



STATE OF NEW HAMPSHIRE
DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH SERVICES

Jeffrey A. Meyers
Commissioner

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August 31, 2018

Honorable Representative Mark Pearson, Chairman
Commission to Study Environmentally-triggered Chronic Illness
Legislative Office Building/Room 205
Concord, NH 03301

Re: HB 1356 (RSA 126-A:76, III, Chapter 296:1, Laws of 2018)
*Report on Data Sharing between the New Hampshire Departments of Health and Human Services
and Environmental Services.*

Dear Chairman Pearson:

As required by HB 1356 (RSA 126-A:76, III, Chapter 296:1, Laws of 2018), please find the attached preliminary report on data sharing practices between the Departments of Health and Human Services and Environmental Services. The following documents are enclosed:

- HB 1356-Final Version
- Preliminary Report
- Appendix C-Inventory Arsenic Data
- Memorandum of Agreement

A presentation of the report to your Commission to Study Environmentally-Triggered Chronic Illness will be held at the next regular meeting scheduled for September 28, 2018. Please let me know if you have any questions by contacting me.

Respectfully submitted,

A handwritten signature in black ink that reads "Lisa Morris".

Lisa Morris
Director

ENCLOSURES

CC: House Speaker Gene Chandler
Senate President Chuck Morse
Honorable Michael York, New Hampshire State Librarian

MEMORANDUM OF AGREEMENT
between the
DEPARTMENT OF HEALTH AND HUMAN SERVICES/DIVISION OF PUBLIC HEALTH SERVICES
and the
DEPARTMENT OF ENVIRONMENTAL SERVICES

This Memorandum of Agreement (MOA) describes the environmental health data sharing activities that have been agreed to between the Department of Health and Human Services, Division of Public Health Services (DHHS/DPHS), and the Department of Environmental Services (DES). The goal of the MOA is to build on existing state capacity and expertise in environmental health surveillance to make information-driven decisions to protect public health. Through this MOA, DHHS/DPHS and DES are able to consistently design, implement, and evaluate environmental public health actions which are supported by environmental health data and information which are scientifically valid, useful, and meaningful.

This MOA covers the period July 1, 2018, through June 30, 2022. The MOA contains the option to renew for an undetermined period of time based on agreement of the parties. This MOA replaces any other agreements that have established between DHHS/DPHS and DES for a specific program.

For the purposes of this MOA, DHHS/DPHS and DES agree to cooperate as follows:

I. Department of Health and Human Services/Division of Public Health Services

The Department of Health and Human Services/Division of Public Health Services agrees to:

1. Assist DES with project planning and implementation when appropriate.
2. Assist DES staff with access to aggregated public health data via the NH Health WISDOM Data Portal.
3. Assist DES staff with access to data within the DHHS Enterprise Data Warehouse.
4. Share technical expertise on data interpretation.

II. Department of Environmental Services

The Department of Environmental Services, agrees to:

1. Assist DHHS/DPHS with project planning and implementation when appropriate.
2. Assist DHHS/DPHS staff with access to environmental monitoring data via DES OneStop and explore opportunities for direct access to database systems as deemed appropriate by DES staff.
3. Abide by the confidentiality rules defined by DHHS/DPHS to protect the identity of all personal information within health records as outlined in 'Guidelines for Public Release of Public Health Data'.
<http://www.dhhs.nh.gov/dphs/hsdm/documents/publichealthdata.pdf>
4. Share technical expertise on data interpretation.

III. Mutual Agreements of the Parties

It is further understood and agreed between DPHS and DES:

1. The parties will maintain communication via regular meetings between program staff to ensure collaboration on work that is being conducted.
2. The parties agree to facilitate the exchange of information and appropriate data sets to support work in the field of Environmental Health.
3. That this MOA may be modified in writing at any time by mutual consent of both parties.
4. In the event that changes in either State or Federal laws or regulations occur which render the performance of the activities set forth in this MOA illegal, void, impractical or impossible, this MOA shall terminate immediately.
5. The parties will review this MOA at least once each year to determine whether it should be revised, renewed, or terminated.

IN WITNESS WHEREOF, the respective parties have hereunto set their hands on the dates indicated.

Jeffrey A. Meyers
Commissioner
Department of Health and Human Services

Robert R. Scott
Commissioner
Department of Environmental Services

Preliminary HB 1356 Legislative Report

New Hampshire Department of Health and Human Services/Division of
Public Health Services and New Hampshire Department of
Environmental Services

August 30, 2018

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Introduction

The following is a preliminary report on deliverables related to House Bill (HB)1356, which directs the Department of Environmental Services (DES) and the Department of Health and Human Services (DHHS) to improve the data sharing and usability of health and environmental data.

Data are an important tool that can help build common understanding, allow for more informed decision making, and improve efficiency and effectiveness. This preliminary report includes background information on communication and engagement processes across DES and DHHS, a memorandum of agreement, an update on standard operating protocol, and arsenic-related data assets. The next report will include final standard operating protocols, description of a pilot project, and cost estimates of the pilot.

Background

HB1356 charged the DES and DHHS to establish a data sharing protocol for health and environmental information collected by each agency. Under HB 1356 (attached as Appendix A), DES and DHHS were asked to provide a report on or before September 1, 2018 to the Speaker of the House of Representatives, the Senate President, the State Library, and the commission to study environmentally-triggered chronic illness to include the following items:

- a. An updated memorandum of agreement (MOA) regarding data sharing between the DES and DHHS.
- b. A standard operating procedure on how data can be shared between the two departments to identify linkages between environmental contaminants and health outcomes.
- c. A description and estimate of the cost to perform a two-way pilot project on arsenic in drinking water, a contaminant where both health effects and environmental data exist.

This preliminary report reflects on an approach that is intended to foster the relationship and build the investment necessary to accomplish this task within both agencies and among stakeholders in order to assure that HB1356 and the larger data-sharing vision will be sustainable over time. Multiple interagency meetings have taken place in order to respond to the requests as outlined by the bill. This process ensured that careful consideration was given to the resources across both agencies while also considering the feasibility and public health importance of the environmental issues at hand.

Memorandum of Agreement

The mission of DHHS is to join communities and families in providing opportunities for citizens to achieve health and independence. Promoting and protecting health and preventing disease are key functions of DHHS through the work of the Division of Public Health Services (DPHS).

The mission of DES is to help sustain a high quality of life for all citizens by protecting and restoring the environment and public health in New Hampshire. The preservation and wise management of New

Hampshire's environment are the important goals of the DES.

Environmental health and welfare for all citizens of the state are responsibilities shared by DHHS and DES. These organizations have a long history of working together to address environmental health concerns, and have focused on the accountability of public agencies, quality and efficiency in addressing the needs of citizens, improving health outcomes, and consistency in messaging. In recent years, DES and DHHS officials have faced community concerns over higher-than-expected rates of cancer and chronic diseases and existing and emerging environmental issues. To proactively address these ongoing concerns, DHHS and DES have worked to update the existing MOA to be more inclusive of DES and DHHS programs. This will allow the agencies to collect health data and information that are scientifically valid, useful, and meaningful and, as a result, will improve consistency of design, implementation, and evaluation of environmental public health actions which are supported by environmental data.

The MOA directly aligns with the primary goals of DES and DHHS which are to protect, maintain, and improve the health of all New Hampshire citizens. Moreover, it integrates data and expertise from DES and DHHS into public health practice. The updated MOA is attached under Appendix B.

Standard Operating Procedure

An interagency team of technical staff are working to establish the standard operating procedure (SOP) for data sharing. The workgroup has been making advancements towards identifying and establishing the purpose, key principles, responsibilities, staff leads, and the processes and procedures necessary for data sharing. This process will ensure that careful consideration is given to the existing data sources, legislation, and rules surrounding privacy protections.

The process to finalize the SOP has been delayed due to vacancies/absence of key staff including bureau chiefs for the Bureau of Public Health Protection and Bureau of Public Health Statistics and Informatics. Once finalized, the interagency team will provide regular updates and a final standard operating procedure on data sharing across agencies.

Pilot Project

In recent years, DHHS and DES staff have faced community concerns over higher-than-expected rates of cancer and chronic diseases as well as other emerging and existing environmentally-related concerns. Approximately 450 substances are known or reasonably anticipated to be carcinogenic, but there are substantial practical challenges in attributing individual cancers or chronic diseases to specific chemical exposures. The existing public health data or environmental data sources and conventional statistical approaches can be labor-intensive and may not be sufficient at determining whether an increase in a health outcome (including cancer or chronic disease) are real or due to random variation. These data sets don't provide conclusive answers about causes of disease. Whether an individual develops a disease or condition depends on the type, dose, and timing of the environmental exposure, whether they have also been exposed to other toxic compounds (such as radon or tobacco), and many personal factors such as genetics, nutrition status, and overall health.

The situation in New Hampshire reflects the current state nationally and illustrates a clear need for new methods to assess and investigate cancer and chronic disease links to environmental contaminants including arsenic. To address the common underlying concern that environmental pollutants may be causing cancer or chronic diseases and to fulfill the deliverable under HB1356, DES and DHHS are proposing a pilot project between the departments on arsenic in drinking water.

The interagency team and academic researchers from Dartmouth Toxic Metals Superfund Research Program developed a pilot project between the departments on arsenic in drinking water. The team proposed evaluating current collaborations across the agencies, current data assets, limitations relating to linking health and environmental data, and the scientific feasibility and public health importance of the proposed pilot to assure resources are used wisely. At this point in time, due to absence of key staff, the interagency team could not complete the work on the pilot proposal. A subsequent report is forthcoming that will include details of the pilot.

Current Collaborations

DHHS and DES have had various collaborations over the years around addressing public health concerns. The following highlights two projects in particular. The New Hampshire Public Health Laboratories (PHL), NH Biomonitoring Program (located within DHHS) has received a five year cooperative agreement from the Centers for Disease Control and Prevention to conduct two biomonitoring studies: 1) a targeted study assessing arsenic and uranium exposure from private well water and 2) a statewide surveillance study assessing exposure to a panel of metals (including arsenic and arsenic species), pesticide metabolites, per- and polyfluoroalkyl substances (PFAS), and cotinine (a nicotine metabolite). The Biomonitoring Program is about to enter Year 5, the final year of the agreement. Both projects are leveraging interdepartmental relationships and resources. The following will describe one of these efforts.

Collaboration Example: The Targeted Arsenic and Uranium Public Health Study

The Targeted Study aims to assess the relationship between arsenic and uranium in private well water and body burden by testing both household drinking (well) water and individuals' urine for those metals. The PHL worked with the Environmental Public Health Tracking (EPHT) Program to identify twenty-five (25) towns at increased risk for having arsenic above the Environmental Protection Agency's (EPA's) maximum contaminant level (MCL) in their groundwater. Modeling produced by the US Geological Survey was utilized and each data point (within a town) was given an estimate of arsenic risk. The town estimates were averaged and towns in southern and southeastern NH that had an estimated risk of arsenic above the MCL of $\geq 35\%$ were selected for this study.

NH PHL staff worked with DES to use the OneStop Well Database for well location identification. DES has a memorandum of understanding (MOU) with the NH Department of Revenue Administration for tax parcel data. The MOU allows for sharing of tax data with NH DES which includes owner name, tax number, property information, and address. This is the most accurate way for DES to find ownership of

the well/property from OneStop information. NH DES was able to share de-identified well, line, and public parcel data with the NH Biomonitoring Program to identify well locations within the targeted towns.

The NH Biomonitoring Program worked to overlay the MOSAIC tax data with the GPS coordinates from OneStop. Wells in public water systems were removed from the study, as public water systems must treat their water to meet the EPA MCLs for all contaminants, including arsenic and uranium. Parcels that contained no wells or more than one well were also removed, as well as parcels without complete address information. The remaining addresses were run through the NH Department of Safety's E9-1-1 address locator to verify accuracy and correct any obvious errors. What remained was an inventory of property addresses with a well registered in OneStop.

These addresses were randomized and some households were selected for invitation into the study. The households were mailed recruitment postcards and letters. Those interested contacted the Biomonitoring Program and people who were at least 5 years old were enrolled, and an in-person meeting was scheduled. Informed consent/assent was given at the meeting followed by administration of the exposure survey. This survey collected demographic, occupational, and recreational information as well as a limited health history (self-reported) and food intake assessment. Participants then self-collected urine and water at their homes on a pre-determined date. Water and urine samples were packaged into a cooler, picked up by a contracted courier, and delivered to the NH PHL for testing by the Water Analysis Laboratory and the Biomonitoring Laboratory. As previously mentioned, water was tested for arsenic, uranium, and VOCs. As part of the incentive for participation in this study, water was also tested for cadmium, iron, manganese, copper (stagnant/flushed), lead (stagnant/flushed), hardness, and pH. The Biomonitoring Program also worked with the NH DES Methyl-tertiary-butyl-ether Remediation Bureau to coordinate free volatile organic compound (VOC) testing of private well water for participants who consented to this process. Water reports were mailed to the participants upon testing completion and, urine reports will be mailed at the conclusion of the study (this study is ongoing).

Throughout this process, the NH Biomonitoring Program has consulted with the Biomonitoring Technical Advisory Committee (TAC) for feedback on study design and methods. The TAC consists of members of academia, the DES Drinking Water & Ground Water Bureau, the Dartmouth Toxic Metals Superfund Research Program, the New England Poison Control Center, DHHS epidemiologists/statisticians, local town administration, health departments, and hospitals. Data collected from this study will be shared on EPHT's WISDOM health data portal as well as with members of the NH Arsenic Consortium, of which DES and DHHS work very closely together.

The NH Biomonitoring Program hopes to secure future funding from the CDC to continue this testing, as well as receive State funding to augment the program. Continuation of this program is critical for assuring the public's health in NH. First, the Biomonitoring Program hopes to evaluate how NH

addresses the environmental contaminants that were tested in the current project and to determine whether the programs in place are successful in reducing levels of these chemicals in NH residents. Second, the Biomonitoring Program is working closely with the DES to determine what new contaminants of concern are emerging and then incorporating them into the NH Public Health Laboratories' test panel. The Biomonitoring Program will reapply for federal funding through a competitive process in 2019. This competitive application is strengthened if the applying state has State funding available to enhance or expand the Biomonitoring Program.

The interagency team has presented The Targeted Arsenic and Uranium Public Health Study as one example of collaboration across agencies to collect public health data related to environmental exposures.

Arsenic Related Data: Assets and Limitations

There are numerous data sets which include measures relevant to the topic of arsenic and associated health outcomes. While many of the data sets are owned or stewarded by the DES and DHHS, some data sets belong to other agencies or organizations or are not maintained in one central location (e.g. private well water test results which are housed by DHHS and many private businesses). As organized in Appendix C, the identified arsenic-related data sets can be divided into three categories: health outcome data for conditions associated with arsenic exposure or potential exposure data, and behavioral data such as water testing, treatment, and consumption.

Appendix C provides detail about each of the identified data sets, including relevant data and indicators, the data steward, the available years and geographic granularity, and limitations and, additional notes for context. In addition to the limitations noted for the individual data sets, there are overarching limitations such as the fact that data is presented in different formats with limited or no ability to make linkages or, that the data sets are not centralized. Additionally, the inclusion of protected and identifiable health information within certain data sets restricts the sharing of data at the record level.

While a memorandum of agreement can facilitate collaboration and data sharing, in particular among State agencies, the State is limited in its regulatory authority to compel certain organizations such as private labs to share data. This poses a significant limitation on the ability to receive water test results for environmental contaminants. These limitations in addition to those noted in the table, impact the ability to produce analyses from which meaningful conclusions can be drawn. Nonetheless, improved sharing practices may help us to come closer to being able to quantify and visualize the potential association between certain environmental factors and health outcomes. Further, outlining the data assets and limitations helps us to better understand the gaps and factors that prevent more meaningful analysis. This understanding can guide efforts to improve and expand upon data collection practices and to formalize partnerships and/or develop legislation to maximize data sharing across entities.

Proposed Pilot Arsenic in Drinking Water

As mentioned in a previous section, due to the absence of key staff, this process is delayed. Additional information will be provided at a later date to include updates on next steps, a final proposed pilot project, and cost estimates.

Appendices

Table 1. Inventory of arsenic related data by type

Data Type	Data Set	Relevant Data Included in Set	Steward	Relevant Indicators	Geographic Granularity	Years Available	Limitations and Additional Notes
Health outcome: note that these health outcomes are not linked to arsenic alone, but to a number of contributing factors	NH State Cancer Registry	Cancer incidence	DPHS (HSDM)/Dartmouth	By type/age/year/geography: case counts, incidence rates	Address-aggregated to town	1990-2015	No residential history, no exposure information (behavioral, occupational, etc.), screening data not collected, data less reliable from 1990-1994; data are good from 1995 onward To calculate rates or standardized incidence ratios, population data is needed (Claritas, US Census, etc.); statistics can be calculated based on cancer type, age at diagnosis, year of diagnosis, stage, and geography
	NH Vital Statistics	Cancer related deaths	DPHS (HSDM)	By type/age/year/geography: mortality counts, mortality rates	Address-aggregated to town	1999-2016	Inconsistent coding of cause of death; ICD coding of cause of death began in 1999 2017 data not yet available due to delays in out of state reporting To calculate rates, population data is needed
Exposure/ potential exposure: note that the presence of arsenic in water does not necessarily indicate exposure	NH Public Health Lab Well Water Quality	Well water test results	DPHS (PHL)	Private well water quality- Arsenic level	Address		There is no requirement for private well owners to test their water quality, and only a portion of those who test do so through the PHL; cannot draw conclusions about a geographic area based on results at one address (results can vary even between next door neighbors); the presence of arsenic does not necessarily mean exposure as people may obtain drinking water from another source Approximately 46% of NH residents receive water from private wells
	Private Lab Well Water Quality	Well water test results	Accredited private labs throughout NH and neighboring states	Private well water quality- Arsenic level	Address	NA- historically this data has not been shared/ made available	Same limitations as PHL well water quality results; RDL limit may vary between labs (a “no detect” reading may be based on a different minimum limit, ex. 5ppb vs 0); MCL changed in 2001 from 50 ppb to 10 ppb Private labs are not compelled to share data, DES and DPHS have not been successful in obtaining data from private labs
	DPHS Biomonitoring	Well water test results, exposure data (based on blood and urine)	DPHS (PHL)	Private well water quality- Arsenic level, arsenic exposure	Address- limited to towns targeted by study	2017	For well water quality- same limitations as PHL well water quality results; for exposure, sources other than water are not controlled for Biomonitoring study is targeted to specific towns, data is not representative of the State
	NHDES MtBE Remediation Bureau Results	Well water test results	DES	Private well water quality- Arsenic level	Georeferenced points		Same limitations as PHL and Private Lab well water quality results Program funding covers MtBE VOC related testing, but participants are given the option to pay for additional analysis (approximately 20% opt to have a test that includes arsenic), those who opt-in sign a waiver granting access to results to DES. Results from optional tests are not submitted to the EMD, but the Bureau has used the results that they receive to populate a separate database to track participation and exceedances (not all concentrations). Effective 7/1/2018, all data will be submitted to the EMD, including optional tests.
	DES Public Water System Monitoring Data	Water test results of PWSs - Arsenic	DES	PWS water quality- Arsenic level	PWS (population served), can be associated with approximate PWS service area	1994-Present	Prior to 2011, data was collected via paper- only results that exceeded 50% of the MCL were recorded electronically; MCL changed in 2001 from 50 ppb to 10 ppb; RDL may vary between labs; results are not constant (results are collected quarterly and may vary over time based on natural variation and treatment) PWS definition- a system that serves 25+ people, or 15+ service connections, for 60 or more days/year. Arsenic reporting is required for community PWSs (residential/year round), and non-transient/non-community systems (workplaces, schools, etc.) that serve the same 25+ people for at least 180 days/year. Transient systems (restaurants, motels, etc.) do not monitor for arsenic.
	USGS Arsenic Probability	Arsenic presence in groundwater	USGS	Probability of arsenic in groundwater at >1 ppb, >5 ppb, >10 ppb	Georeferenced points	2011	Data is modeled- it indicates a high probability of the presence of arsenic, based on a limited number of factors (excluding regional groundwater redox information, groundwater pH, well depth, fracture location and depth, and other groundwater chemistry measures) and on a limited number of samples, as such, it cannot be used to determine which individual wells will be at risk; presence of arsenic in groundwater does not necessarily translate to exposure Data most relevant when considering potential exposure among residents with private wells, a high probability of

							arsenic in bedrock where there is a PWS would not likely translate to exposure
	USGS	Arsenic presence in groundwater	USGS	Point in time level of arsenic in specific well locations	Georeferenced points/ well location	2006	Wells are located statewide, samples were drawn in 2006 and analyzed in 2015 (tested and proven to be sound) 3 new wells on the seacoast monitored bi-monthly from 2014-2018 for arsenic (and uranium) to show arsenic trends and seasonal variation
Behavioral Data: water source and consumption, testing, and treatment	NH BRFSS	Behavioral data around testing and consumption	DPHS (HSDM)	Drinking water source, water consumption, well water testing (ever/when), mitigation (avoidance or testing), awareness of health impacts from water contaminants, source of information/guidance about testing and treatment	Record level-aggregated to county (ability to look at Manchester and Nashua exclusive of Hillsborough County) or PHN	2014, 2017	Sample size may be too small to draw conclusions at the county level or to stratify by other factors (such as income, education, etc.), questions have not remained consistent year-to-year 2017 sub-state data will be released in the fall of 2018; 2018 data is in process of being collected, no timeline yet for data release
	NH PRAMS	Behavioral data around testing	DPHS (HSDM & MCH)	Drinking water source, well water testing (in 12 months prior to delivery), health care worker advisement on testing	State	2013-2016	Data limited to women who have recently given birth; no information about results or treatment
	Private Well Owner Survey	Behavioral data around testing, consumption, and treatment	Dartmouth Toxic Metals Superfund Research Program	Well water testing, well water treatment, concern about arsenic, water consumption, demographic data	State/regions within the State	2014	Not a representative random sample, results may not be generalizable ⁷⁹⁹¹

Acronym Key:

BRFSS: Behavioral Risk Factor Surveillance System

DES: Department of Environmental Services

DPHS: Department of Health and Human Services, Division of Public Health Services

EMD: Environmental Monitoring Database

HSDM: Bureau of Health Statistics and Data Management

MCL: Maximum Contaminant Level

MtBE: Methyl tert-butyl ether

PHL: Public Health Lab

PHN: Public Health Network

ppb: parts per billion

PRAMS: Pregnancy Risk Assessment Monitoring System

PWS: Public Water System

RDL: Reporting Detection Limit

USGS: United States Geological Survey

voc: volatile organic compound