

MWRA's WWTP PFAS Discharge Local Limit Approach

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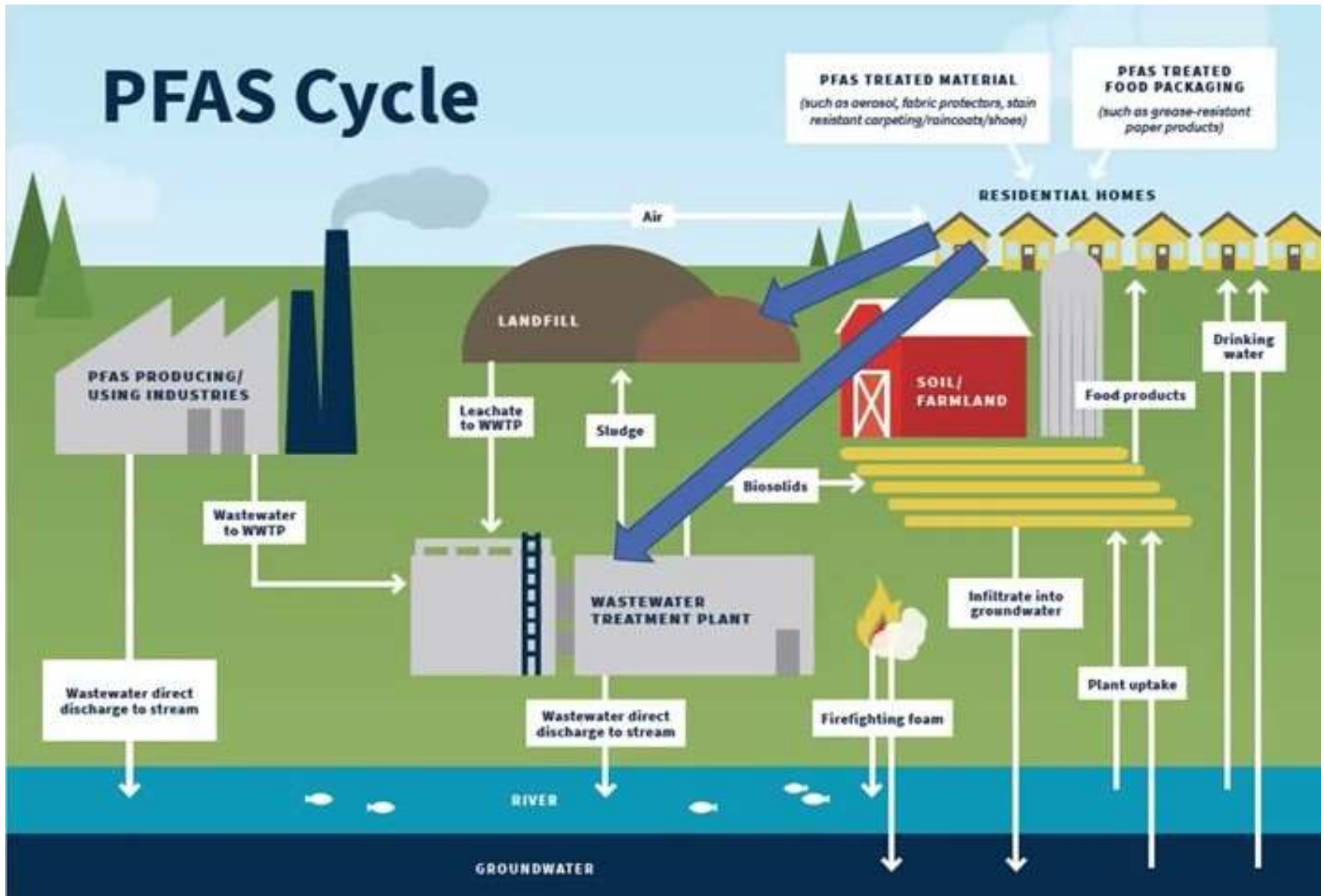
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OVERVIEW

- Background – PFAS & Industrial Pretreatment
- Challenges for Landfills & WWTPs
- MPART Work Group
- MWRA Local Limits Approach



PFAS Cycle



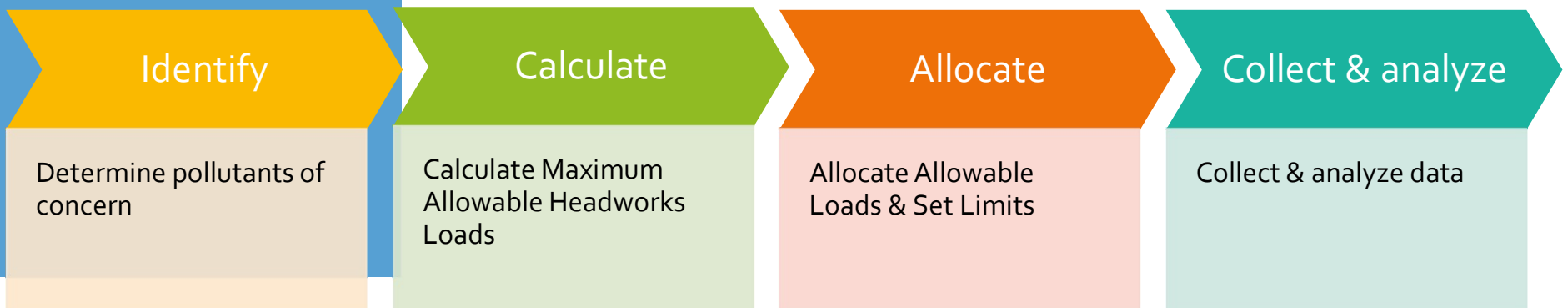
EGLE PFAS Actions

- PFOS is driver due to low state-wide criteria (11-12 ppt)
- Monitoring municipal & industrial discharges for PFAS
 - Are standards met at WWTPs?
 - Future permits may have numeric limitations
- Industrial Pretreatment Program (IPP) PFAS Initiative
 - Identify & monitor
 - Pollutant Minimization & Source Evaluation Program
 - WWTPs with IPP: local limits evaluation



Local Limits

- Avoid interference with treatment process
- Prevent pass-through to surface waters
- Permit compliance for WWTP
- Needed where “reasonable potential to exceed” exists in WWTP effluent
 - EGLE will add requirements to NPDES permit renewals with compliance schedules



Shared Challenges – Landfills & WWTPs

- Both are “Receivers” of PFAS from society/industry, not users/generators
- Identifying and controlling sources
- Passing PFOS back and forth
 - Biosolids
 - Spent GAC
 - Leachate
- Not “one size fits all”
- Treatment challenges



Leachate PFAS Treatment Challenges

- Absent pretreatment, difficult to reduce PFOS in leachate, given disposal of waste with PFAS in many consumer products, industrial waste
- No pretreatment currently needed at most Michigan landfills
- Most technology research on GW or drinking water
- Leachate is a very complex matrix compared to groundwater or drinking water or WWTP effluent
 - Many competing contaminants
 - Many fouling contaminants
- Residuals disposal
- Operational complexity (matrix driven)



Leachate Pretreatment Before PFAS Treatment

- Most PFAS removal technologies require significant pretreatment due to competing and fouling contaminants in leachate and their elevated concentrations relative to POTW effluent, GW or drinking water
 - Biological fouling
 - Organic fouling
 - Inorganic fouling/scale
 - Competing contaminants
- Pretreatment may be needed to support WWTP achieving effluent limits
 - Biological processes
 - Oxidation
 - Coagulation/flocculation/precipitation
 - Solids separation/filtration
 - Pretreatment residuals management (contain PFAS)

Brown and Caldwell



MPART
Landfill/WWTP
Work Group
Purpose:
Facilitate &
Collaborate

- Municipal Wastewater Treatment Operations and Landfills
 - Receive wastewater or waste containing PFAS that they did not generate
 - Depend on one another for treatment (landfill leachate) or disposal (WWTP sludge) of PFAS containing waste or waste waters
 - Have complex roles in managing PFAS in the environment
- MWEA and MWRA working group purpose
 - Facilitate constructive communication on issues surrounding PFAS
 - Prioritize responses based on risk and individual circumstances
 - Allow time for thoughtful consideration and planning
 - Collaborate on innovative solutions



MWRA Goals & Objectives

- Appropriately manage PFOS in leachate through BMPs/ pollutant minimization
 - Support WWTPs to meet NPDES limits
 - Cost-effective solutions
 - Risk-based
- Suggested framework for local limits
 - Where necessary
 - Site-specific
 - “Need Based” allocations



Where local limits are necessary

- Needed where WWTP has “reasonable potential to exceed” for PFOS in its discharge based on past data
- Local Limit Development
 - EPA Guidance (2004)
 - Load or Concentration based
 - Equal Concentration Option
 - Basis of Industrial User Need
 - Treatability and Existing Loading
- Management Controls
 - Include PFOS load minimization BMPs for landfills



Basis of Industrial User (IU) Need

1. Select individual (or groups of) IUs with treatability or other challenges
2. Allocate IUs selected in step 1 their baseline loading
3. Allocate remaining Maximum Allowable Industrial Loading (MAIL) to other IUs
4. The Control Authority decides allocation that's best for community



Example scenario

Source	Flow (MGD)	Current PFOS (ng/L)	Current PFOS Load (10^{-6} lb/d)	Uniform concentration limit (ng/L)	Basis of need limit (ng/L)
Background	23.92	4	798	4	4
Leachate A	0.05	200	85	106	200
Leachate B	0.03	700	175	106	700
Industry 1	0.30	150	375	106	99
Industry 2	0.20	20	33	106	20
Industry 3	0.50	300	1254	106	99



OPPORTUNITY

- Pretreat PFOS where most Cost Effective
 - Maximize benefit to human health & environment
- Place Treatment Burden on PFOS Generators
 - Landfills, like Treatment Plants, don't generate PFOS; often minor contributors
- Keeps Waste Disposal Rates Down



AND CHALLENGES

- More involved calculation
- Administration
 - Varied limits
 - Sewer Use Ordinance
- Increased Control Authority effort
- Governing Board must approve




Summary

- Shared challenges for WWTPs and landfills
- Not “one size fits all”
- Provide flexibility for IUs that need it
- Landfills should work collaboratively with their local WWTP



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Questions?