, if Minnesota participates in the national network, the EHTB Program staff would undoubtedly have more influence in refining the national measures than if it were to withhold the Minnesota data.

Cecelia Martinez asked for clarification as to any disadvantages of submitting data to the national program. Michonne Bertrand and Jean Johnson responded that, if the national network were to change its formulations for data reduction, then Minnesota would need to reduce its data anew. Moreover, if Minnesota would want to diverge from the national guidelines in data collection or interpretation, we might confuse our users by distributing two different data sets, one for national consumption, and one aligned with Minnesota-specific parameters.

Al Bender returned to Greg Pratt’s earlier comment about sensitizing program partners to the secondary use of data. He reinforced the value of capturing data elements that are critical to secondary use by the environmental health tracking initiative. For example, a few of the indicators rely on hospitalization data. Other than one or two exceptions across the U.S., state health agencies do not receive personal identifiers with hospitalization data. Yet public health would be well served by tracking cases at the individual level instead of by county or zip code. Repeat hospital visits by a single individual are but one situation in which interpretation of data can be challenging. Al pointed out that public health practices and data privacy protections are not in conflict; in fact, public health practitioners are generally champions of data privacy protection. Furthermore, the legislature seems to be willing to invest in evaluating environmental/public health data to
improve health outcomes. Thus, it might behoove the EHTB Program to make a recommendation that the Minnesota Hospital Association submit data to MDH that retains personal identifiers. Al noted that MDH would be legally obligated to protect data privacy, and MDH would be capable of significant improvements in data quality and evaluation.

Greg Pratt remarked that a similar initiative is underway with a subgroup of the Minnesota component of the National Children’s Study. The subgroup recognizes the value of associating environmental/public health data with individuals. In fact, Blue Cross/Blue Shield links environmental data and personal health data within its own system. However, linkages cannot occur between health care networks presently.

Beth Baker encouraged the EHTB Program staff to investigate if any other state health agencies already obtain personal identifiers and to learn how this approach might be pursued in Minnesota. Greg Pratt put forward a motion that MDH should look at outreach activities to hospital associations and other entities to make them aware of the benefits to be gained to public health programs if individual data elements are associated with the hospitalization data. The motion was not seconded. Dan Stoddard suggested that MDH explore the options that have been pursued by other state health agencies to obtain access to personal identifiers linked to hospitalization records.

**Chemical selection criteria**

Michonne Bertrand referred the panel members to the background book, which contains an updated version of the selection criteria for chemicals to be examined in biomonitoring studies. Following the advisory panel’s earlier recommendation to give more weight to criteria for seriousness of health effects and degree of exposure at levels of significance, she noted that the weighted criteria give preference to well-studied chemicals rather than emerging toxins.

Michonne also referred to the process and timeline for selecting chemicals. She noted that the process is intended to make recommendations for priority chemicals for a biomonitoring base program. The process is not specifically geared toward identifying a chemical for the fourth biomonitoring pilot project. Because of the time constraints in this two-year funding period, the selection of the fourth biomonitoring pilot project may be based on convenience.

The chemical selection process would begin by soliciting public input, with the expectation that these nominations are suggestions (rather than ranked priorities) and indications of issues important to Minnesota’s citizens. Advisory panel members and program staff will be encouraged to put forward their own nominations during the public nomination period. Subsequent steps in the process would include scoring by workgroup members and invited experts. The scoring outcomes would be presented to the advisory panel for further deliberation, perhaps at the September panel meeting.
Cecilia Martinez concurred that chemicals with known health effects should carry more weight in the scoring system. Political motivation is an important factor, as well. She asked how perfluorochemicals and arsenic ranked, using this scoring system. Jean Johnson and Michonne replied that the EHTB workgroup members determined that perfluorochemicals ranked in the middle of the scoring range, particularly due to its high marks for public concern but low marks for known, serious health effects. Arsenic scored quite high and lead scored very high, mainly because it has been characterized extensively regarding exposed populations and health effects. In response to Debra McGovern’s inquiry, Jean replied that the EHTB workgroup did not include mercury in its scoring exercise.

Beth Baker asked about the role of the advisory panel at the September meeting in making recommendations about the nominated chemicals. Dan Stoddard recommended that all NHANES chemicals be included in the list of nominated chemicals and that they be scored, at least according to broad chemical categories. Dan emphasized that the scoring system is dependent on the program’s vision, yet to be finalized. The scoring process will be highly dependent on the types of biomonitoring projects that get sustainable funding, which is an important goal for the biomonitoring program.

After some discussion by the committee on biomonitoring options, Dan suggested that the EHTB program staff and advisory panel could collaborate on two or three proposals to present to the legislature. Each of these would address a different vision for biomonitoring in Minnesota: a baseline study that monitors the public every few years, an emphasis on emerging issues, and/or a focus on known problems. An important role for the advisory panel would be to ensure that the proposals are scientifically defensible. Al Bender agreed that the advisory panel could serve as a critical buffer to bring a scientific perspective to the many pressures felt by legislators.

Beth asked the panel members to consider the tasks that should be accomplished by September. Dan responded that the biomonitoring program vision should be articulated first, as that would shed light on whether the scoring process should favor well studied, known contaminants or emerging, relatively uncharacterized contaminants. He suggested that the visioning process should proceed with a long term focus on what biomonitoring and environmental health tracking could accomplish decades from now assuming funding were unlimited. Projects should then be small, achievable and technically defensible steps building towards the long term vision. Cecilia cautioned the EHTB program to avoid having to choose between only known contaminants and only emerging contaminants.

Beth pointed out that the EHTB program staff would be challenged to score all NHANES chemicals in the chemical selection process. Dan suggested that due to technological limitations it might be very difficult or impossible to conduct biomonitoring for some of the chemicals and therefore some could be scored relatively quickly as pass vs. concern vs. fail. He recommended that chemicals would fail if they lack an analytical method. Michonne commented that the laboratory cost is another criterion amenable to pass vs. concern vs. fail. She suggested that the public nomination process would be the first step,
and that a later step would screen chemicals by adequacy of an analytical method. Jean suggested that the screening process should not eliminate chemicals that lack an analytical method currently because the EHTB program may choose to invest in developing laboratory capability. Dan agreed, and he noted that the scoring criteria may differ between known chemicals and emerging chemicals. He recommended that a score of “concern” could be used when there are significant short term obstacles to biomonitoring, however funds and effort could be dedicated to developing analytical methods for emerging toxins.

**Project status updates**
Jean Johnson reported that the arsenic biomonitoring pilot project is beginning to recruit community participants. The objective is to recruit 100 children, 3 to 10 years of age, living in homes with high soil levels of arsenic near the site of a former pesticide facility. Introductory postcards were sent in May to the 894 eligible households. Introductory letters are being sent now, with a brief questionnaire about the ages of children in the household. Field staff will be recruiting non-English speakers through door-to-door and phone solicitations. Current plans are that sample collection will begin in late June or early July.

Jean announced that the perfluorochemicals biomonitoring pilot project is pending approval from the MDH Institutional Review Board (IRB). Two HealthEast clinics have been contracted for participants to donate blood specimens. Program staff members plan to send letters of recruitment to eligible participants in July. Sample collection may occur in August and September. MDH Public Health Laboratory scientists will analyze serum specimens for 7 perfluorochemicals, including PFBA, PFOA, and PFOS.

A mercury biomonitoring pilot project is being explored. The EHTB Steering Committee is considering if an EPA-funded mercury project could partially fulfill the expectations of the EHTB program. At this juncture, no input is requested from the advisory panel.

Candidates for a fourth biomonitoring project are being explored. Jean reported that she is meeting with researchers at the University of Minnesota who might provide convenient access for secondary use of their specimens. Specimen availability, time, cost, and laboratory capacity are limiting the choices.

**Biomonitoring: Next Steps**
Beth Baker recommended that topics at the September meeting of the advisory panel could include a presentation of the list of chemicals nominated by the public during the summer months and a presentation of options for the fourth biomonitoring pilot project.

Jean Johnson reported that EHTB program staff members are continuing to develop the biomonitoring pilot program guidelines, including a vision for the biomonitoring program. She listed three options for the vision: (a) public health surveillance (monitoring overall trends in the state’s population); (b) a research perspective that
encompasses exposure sources and health outcomes; and (c) studies that address community concerns around contamination sites.

Al Bender noted that the Minnesota Statutes require the EHTB program to report progress to the legislature. Jean responded that the statutes require reports on both the biomonitoring program and the environmental health tracking program by January 2009. Michonne Bertrand noted that the program fulfilled its obligation to provide a biomonitoring report to the legislature in January 2008, and the report outlined plans to submit a biomonitoring update in January 2009.

Jean suggested that another topic for the September meeting could be a report on visions and objectives of biomonitoring programs that are being pursued in other states. In fact, members of the State Environmental Health Indicators Collaborative (SEHIC) have suggested a collaborative effort to articulate a vision for state biomonitoring programs.

Cecilia Martinez asked about the status of the chemical selection process used by California’s biomonitoring program. Michonne reported that the survey was released in April; the survey asks for input on the types of chemicals that should be studied and the criteria for selecting chemical categories. A copy of California’s survey of the public is provided in the background book. The biomonitoring programs in both Minnesota and California are choosing a chemical selection process that involves nominations from the public, recommendations from the scientific advisory panel, and evaluation by the program staff. The agenda for the June meeting of California’s scientific guidance panel includes a discussion of the survey results. The website for the California biomonitoring program has many useful documents.

Closure
Beth Baker thanked the panel members for their continued dedication. The next meeting is scheduled for September 9, 2008, for 1:00 to 4:00. The meeting will be held at Snelling Office Park in Saint Paul. Michonne Bertrand asked the panel members to contact her at any time with comments and suggestions to sustain constructive interactions between the panel and the EHTB program staff.