CHESAPEAKE BAY AND WATER RESOURCES POLICY COMMITTEE (CBPC)
ANNUAL BAY & WATER QUALITY FORUM AGENDA

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Friday, September 16, 2022

New PFOA and PFOS Health Advisory Levels

- On June 15, 2022, EPA issued interim Health Advisory Levels for PFOA (Perfluorooctanoic Acid) and and PFOS (Perfluorooctanesulfonic acid) to help inform the public of new scientific information on these chemicals' health effects while they continue to develop regulations
- EPA also issued final Drinking Water Health Advisories for GenX Chemicals (hexafluoropropylene oxide) and Perflurobutane sulfuric acid and its related compound potassium perflurobutane sulfonate (PFBS)
- EPA uses the Unregulated Contaminant Monitoring Rule (UCMR) to assess the occurrence of contaminants of concern for subsequent regulation development
- EPA plans to propose new drinking water regulations on PFAS in Fall 2022

	EPA's 2022 HA Level	UCRM 5 Method Reporting Limit
Perfluorooctanesulfonic acid (PFOS)	0.02 ppt (interim)	4 ppt
Perfluorooctanoic acid (PFOA)	0.004 ppt (interim)	4 ppt
Perfluorobutanesulfonic acid (PFBS)	2,000 ppt (final)	4 ppt
Hexafluoropropylene Oxide Dimer Acid and its Ammonium Salt (GenX)	10 ppt (final)	4 ppt

National and International Wastewater PFAS Data

- EPA National Survey of 50 WWTP's effluent show the presence of PFAS
- PFAS is found all over the world, even in the snow on Mount Everest

Country	# WWTP	influent ng/L	effluent ng/L	reference
USA	50		10-30 (median)	EPA survey
Australia	19	76 (median)	140 (median)	(Coggan et al., 2019b)
China	18	19-232	15-234	(Pan et al., 2016)
USA	8		80-2900	(Houtz et al., 2015)
USA	4		62-418	(Furl et al., 2011)
China	2		320-420	(Chen et al., 2016)
Thailand	2	847	662	(Kunacheva et al., 2011)
Jordan	1	10-15	14-24	(Shigei et al., 2020)
Canada	1		130 ± 20	(Vierke et al., 2013)

ppt and ng/l units – are numerically interchangeable (Water vs Wastewater)

PFAS in Wastewater Paradox

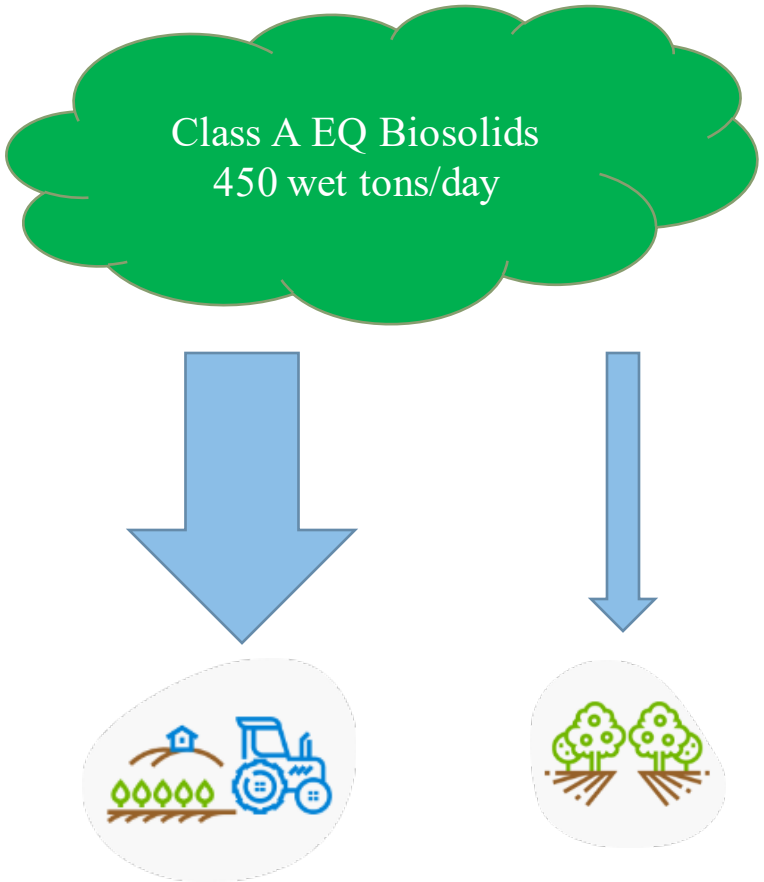
- As PFAS production and importation was halted, other compounds were substituted that ***added alternate molecules to the PFAS chemical chain*** making them safer

- Through wastewater treatment and bacterial action, the alternate molecules get removed leaving behind PFAS

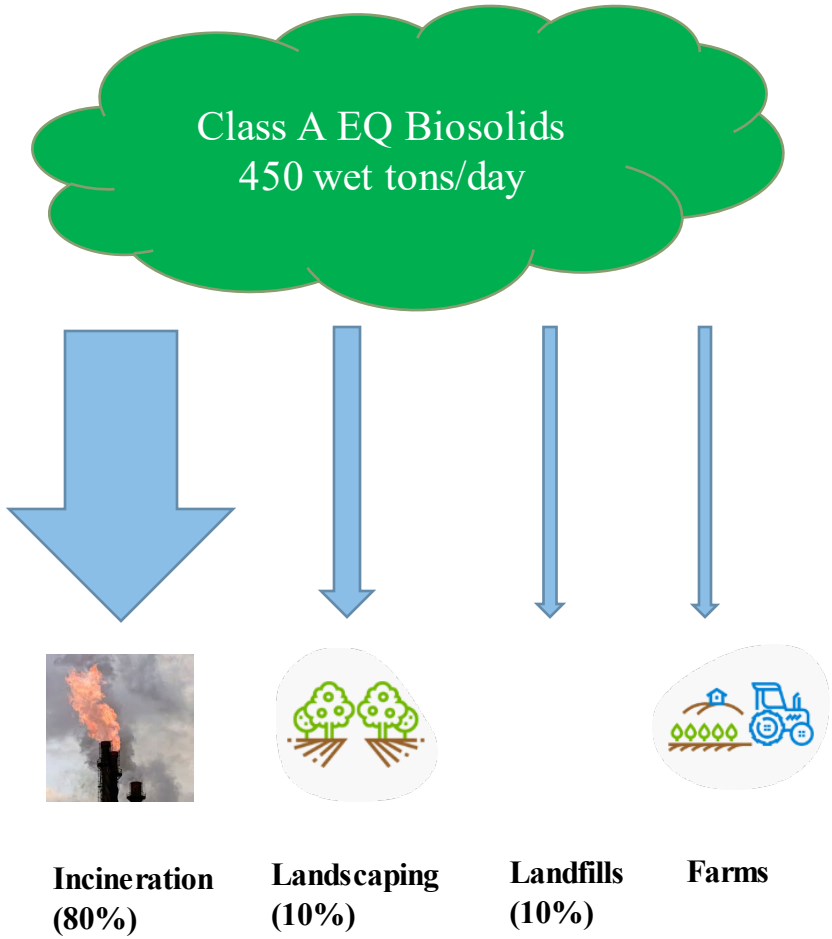
- This transformation of the precursors to PFAS explains why the effluent is often higher than influent

Wastewater and Biosolids

Current Management

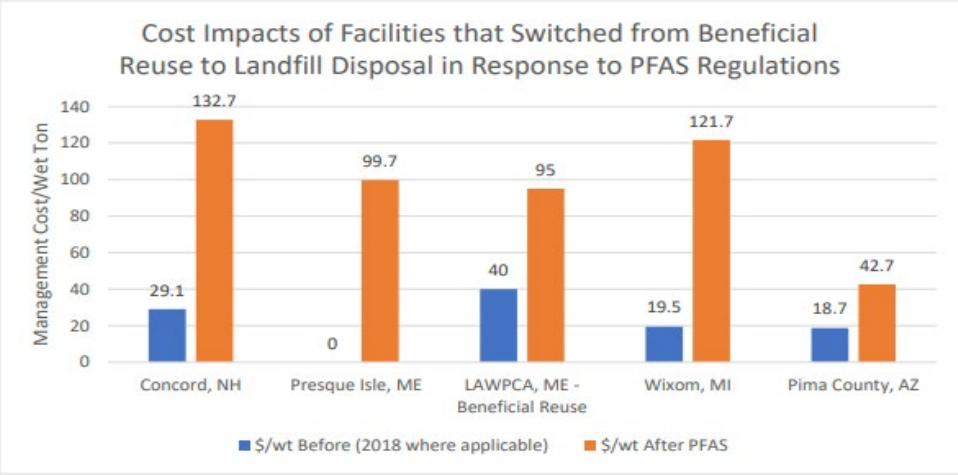


Alternative Management Options Mitigate Potential PFAS Risks



Risks

- Operational
- Financial
- Compliance
- Reputational



Class A Biosolids Program Cost Savings	
Average Biosolids Production, wet tons/year	164,250
Average Land Applied, wet tons/year	114,250
WSSC managed	68,985
Blue Drop managed	45,265
Average Marketed (Blue Drop), wet tons/year	50,000
Cost of Current Approach	
Land Application Cost, $/year	$6,176,615
Annual Revenue, $/year	$300,000
Cost/wt, $	**$36**
Cost of Landfill Option	
average tip fee for landfills in region ($/ton)	$61
average haul cost to landfill ($/ton)	$40
Annual Cost, $/year	$16,589,250
Cost/wt, $	**$101**
Cost of Thermal Oxidation	
Average tip fee for Incineration Cost ($/ton)	$100
average haul cost to incenerator ($/ton)	$40
Annual Cost, $/year	$22,995,000
Cost/wt, $	**$140**

Comprehensive Sampling Program for Wastewater

- **Enhanced sampling campaign (69 samples in total):**
  - Sample industrial dischargers, hauled waste and leachate
  - Sample across different process units of Blue Plains advanced wastewater treatment
  - Sample plant effluent discharge and Bloom biosolids
  - Sampling of processed Bloom products and test leachability potential of these products

Pretreatment program	Fate through Blue Plains	Bloom
9 significant industrial users	Influent (3 trunk sewers, lower/upper oxon run	cured bloom product
3 hauling sources	Sampling over process units	during curing process
2 landfill leachate sources	Effluent and cake	Before and after composting
	Over storm water treatment	
2 time points	1 time point for process units	3 time points for cured bloom
	1 storm event	1 curing experiment
	3 time points for effluent/cake	1 composting experiment
		2 leachability assessments
28 samples	22 samples	19 samples

Project team:

- DC Water: CWQ&T department (Haydee/Elaine) + Resource recovery department (Chris/James)
- External collaborators: Purdue University (Linda Lee) – *Expert and lead in method development for biosolids and wastewater in USA*