Briefing to the Joint Standing Committee on Environment and Natural Resources

PFAS in Maine

February 15, 2023

Melanie Loyzim, Commissioner

MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION
Protecting Maine’s Air, Land and Water
2020 PFAS Task Force

1. Providing safe drinking water
2. Protecting our food supply
3. Identifying and investigating PFAS contaminants in the environment
4. Identifying and reducing uses of PFAS
5. Managing waste responsibly
6. Improving public education about PFAS
7. Promoting federal action
8. Funding for state agencies to investigate, respond to and reduce exposure of Maine citizens to PFAS
Source Reduction
- Report usage
- Prohibitions

Investigation & Remediation
- Water Quality
  - Wastewater discharges
  - Surface water quality
  - Fish tissue sampling
- Remediation & Waste Management
  - Residuals
  - Landfills
  - Soil
  - Groundwater
Updates on the PFAS Soil and Groundwater Investigation

February 15, 2023

Susanne Miller, Director
Bureau of Remediation and Waste Management

MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION
Protecting Maine’s Air, Land and Water
Refresher: What are PFAS?

PFAS = per- and poly fluoroalkyl substances

- 32 MRS §1732, 38 MRS §1612 - one fully fluorinated carbon atom

- Used in many consumer products:
  - Grease and water repellant
  - Heat resistant

- Difficult to destroy the C-F bond, ubiquitous in environment

- Referred to as “forever chemicals”
PFAS are found in Maine's soils, surface and groundwaters, plants and wildlife

PFAS Cycle

PFAS TREATED MATERIAL
(such as aerosol, fabric protection, stain resistant carpeting, raincoats/shoes)

PFAS TREATED FOOD PACKAGING
(such as grease-resistant paper products)

Residential Homes

Soil/Farmland

Drinking water

Food products

Infiltrate into groundwater

Plant uptake

Wastewater to WWTP

Leachate to WWTP

Sludge

Biodegradable

Wastewater direct discharge to stream

Wastewater direct discharge to stream

Firefighting foam

RIVER

GROUNDWATER

EGLE - MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

800-662-9278 | Michigan.gov/PFASresponse

03/2019

MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION

www.maine.gov/dep
Why should we be concerned about PFAS?

- Increased cholesterol levels
- Decreased vaccine response in children
- Small decreases in infant birth weights
- Increased risk of kidney or testicular cancer
- Changes in liver enzymes
- Increased risk of high blood pressure or pre-eclampsia in pregnant women

*Taken from the Agency for Toxic Substances and Disease Registry (U.S. CDC) - Potential health effects of PFAS chemicals | ATSDR (cdc.gov)*
PFAS in Maine - up to 2020

- 1940’s – Teflon 1st PFAS introduced into the marketplace
- 1970’s – EPA Biosolids Program
- 2016 – PFAS detected in public monitoring well; soil and groundwater at an Arundel farm and in farm’s dairy milk
- 2019 – Governor Mills creates PFAS Task Force
- 2020 – PFAS Task Force Releases report; 2 Fairfield dairy farms detect PFAS in milk; DEP investigation of soil and groundwater in Fairfield begins
2021- Now: Maine Responds Swiftly

- 2021- Soil and groundwater investigation required

- 2021 - $20M to DEP in state budget + $5M from MJRP; 11 FTE’s and 6 LPP positions added

- 2021 – 2023 PFAS investigation underway
  - Establish administrative structure
  - Develop processes to implement program
  - Hire, onboard, and train new staff
  - Finalize contracts & purchase equipment
  - Research and update license files/records
  - Coordinate with Maine DACF, CDC, DWP, IF&W
  - Schedule and conduct sampling events
  - Collect, validate, review, and compile data
  - ~ 50 staff involved in ongoing effort
Standards and Screening Levels

- Maine's interim drinking water standard
  20 ppt for sum of 6 PFAS
  (PFOA, PFOS, PFNA, PFHxS, PFHpA, PFDA)
- EPA Health Advisories

<table>
<thead>
<tr>
<th>PFAS Compound</th>
<th>New Health Advisories</th>
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<tbody>
<tr>
<td>PFOA</td>
<td>0.004 ppt (Interim)</td>
</tr>
<tr>
<td>PFOS</td>
<td>0.02 ppt (Interim)</td>
</tr>
<tr>
<td>GenX</td>
<td>10 ppt (Final)</td>
</tr>
<tr>
<td>PFBA</td>
<td>2,000 ppt (Final)</td>
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For PFOA and PFOS the interim advisory falls below current laboratory reporting levels. Current laboratory methods can't reliably determine if PFOA or PFOS are present at these interim levels.
PFAS Investigation

- Original estimate 700 sites; now 1,037
- Sites =
  - Multiple fields/locations
  - Cross municipal boundaries
  - Significant acreage
  - Sometimes used by multiple generators (multiple sources applied to one location)
  - Land ownership/lot changes
## PFAS Investigation - Prioritization

### PFAS Sludge Land Application Investigation Tiered System

<table>
<thead>
<tr>
<th>Tier</th>
<th>Volume Applied</th>
<th>PFAS Likely Present in Sludge</th>
<th>Proximity to Receptors Within ½ Mile</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>&gt; 10,000 cubic yards</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>II</td>
<td>5,000 - 10,000 cubic yards</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>III</td>
<td>&lt; 5,000 cubic yards</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>IV</td>
<td>Sites where information gathered to date indicates that no sludge was land applied. Additional research is needed to verify this information.</td>
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- Tiered sludge sites
- Septage sites managed separately
PFAS Investigation – Where are we?

- Soil and groundwater investigation has been initiated at 20% of all sites
  - 15% Groundwater investigation complete
  - 14% Soil investigation complete
  - ~ 308 residential water treatment systems installed
- Tier I Sites just about complete; working on Tier II Sites
- Tier III will have most sampling
- Septage sites ~ 50% complete
PFAS Investigation – Groundwater

- 77% groundwater well results lower than Maine’s interim drinking water standard of 20 ppt

- Remaining 23% above 20 ppt as follows:
  - 12% 20 - 100 ppt
  - 7% 100 - 1000 ppt
  - 4% > 1000 ppt
PFAS Investigation - Soil

- ~ 400 soil samples collected
- No enforceable PFAS soil standard or one number to explain what PFAS in soil levels mean
- Screening levels typically based on use and function of soil
- DEP screening levels for residential use, recreational use, redevelopment, etc.
- DEP does not have screening levels for agricultural use
PFAS Investigation - Farms

- 56 Farms working with DACF
- 50 associated with sludge sites; 0 with septage

![Graph showing the number of farms working with DACF by tier. Tier I has the highest number, followed by Tier III and Tier IV.](#)
PFAS Investigation - Expenses

Non-personnel costs > $3,500,000 since 2019

- Laboratory Analysis 31%
- Filter Install & Maintenance 4%
- Sampling Contracts 10%
- Equipment 21%
- Bottled Water Distribution 32%
- Research 2%
PFAS Investigation – Treatment Costs

<table>
<thead>
<tr>
<th>Average Costs of Filtration Installations Per Residence</th>
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<tr>
<td>Filter System Installation (One time)</td>
</tr>
<tr>
<td>Pre-Treatment Systems (One time only as needed)</td>
</tr>
<tr>
<td>Sheds (One time only as needed)</td>
</tr>
<tr>
<td>Filter Changeouts * (Annual cost per changeout)</td>
</tr>
<tr>
<td>Routine Sampling ** (Annual cost)</td>
</tr>
</tbody>
</table>

* Filter changeouts vary 1-4 times/year

** Sampling may be as frequent as monthly or as little as 1-2 times/year. Annual costs range $2,500 to $4,500 a year
PFAS Investigation – Cost Projections

- Preliminary projections – still early in process!

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<th># Sites to investigate</th>
<th>Cost based on current “burn” rate</th>
<th>Costs doubled for inflation/unexpected</th>
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<td>1,037</td>
<td>$27.7M</td>
<td>$53.5M</td>
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- Cost of investigating every private drinking well in Maine
  - Maine Census ~ 370,000 private groundwater wells
  - Based on current burn rate for 1,525 wells, total costs could be ~ $1.5B

- Ongoing annual costs of maintenance & monitoring filtration systems = $1.232M - $3.234M
PFAS Investigation – Cost Projections

- Projections only calculated for filtration systems in place; not new ones that will need to be installed

- Drinking water standard
- Installation of new systems
- Increase in long-term costs for Maine
Contact:

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www.maine.gov/dep