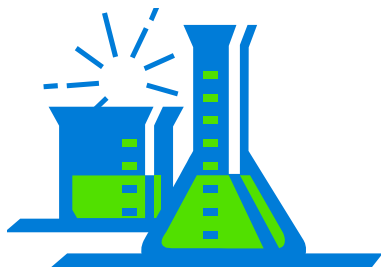# Unregulated Contaminant Monitoring Rule 3
Overview of New Jersey Data

January 1, 2013 – December 31, 2015

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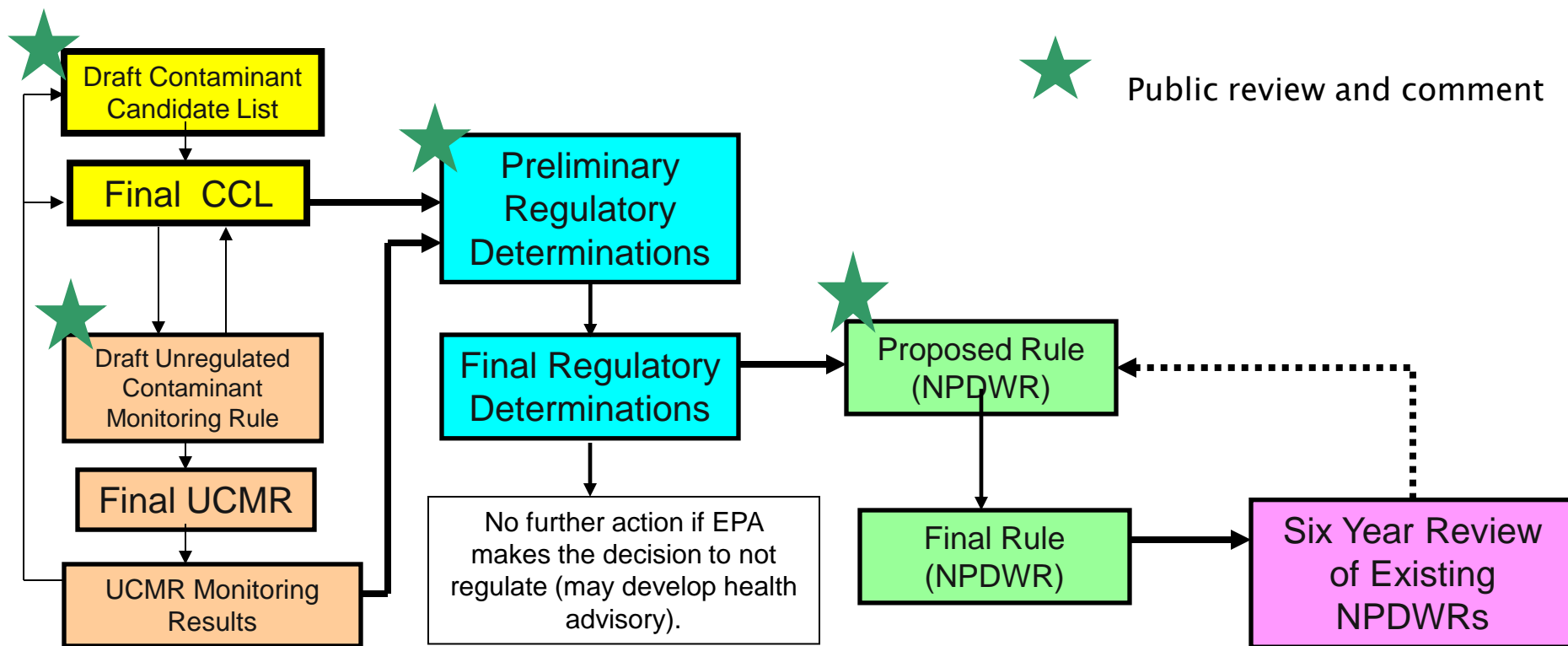Clean Water Council December 13, 2016

UCMR:
Unregulated Contaminant Monitoring Rule

▸ U.S. Environmental Protection Agency
  - New list of up to <u>30 unregulated contaminants</u> every 5 years
    - 2013–2015

▸ To provide baseline <u>occurrence data</u>
  ◦ Drinking water contaminants that <u>do not have health – based standards</u> under the SDWA
  ◦ USEPA can combine with toxicological research to make decisions about potential <u>future drinking water regulations</u>

General Flow of Federal Safe Drinking Water Act Regulatory Processes

Public review and comment

Draft Contaminant Candidate List

Final CCL

Draft Unregulated Contaminant Monitoring Rule

Final UCMR

UCMR Monitoring Results

Preliminary Regulatory Determinations

Final Regulatory Determinations

No further action if EPA makes the decision to not regulate (may develop health advisory).

Proposed Rule (NPDWR)

Final Rule (NPDWR)

Six Year Review of Existing NPDWRs

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

System Type	Systems serving >10,000	Systems serving ≤10,000	
CWS & NTNCWS	All systems (4200) NJ = 160	800 randomly selected systems NJ = 15	NJ =175 systems
TNCWS	No requirements	No requirements	

Screening Survey (List 2 Contaminants) = 7 contaminants

System Type	Systems serving >10,000	Systems serving ≤10,000	
CWS & NTNCWS	All systems (410) serving more than 100,000, and 320 randomly selected systems serving 10,0001 to 100,000 NJ = 21	480 randomly selected systems NJ = 6	NJ = 27 systems
TNCWS	No requirements	No requirements	

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

System Type	Systems serving >1,000	Systems serving ≤1,000
CWS, TNCWS & NTNCWS	No requirements	800 randomly selected systems [NJ = 3]
	NJ =160 systems	NJ =21 systems

UCMR Data: 2016 Release 1,045,484 samples nationwide

- ▸ <u>36,665 NJ samples – 181 systems</u>
  - **PWS > 10,000: 160 systems; 34,557 samples**
  - PWS< 10,000: 21 systems, 2108 samples
    - [Very small systems for micro: 3 systems, 33 samples]
- ▸ <u>Monitoring type</u>
  - **Assessment: monitoring: 34,629 samples**
  - Screening survey: 2036
  - Prescreening: 33 in April 2016 data release
- ▸ <u>Facility type</u>
  - **GW = 25,111samples (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
  ◦ http://water.epa.gov/lawsregs/rulesregs/sdwa/ucmr/ucmr3/upload/UCMR3_FactSheet_List1.pdf
  ◦ DrinkTap.org

  ◦ NJ specific "reference concentrations"

Assessment Monitoring: List 1

▶ <u>Volatile Organic Compounds</u> (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

Assessment Monitoring: List 1

▸ <u>Synthetic Organic Compounds</u> (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

Assessment Monitoring: List 1

▶ <u>Oxyhalide Anion</u> (1)
  ◦ 174 systems; 1993 samples

  ◦ <u>Chlorate</u>
    · 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

    - EPA 200.8 Rev 5.4, ASTM D5673-10, Standard Methods 3125 (1997)

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

Assessment Monitoring: List 1

▸ <u>Perfluorinated Compounds</u> (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

Assessment Monitoring: List 1 Perfluorinated Compounds (cont.)

- **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

Assessment Monitoring: List 1 Perfluorinated Compounds (cont.)

- ## 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

Assessment Monitoring: List 1 Perfluorinated Compounds (cont.)

- 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: I 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
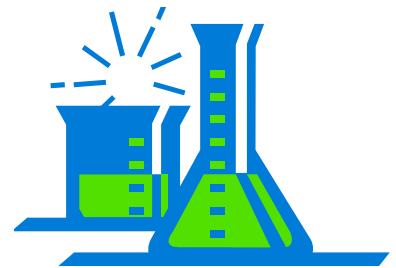
UCMR4

- **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
    - Tebuconazoletotal
    - 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

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