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PFAS TECHNICAL ADVISORY GROUP


REMEDICATION AND REDEVELOPMENT PROGRAM

FEBRUARY 22, 2019



AGENDA

- INTRODUCTIONS
 - PURPOSE AND SCOPE
 - UPDATES
 - GAP ANALYSIS
 - SHARING EXPERIENCES
- 



INTRODUCTIONS – WHO ARE WE?

- WHAT IS YOUR NAME?
- WHERE DO YOU WORK?



PURPOSE AND SCOPE

- DNR WILL FACILITATE QUARTERLY MEETINGS THAT WILL FOCUS ON A VARIETY OF TOPICS INCLUDING THE WHAT, WHERE, WHEN AND HOW OF PFAS ASSESSMENT.
- OUR GOAL IS TO:
 - SHARE CONCERNS,
 - IDENTIFY CURRENT AND PROPOSED PRACTICES FOR ASSESSMENT AND TREATMENT, AND
 - STRATEGIZE ON ISSUES REQUIRING SOLUTIONS.
- THIS FIRST MEETING WILL FOCUS ON
 - NR 140 STANDARD DEVELOPMENT,
 - ANALYTICAL PROCESSES AND LABORATORY METHOD APPROVAL, AND
 - PFAS PARAMETERS INCLUDED IN ANALYSIS

UPDATES

- [EPA'S PFAS ACTION PLAN](#)
- GROUND WATER STANDARD RECOMMENDATIONS
- [DNR AUTHORITY UNDER NR 700](#)
- DNR'S PROCESS FOR GRANTING STATE APPROVAL FOR PFAS ANALYTICAL METHODS
- PFAS COMPOUNDS REPORTED TO DNR/RR FROM NR 700 SITE INVESTIGATION WORK
- PFAS TRACKING IN [BRRTS ON THE WEB](#)
- LESSONS LEARNED FROM DNR'S MEETING WITH MINNESOTA POLLUTION CONTROL AGENCY

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EPA'S PFAS ACTION PLAN

FEBRUARY 2019

JUDY FASSBENDER, SECTION CHIEF

DNR REMEDIATION AND REDEVELOPMENT PROGRAM

EPA'S PFAS ACTION PLAN

PRIORITY ACTIONS

- PROPOSE A NATIONAL DRINKING WATER REGULATORY DETERMINATION FOR PFOA AND PFOS
- INITIATE THE REGULATORY DEVELOPMENT PROCESS FOR LISTING PFOA AND PFOS AS CERCLA HAZARDOUS SUBSTANCES
- DEVELOP INTERIM CLEANUP RECOMMENDATIONS FOR PFOA AND PFOS
- FINALIZE DRAFT TOXICITY ASSESSMENTS FOR GENX CHEMICALS AND PFBS; DEVELOP ADDITIONAL TOXICITY VALUES FOR PFBA, PFHXA, PFHXS, PFNA AND PFDA
- USE NEW STATUTORY REQUIREMENTS TO REVIEW NEW PFAS AND ISSUE SUPPLEMENTAL PROPOSED SIGNIFICANT NEW USE RULES (SNUR ON PFAS)



EPA'S PFAS ACTION PLAN

SHORT-TERM ACTIONS

- UNDERSTANDING AND ADDRESSING PFAS TOXICITY AND OCCURRENCE
 - UNDERSTANDING AND ADDRESSING PFAS EXPOSURE
 - RISK COMMUNICATION AND ENGAGEMENT
- 

EPA'S PFAS ACTION PLAN

LONG-TERM ACTIONS

1. EXPLORE DATA AVAILABILITY FOR LISTING PFAS CHEMICALS TO THE TOXICS RELEASE INVENTORY
2. DETERMINE IF DATA SUPPORT THE DEVELOPMENT OF CLEAN WATER ACT SECTION 304(A) AMBIENT WATER QUALITY CRITERIA FOR HUMAN HEALTH FOR PFAS
3. EXPLORE IDENTIFICATION OF INDUSTRIAL SOURCES THAT MAY WARRANT POTENTIAL REGULATION NATIONAL ELGS
4. GENERATE PFAS TOXICOLOGY DATA THROUGH NEW APPROACHES
5. PROPOSE A NATIONWIDE DRINKING WATER MONITORING FOR PFAS UNDER NEXT UCMR MONITORING
6. DEVELOP DATA STANDARDS BEST PRACTICE THAT ALLOWS SHARING OF SOIL, AIR, WATER, FISH TISSUE AND OTHER PFAS MONITORING DATA
7. IDENTIFY SENSITIVE AND SUSCEPTIBLE SPECIES, BIOACCUMULATION, AND BENCHMARKS AND THRESHOLDS FOR ECOLOGICAL TOXICOLOGY
8. INCORPORATE PFAS INFORMATION INTO EPA ATMOSPHERIC MODELS TO UNDERSTAND FATE AND TRANSPORT



DEVELOPMENT OF NR 140 STANDARD RECOMMENDATION

DR. SARAH YANG, TOXICOLOGIST

WISCONSIN DEPARTMENT OF HEALTH SERVICES

NR 140 STANDARDS

- HOW LONG WILL IT TAKE TO GET AN NR 140 STANDARD IN PLACE?
- OTHER POSSIBLE CHANGES TO GROUNDWATER QUALITY STANDARDS FOR PFAS COMPOUNDS



WIS. ADMIN. CODE NR 700 REGULATORY AUTHORITY

JUDY FASSBENDER, SECTION CHIEF

DNR REMEDIATION AND REDEVELOPMENT PROGRAM

NR 700 REGULATORY AUTHORITY

- WISCONSIN'S DEFINITION OF HAZARDOUS SUBSTANCE DISCHARGE AND ENVIRONMENTAL POLLUTION – WIS. STAT. CH. 292
- REQUIREMENT TO NOTIFY THE DNR IMMEDIATELY – NR 706
- AUTHORITY TO REQUIRE EVALUATION OF EMERGING CONTAMINANTS – NR 716.07
- AUTHORITY TO REGULATE SAMPLING AND ANALYSIS METHODS – NR 716.13(12)
- AUTHORITY TO REQUIRE RESPONSE ACTION – NR 708 AND NR 722
- MEANS TO DETERMINE CLEANUP REQUIREMENTS FOR COMPOUNDS W/O STANDARDS – NR 722.09

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NR 149 LABORATORY CERTIFICATION PROGRAM

TOM TRAINOR

CERTIFICATION PROCESS

- Request from Supervisor of covered program ✓
- Consult with Certification Standards Review Council ✓
- What analytes – **FINAL LIST PROPOSED – two remaining questions**
- Will we require special sampling procedures - ?
- Does a method exist that meets our needs – **NO**
- What method procedures will we require - ?
- Do PT samples exist ✓
- How will we charge for this ✓
- Application form updated - **NO**
- Update Lab Cert database (6 tables, 300+ rows, 2000+ fields) - **NO**
- Inform labs of WI requirements - **NO**
- Inform labs accepting applications - **NO**
- Process applications - **NO**
- Audit Lab – resolve findings - **NO**

PROPOSED PFAS CERTIFICATION LIST

30 COMPOUNDS – is this too many – default list

Acronym	Analyte (free acid)
11Cl-PF3OUdS	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid
4:2 FTS	4:2 Fluorotelomer sulfonic acid
6:2 FTS or 6:2 FTSA	6:2 Fluorotelomer sulfonic acid
8:2 FTS or 8:2 FTSA	8:2 Fluorotelomer sulfonic acid
ADONA, DONA, NaDONA	4,8-dioxo-3H-perfluorononanoic acid
F-53B or 9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid
HFPO-DA, GenX, PFPrOPrA	Hexafluoropropylene oxide dimer acid
NEtFOSAA	N-ethyl perfluorooctanesulfonamidoacetic acid
NMeFOSAA	N-methyl perfluorooctanesulfonamidoacetic acid
PFBA	Perfluorobutanoic acid
PFBS	Perfluorobutane sulfonic acid
PFDA	Perfluorodecanoic acid
PFDoA or PFDoDA	Perfluorododecanoic acid
PFDS	Perfluorodecane sulfonic acid
PFHpA	Perfluoroheptanoic acid

Acronym	Analyte (free acid)
PFHpS	Perfluoroheptane sulfonic acid
PFHxA	Perfluorohexanoic acid
PFHxDA	Perfluorohexadecanoic acid
PFHxS	Perfluorohexane sulfonic acid
PFNA	Perfluorononanoic acid
PFNS	Perfluorononane sulfonic acid
PFOA	Perfluorooctanoic acid
PFODA, PFOcDA	Perfluorooctadecanoic acid
PFOS	Perfluorooctane sulfonic acid
PFOSA or FOSA	Perfluorooctanesulfonamide
PFPeA	Perfluoropentanoic acid
PFPeS	Perfluoropentane sulfonic acid
PFTA, PFTreA, PFTeDA	Perfluorotetradecanoic acid
PFTTrDA or PFTTriA	Perfluorotridecanoic acid
PFUnA, PFUnDA, PFUDA	Perfluoroundecanoic acid

ANY REASON TO ADD THESE 3 ?

Acronym	Analyte (free acid)
PFDoS	Perfluorododecane sulfonic acid
N-MeFOSE	N-Methylperfluorooctanesulfonamidoethanol
N-EtFOSE	N-Ethylperfluorooctanesulfonamidoethanol

WILL REQUIRE REPORTING OF LINEAR AND BRANCHED ISOMERS WHERE BRANCHED ISOMERS ARE COMMERCIALY AVAILABLE

COMPOUND CHALLENGES

- Standard availability (including branched)
- Isotope standard availability
- Cost of standards increase cost of analysis
- More compounds requested higher cost of analysis
- One method procedure may not work for all – SPE media
(do we want to pay double the cost just to get more compounds)

CHOOSE COMPOUNDS BASED ON SITE SOURCE KNOWLEDGE

LABORATORY CERTIFICATION CAN ALWAYS ADD COMPOUNDS TO OUR
SUITE OF OFFERINGS LATER



Michigan DEQ has already done a lot of the sampling heavy lifting ...

Technical Guidance Documents

[Fish Tissue PFAS Sampling Guidance](#) (1/2019)

[General PFAS Sampling Guidance](#) (Revised 10/16/2018)

[Groundwater PFAS Sampling Guidance](#) (10/2018)

[Residential Well PFAS Sampling Guidance](#) (Revised 10/11/2018)

[Soil PFAS Sampling Guidance](#) (11/28/2018)

[Surface Water PFAS Sampling Guidance](#) (11/28/2018)

[Wastewater PFAS Sampling Guidance](#) (Revised 10/11/2018)

[PFAS Sampling Quick Reference Field Guide](#) (Revised 10/17/2018)

What PFAS compound name do you want labs to report ?

a. **Acronym** (sometimes inconsistent)

(PFUnA, PFUnDA, PFUDA)

b. **Free acid name**

(Per fluoro undecanoic acid # 2058-94-8)

c. **Anion name (Salt)**

(Per fluoro undecanoate # 196859-54-8)

d. **Free acid (Anion) name (Salt)**

Per fluor undecanoic acid (Per fluoro undecanoate)

COMPOUND NAMES PART II

- METHODS, IN GENERAL, REFER TO THE ACID FORM (EXCEPT FOR ASTM).
- LABORATORIES MEASURE THE ANION FORM.
- DW PROFICIENCY TESTING SAMPLES ARE IN ACID FORM - ONE CAS #.
- WATER AND SOIL PTS ARE IN BOTH ACID AND ANION FORM (SALT) – DIFFERENT CAS #.
- IS IT OK IF THE PT FORM IS DIFFERENT FROM THE REPORTED FORM ?
- IS IT OK IF THE FORM REPORTED BY THE LABORATORY IS DIFFERENT FROM THE FORM LISTED ON THEIR CERTIFICATE ?
- HOW WILL THE DEPARTMENT DEAL WITH THE SAME ANALYTES REPORTED IN DIFFERENT FORMS ?

ANALYTICAL METHODS

- THERE IS ONE APPROVED METHOD: EPA 537.1 NOVEMBER 2018 – DW ONLY.
- THAT MEANS NO METHOD FOR ALL OF THE OTHER MATRICES
- WHICH MEANS EACH LABORATORY PERFORMS “THEIR OWN VERSION” OF A MODIFIED EPA 537.1
- **HOW DO WE ENSURE CONSISTENT QUALITY DATA IF EACH LAB HAS THEIR OWN VERSION**
- SW 8327 DRAFT – DILUTE/SHOOT - POOR
- DOD QSM 5.2 – BEST SO FAR
- ASTM D7968 AND D7979 – DILUTE/SHOOT - POOR
- ISO 21675 DRAFT – OK
- MNELAP – ANALYTICAL CHECKLIST - GOOD

WI METHOD MODIFICATIONS IN ORDER OF IMPORTANCE

- **ISOTOPE DILUTION FOR ALL ANALYTES WHERE ISOTOPES ARE AVAILABLE.**
- **SECONDARY TRANSITION ION CONFIRMATIONS WHERE AVAILABLE.**
- **ASSESS THE PRIMARY : SECONDARY ION TRANSITION RATIOS TO REMOVE FALSE POSITIVES**
- **USE SPE FOR EXTRACTION UNLESS HIGH CONCENTRATION**
- **EXTRACT ENTIRE WATER SAMPLE IN BOTTLE AND ITS RINSATE**
- **LONGER THAN 1 HOUR BASIC DIGESTION OF SOLIDS AND WASTES**
- **REQUIRE CLEANUP OF ALL SAMPLES AND BATCH QC SAMPLES**
- **CHROMATOGRAPHIC SEPARATION OF LINEAR AND BRANCHED ISOMERS**
- **S/N \geq 10 FOR QUANTITATION IONS AND S/N \geq 3 FOR CONFIRMATION IONS**
- **CENTRIFUGE TO REMOVE SOLIDS IN AQUEOUS SAMPLES**
- **VERIFY MASS CALIBRATION TO \pm 0.5 AMU OF TRUE VALUE**
- **70 – 130% RECOVERY OF ALL STANDARDS IN THE INITIAL CALIBRATION INCLUDING MRL**

WI CERTIFICATION QUESTIONS

- **HOW DO WE WANT THE METHOD CITED ON REPORTS ?**
- **DO WE REQUIRE INJECTION RECOVERY STANDARDS IN ADDITION TO ISOTOPE DILUTION ?**
- **ARE WE GOING TO SET MINIMUM REPORTING LEVELS PER COMPOUND SO THAT ONE LAB DOESN'T REPORT A DETECTION WHERE ANOTHER LAB DOESN'T DUE TO A HIGHER MRL ?**
- **WILL WE REQUIRE REPORTING BELOW THE MRL – METHODS DISCOURAGE THIS ?**
- **HOW DO WE EXPECT NON-DETECTIONS TO BE REPORTED < MRL, < LOD ?**
- **HOW MANY BLANKS DO WE WANT TO REQUIRE – EQUIP, FIELD, TRIP, METHOD ?**
- **HOW CLEAN DO BLANKS NEED TO BE (LOD, ½ MRL, RL) ?**
- **HOW DO WE DEFINE PFAS-FREE MATERIALS ?**

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NR 700 PFAS REPORTING

STEVE ALES, FIELD OPERATIONS DIRECTOR

DNR REMEDIATION AND REDEVELOPMENT PROGRAM



PFAS COMPOUNDS REPORTED

- MEDIA SAMPLED
 - GROUNDWATER, SURFACE WATER, SEDIMENT, SOIL
 - MUNICIPAL WATER, PRIVATE WELLS
 - FISH TISSUE, WILDLIFE TISSUE AND SERUM
 - COMPOUNDS REPORTED
 - VARIABILITY
- 

BRRTS TRACKING

- REPORTED PFAS DETECTIONS ON BRRTS ON THE WEB
 - USE ADVANCED SEARCH OPTION IN BRRTS
 - SELECT PFAS AS “SUBSTANCE”
 - SEARCH FOR ALL SITES WHERE PFAS HAS BEEN IDENTIFIED AT NR 700 RESPONSE ACTION SITES

GAP ANALYSIS AND PRIORITIZATION

- SEVERAL KEY RESEARCH AND REGULATORY NEEDS HAVE BEEN IDENTIFIED FOR PFAS AND OTHER EMERGING CONTAMINANTS.
- SEEKING
 - CONCURRENCE ON IDENTIFIED GAPS/NEEDS
 - IDENTIFICATION OF ADDITIONAL GAPS/NEEDS
 - RECOMMENDATIONS FOR PRIORITIZATION FOR ACTION
 - SUPPORT FROM SMALL GROUPS FOR DEVELOPING SOLUTIONS

GAP ANALYSIS

- CONCEPTUAL SITE MODEL FOR INVESTIGATION
SCOPING/REMEDIAL ACTION STRATEGY
- HOW TO DETERMINE WHEN TO SAMPLE (NR 716.07)
- WHICH PFAS COMPOUNDS ARE COMMONLY FOUND AT SPECIFIC
LAND USES? WHICH COMPOUNDS SHOULD BE SAMPLED FOR
GIVEN A SPECIFIC PFAS SOURCE AT A SITE?
- SAMPLE COLLECTION METHODS – MEDIA VARIATIONS

GAP ANALYSIS

- SAMPLE ANALYSIS METHODS
- QA/QC RECOMMENDATIONS
- CLEAN UP STANDARDS
- REMEDIAL STRATEGIES
- TRAINING/CASE STUDIES
- OTHERS?


SHARING EXPERIENCES

- A FORUM TO SHARE KNOWLEDGE AND EXPERIENCE WITH PFAS
 - WHAT TO LOOK FOR?
 - WHERE TO LOOK?
 - WHEN TO LOOK?
 - HOW TO SAMPLE, ANALYZE AND ASSESS PFAS COMPOUNDS?
 - CONCEPTUAL SITE MODELS?
 - SURPRISE FINDINGS?



SHARING EXPERIENCES

MINNESOTA'S EXPERIENCE


- ADDRESSING WATER SUPPLIES
 - CONCEPTUAL SITE MODEL FOR UNDERSTANDING CONTAMINANT MIGRATION
 - 3M SOURCE ASSESSMENT – INCLUDING MANUFACTURING SITES, LANDFILLS, OTHER
 - NON 3M SOURCES – FIRE DEPARTMENT TRAINING AREAS, LANDFILLS, OTHER MANUFACTURES
 - SOURCE IDENTIFICATION EVALUATION STRATEGY
- 

RECOMMENDATIONS FOR NEXT MEETING

- MAY 31 FROM 10-2
 - AGENDA TOPICS?
 - CONFIRMATION OF SUBGROUPS/TOPICS TO DEVELOP DISCUSSION MATERIAL FOR THE NEXT MEETING?



MEETING REVIEW

- WHAT WAS HELPFUL?
 - WHAT WAS NOT HELPFUL?
 - RECOMMENDATIONS FOR IMPROVEMENT?
- 

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THANKS FOR PARTICIPATING