Unregulated Contaminant Monitoring Rule 3
Overview of New Jersey Data


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U.S. Environmental Protection Agency

- New list of up to 30 unregulated contaminants every 5 years
  - 2013–2015

To provide baseline occurrence data

- Drinking water contaminants that do not have health-based standards under the SDWA
- USEPA can combine with toxicological research to make decisions about potential future drinking water regulations
General Flow of Federal Safe Drinking Water Act Regulatory Processes

At each stage, need increased specificity and confidence in the type of supporting data used (e.g. health, occurrence, treatment).
### UCMR3 System Applicability

#### Assessment Monitoring (List 1 Contaminants) = 14 contaminants

<table>
<thead>
<tr>
<th>System Type</th>
<th>Systems serving &gt;10,000</th>
<th>Systems serving ≤10,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>CWS &amp; NTNCWS</td>
<td>All systems (4200)</td>
<td>800 randomly selected systems</td>
</tr>
<tr>
<td></td>
<td>NJ = 160</td>
<td>NJ = 15</td>
</tr>
<tr>
<td>TNCWS</td>
<td>No requirements</td>
<td>No requirements</td>
</tr>
</tbody>
</table>

#### Screening Survey (List 2 Contaminants) = 7 contaminants

<table>
<thead>
<tr>
<th>System Type</th>
<th>Systems serving &gt;10,000</th>
<th>Systems serving ≤10,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>CWS &amp; NTNCWS</td>
<td>All systems (410) serving more than 100,000, and 320 randomly selected systems serving 10,000 to 100,000</td>
<td>480 randomly selected systems</td>
</tr>
<tr>
<td></td>
<td>NJ = 21</td>
<td>NJ = 6</td>
</tr>
<tr>
<td>TNCWS</td>
<td>No requirements</td>
<td>No requirements</td>
</tr>
</tbody>
</table>

#### Pre-Screen Testing (List 3 Contaminants): viruses = 2 contaminants

<table>
<thead>
<tr>
<th>System Type</th>
<th>Systems serving &gt;1,000</th>
<th>Systems serving ≤1,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>CWS, TNCWS &amp; NTNCWS</td>
<td>No requirements</td>
<td>800 randomly selected systems</td>
</tr>
<tr>
<td></td>
<td>NJ = 160 systems</td>
<td>NJ = 21 systems</td>
</tr>
</tbody>
</table>
UCMR Data: 2016 Release
1,045,484 samples nationwide

- **36,665 NJ samples – 181 systems**
  - PWS > 10,000: 160 systems; 34,557 samples
  - PWS < 10,000: 21 systems, 2108 samples
    - [Very small systems for micro: 3 systems, 33 samples]

- **Monitoring type**
  - Assessment: monitoring: 34,629 samples
  - Screening survey: 2036
  - Prescreening: 33 in April 2016 data release

- **Facility type**
  - GW = 25,111 samples (140 systems)
  - SW = 9502 samples (86 systems)
  - Mixed = 1856 samples (52 systems)
  - GUDI = 196 samples (2 systems)
UCMR Data: 2016 Release

- 36,665 samples analyzed in New Jersey
  - 15,603 first samples
  - 15,187 second
  - 3011 third
  - 2864 fourth

- Sample locations
  - Entry point = 32,615
  - Maximum residence time = 4050

- Collection year
  - 2013 = 11,620
  - 2014 = 13,660
  - 2015 = 11,351
  - 2016 = 34
UCMR Data

- MRLs lower than in previous UCMRs, more detections than in past UCMRs

- Reference concentrations posted for most contaminants
  - DrinkTap.org
  - NJ specific “reference concentrations”
Assessment Monitoring: List 1

- **Volatile Organic Compounds (7)**
  - 174 systems; 1430 samples
  - 1,2,3-Trichloropropane
  - 1,3-Butadiene*
  - Chloromethane (Methyl chloride)
  - 1,1-Dichloroethane
  - Bromomethane (methyl bromide)*
  - Chlorodifluoromethane (HCFC-22)
  - Bromochloromethane (Halon 1011)

  - USEPA Method 524.3

*Not detected in NJ
Assessment Monitoring: List 1 VOCs – cont.

- **1,2,3 – Trichloropropane**
  - DWQI Recommended MCL (2009) = 0.03 ug/L
  - MRL = 0.03 ug/L
  - 2/174 systems > MRL

- **1,1–Dichloroethane**
  - NJ MCL = 50 ug/L
  - EPA ref. conc. = 6/600 ug/L (10^{-6}/10^{-4})
  - MRL = 0.03 ug/L
  - 27/174 systems > MRL
Synthetic Organic Compounds (1)
- 174 systems; 1430 samples

- 1,4-dioxane
  - Detected in 339/1430 samples in NJ (24%)
  - PQL modified 11/25/2015; Interim Specific Ground Water Quality Criteria (ISGWQC) became the Groundwater Standard = 0.4 ug/L
  - 27/174 systems > Groundwater Standard = 16% of systems that sampled
  - DEP issued letters to these systems: monitoring
  
  - EPA Method 522; MRL = 0.07 ug/L
Oxyhalide Anion (1)
  - 174 systems; 1993 samples

Chlorate
  - Detected in 1503/1993 samples (75%)
  - Detected above EPA ref. conc. (210 ug/L) in 14% of samples; 45% of systems

  - EPA 300.1, ASTM D6581-08, Standard Methods 4110D (1997)
Assessment Monitoring: List 1

- **Metals (6)**
  - 175 systems; approx. 2020 samples
    - *Vanadium* (1 sample; 2nd sample low)
    - Molybdenum
    - *Cobalt* (1 sample; 2nd low)
    - Strontium
    - Chromium
    - Hexavalent chromium

Assessment Monitoring: List 1 Metals – cont.

- **Strontium**
  - Detected in 2009/2015 samples (>99%)
  - NJ Groundwater standard = 2000 ug/L
  - 11/2015 samples and 6/174 systems > NJ Groundwater standard

- DEP notified one system
Assessment Monitoring: List 1 Metals – cont.

- Chromium
  - MCL = 100 ug/L
  - Detected in 131/174 systems (75%)
  - 956/2018 samples (47%)
  - Range of detections: 0.2–58 ug/L

- Hexavalent chromium
  - Detected in 157/174 systems (90%)
  - 1000/2023 samples (49%)
  - Range of detections: 0.03–3.8 ug/L
Perfluorinated Compounds (6)
- 175 systems; 1456 samples
  - perfluorooctane sulfonate (PFOS)
  - perfluorooctanoic acid (PFOA)
  - perfluorononanoic acid (PFNA)
  - perfluorohexane sulfonic acid (PFHxS)
  - perfluoroheptanoic acid (PFHpA)
  - perfluorobutane sulfonic acid (PFBS)*

* Not detected in NJ

- EPA 537 Rev 1.1
PFOA

- EPA MRL = 0.020 ug/L or 20 ng/L
- Detected in 81/1456 samples (5.6%); 18/175 systems (10%)

- EPA Draft HA = 70 ng/L (combined PFOA+ PFOS)
  - 1 sample above 70 ug/L; 6 systems PFOA+PFOS>70 ug/L
- DEP Draft Guidance (2007) = 40 ng/L
  - 13 samples, 7 systems
- DWQI Draft HB recommendation (2016) = 14 ng/L
  - 81 samples, 18 systems
PFOS

- EPA MRL = 0.040 ug/L or 40 ng/L
- Detected in 12/1456 samples (0.8%); 5/175 systems > MRL (3%)

- EPA Draft HA = 70 ng/L (combined PFOA + PFOS)
  - 1 sample
PFNA

- EPA MRL = 0.020 ug/L or 20 ng/L
- Detected in 7/1456 samples (0.5%); 4/175 systems (2%)

- No EPA Reference concentration
- Groundwater standard = 0.01 ug/L
- DWQI MCL recommendation (2015) = 13 ng/L
  - 7 samples, 4 systems
Screening Survey: List 2

- **Hormones (7)**
  - 27 systems; 291 samples
    - 17–β–estradiol*
    - 17–α–ethynylestradiol (ethinyl estradiol)*
    - 16–α–hydroxyestradiol (estriol)*
    - Equilin*
    - Estrone*
    - Testosterone: 1 sample in 2013; 3 other samples ND
    - 4–androstene–3,17–dione: 1 sample in 2015, 3 other samples ND

*Not detected in NJ

- USEPA Method 539
Pre-Screening Testing: List 3

- **List 3 Contaminants**
  - Enteroviruses*
  - Noroviruses*
  - USEPA Method 1615, developed by USEPA and USGS
    - Aerobic spores
    - Enterococcus
    - Enterovirus (cell culture)
    - Enterovirus (RT–qPCR)
    - E. coli
    - Male specific phage
    - Norovirus GIA
    - Norovirus GIB
    - Norovirus GII
    - Somatic phage
    - Total coliform

* Not detected in NJ
Summary of NJ UCMR Data

- Not detected in UCMR3 in NJ (10)
  - 1,3-Butadiene
  - Bromomethane
  - Perfluorobutane sulfonic acid (PFBS)
  - 17-β-estradiol
  - 17-α-ethynylestradiol (ethinyl estradiol)
  - 16-α-hydroxyestradiol (estriol)
  - Equilin
  - Estrone
  - Noroviruses
  - Enteroviruses
Summary of NJ UCMR Data

- NJ MCL (2)
  - 1,1-Dichloroethane
  - Chromium

- ISGWQC (4)
  - 1,4-Dioxane
  - PFNA
  - Strontium
  - 1,2,3-Trichloropropane

- Under review by DWQI (2)
  - PFOA
  - PFOS
Summary

- In NJ, some of UCMR3 contaminants were detected above reference concentrations
- EPA regulatory determination
- Future UCMR4
UCMR4

UCMR4 Analytes
- Monitoring 2018–2020
  - 10 cyanotoxins
  - 2 metals
  - 8 pesticides
  - 1 pesticide manufacturing by-product
  - 3 brominated haolacetic acid groups
  - 3 alcohols
  - 3 semivolatile chemicals

https://www.epa.gov/dwucmr/fourth-unregulated-contaminant-monitoring-rule
UCMR4 Analytes

- Monitoring 2018–2020
  - 10 Cyanotoxins (EPA 544, 545, 546)
  - 2 metals (EPA 200.8)
    - germanium
    - Manganese
  - 8 pesticides, 1 pesticide manufacturing (EPA 525.3)
    - alpha-Hexachlorocyclohexane
    - Chlorpyrifos
    - Dimethipin
    - Ethoprop
    - Oxyfluorfen
    - Profenofos
    - Tebuconazole total
    - Total Permethrin (cis– & trans–)
    - Tribufos
UCMR4 Analytes contd.

- 3 brominated haloacetic acid groups (EPA 552.3, EPA 557)
  - HAA5
  - HAA6br
  - HAA9

- 3 alcohols (EPA 541)
  - 1-Butanol
  - 2-Methoxyethanol
  - 2-Propen-1-ol

- 3 semivolatile chemicals (EPA 530)
  - Butylated Hydroxyanisole
  - o-Toluidine
  - Quinoline

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