PFAS and Biosolids: A Maryland State Perspective

MWCOG PFAS and Biosolids Workshop

October 9, 2025

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Maryland Department of the Environment

Policy Action and Success Summary

Federal Action

- EPA Draft Biosolids Risk Assessment (January 2025)
- PFAS Destruction and Disposal Guidance (April 2024)
- CERCLA Hazardous Substance Designation (April 2024)
- NPDES PFAS Pretreatment Guidance (December 2022)

State Action

- PFAS Action Plan (December 2023)
- Wastewater and Biosolids Monitoring (2023, January 2025-present)
- Biosolids Land Application Guidance (August 2024)
- Source Trackdown and Industrial source reduction (Ongoing)
- Deployment of federal funding for PFAS in drinking water and wastewater (2022-present)

EPA Draft Biosolids Risk Assessment

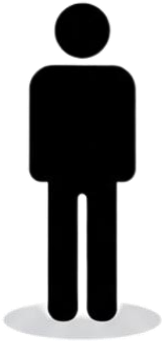
- *Draft* published January 2025; public comments closed August 2025
- Standard procedure for potential contaminants in sewage sludge
- Modeled several theoretical scenarios with different application rates, and exposure and uptake pathways (milk, eggs, meat, well contamination, etc.)
- Also modeled risks associated with landfilling, incineration
- Analyzes several factors:
  - **Presence:** how much of a pollutant is present in the environment?
  - **Exposure:** how much contact a human or wildlife has with the pollutant?
  - **Toxicity:** the health effects the pollutant causes in humans or wildlife?

Contextualizing the Risk

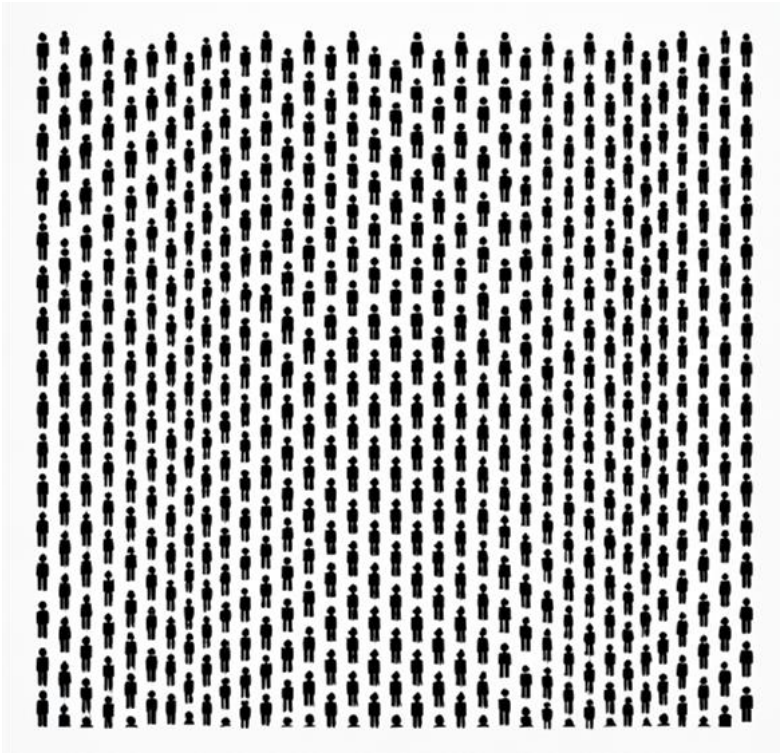
EPA Modeled Scenario:

- How much PFAS: **1 part per billion (ppb)**
- How often is it applied: **1 time per year**
- How much is applied: **10 dry metric tons per hectare**
- How many years is it applied: **40 years**
- How many years of a person's exposure: **10 years**
- Assume only one exposure pathway: **milk, average consumption**
- Isolate to one health effect: **cancer risk**

Contextualizing the Risk



1 case



1000 cases

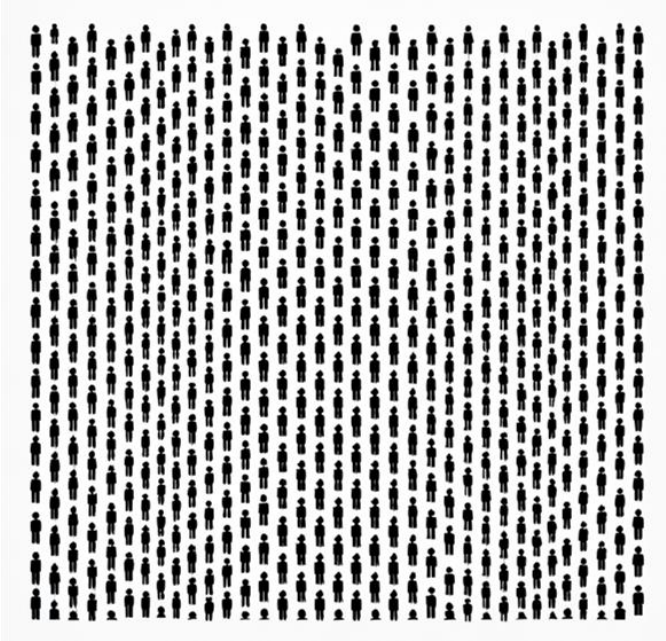
Additional lifetime cases of cancer per million people

Contextualizing the Risk

Thought exercise scenario:

- How often is it applied: **1 time per year**
- How much is applied: **3 dry metric tons per hectare (down from 10)**
- How many years is it applied: **10 years (down from 40)**
- How many years of a person's exposure: **3 years (down from 10)**
- PFAS Concentration: **1 PPB**

Contextualizing the Risk



1000 cases

22.5 cases

Additional lifetime cases of cancer per million people

MD PFAS Biosolids Samples (2025)

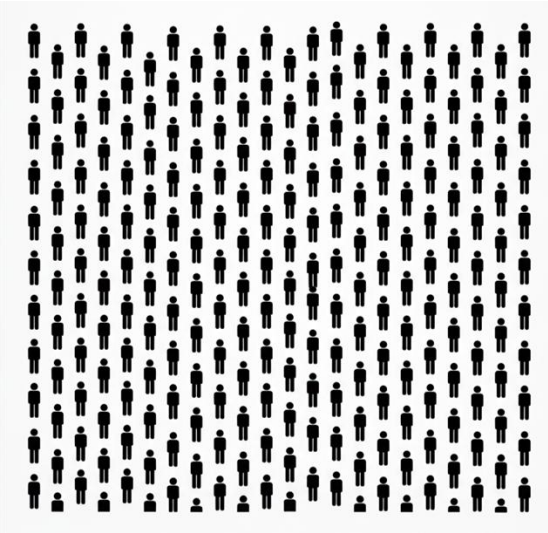
				January		February		March		April		May		June		July			August	
Facility Name	Frequency Of Tests Per Year	Analyte	2023 data	Sample 1	Sample 2 (if app)	Sample 1	Sample (if app)	Sample 1	Sample 2 (if app)	Sample 1	Sample 2 (if app)	Sample 1	Sample 2 (if app)	Sample	Sample (if app)	Sample 1	Sample 2 (if app)	Sample	Sample	Sample (if app)
Aberdeen (City) Advanced WWTP/Compost Facility	1	PFOS				10.2				7.5										
		PFOA				9.7				8.3										
Annapolis WWTP	6	PFOS	7.4	3.5				4.5				3.2								
		PFOA	2.4	0.25				0				0.56								
Back River WWTP	12	PFOS	30.2	21.6		31.8		21.4				30.8		18.4			1.9			22.3
		PFOA	1.8	2.2		2.1		2.2				2.1		2			2			2.1
Ballenger Creek WWTP	6	PFOS	11.5			7.2		8.2		5.5		6		4.7		7.4			7.1	
		PFOA	3			3.9		2.1		1.6		4.8		4.7		5.8			2.7	
Blue Plains WWTP-Lime Stabiliztion	12	PFOS	16	21	23	17	14	14	18	12	12	13	12	11		14			17	
		PFOA	4	3.6	3.1	3	2.4	1.8	2.1	1.9	2.7	1.5	1.5	1.4		2.1			2.1	
Broadneck WWTP	6	PFOS	11.5			7.2		5.6				6.3								
		PFOA	4.8			2		1.3				1.5								
Broadwater WWTP	4	PFOS				2.3						4.9								
		PFOA				0.23						0								
Boonsboro WWTP	1	PFOS												4.84					10.4	
		PFOA												7.67					7.42	
City of Bowie WWTP	4	PFOS	16					3.9				6.8							13	
		PFOA	3.4					0				0							1.4	
Cox Creek WWTP	6	PFOS	6.9	0				3.7				5.7								
		PFOA	ND	0				0				0.95								
Cumberland WWTP (pellet) j. DiFonzo Water Reclamation	4	PFOS		5.8						6.5						5.6				
		PFOA		0						0.33						0.4				
Damascas WWTP	1	PFOS	17.6	9.2						13		23				14				
		PFOA	9.1	7.5						4.4		23				3.1				
Deep Creek Lake WWTP (Currently landfilled)	1	PFOS	119																	
		PFOA	37																	
Dorsey Run WWTP	1	PFOS	2.1			3				0										
		PFOA	ND			0.81				0										
Easton WWTP	4	PFOS				3.7						13				4.1				
		PFOA				2						6				1.3				
Elkton WWTP -Composting	1	PFOS								7.8										
		PFOA								2.5										
Frederick City WWTP	4	PFOS	18.6	8.37				8.89				8.8				11.4				
		PFOA	1.1	0.867				0.545				0.636				0.83				
Freedom District WWTP	4	PFOS	8.5	0.57						6.9										
		PFOA	6.5	1.6						0										
Grantsville WWTP	1	PFOS						0												
		PFOA						9.8												
Hagerstown Pelletizer - City Hagerstown WWTP	6	PFOS		8.4				7.4				15				12				
		PFOA		1.4				0.83				1.8				1.4				
Havre de Grace POTW/Class B	1	PFOS	44.2					27.7				27.7				33.1				
		PFOA	9.3					5.1				4.9				6.1				

MD PFAS Biosolids Samples (2025)

Leonardtown WWTP	1	PFOS	11.7					11.5															
		PFOA	5					5.73															
Little Patuxent WWTP/Class A Heat Drying	6	PFOS	8.6			1.8	23	8.5	6.9	9	8.5	10		6.3	8	7.2	8.7		12				
		PFOA	2.4			0.15	3.6	0.97	0.86	0.82	0.77	0		0.85	0.82	1.1	1.3		0.78				
Marlay-Taylor WRF- St. Mary's	4	PFOS	7.9	34								9.8				11							
		PFOA	1	14								0				0							
Maryland City WWTP	4	PFOS	4			1.4						2.6											
		PFOA	2.1			0.24						0.76											
Maryland Corretional Institute WWTP	1	PFOS	9.8	1.6						2.3													
		PFOA	6.4	1.6						1.3													
Mattwoman WWTP	6	PFOS	5.2	2.01				5.1				5.1				6.2							
		PFOA	ND	0.263				1.4				0.45				0.66							
Milwaukee/Milorganite WWTP Pelletizer	12	PFOS	0.2	2.5		3.5		1.6		2.5		1.7		5.5		19			6.9				
		PFOA	0.045	0.19		0.18		0.18		0.34		0.25		0.39		0.59			0.42				
Mount Airy WWTP	4	PFOS	10.5											2.22					2.13				
		PFOA	3.3											1					0				
Mt. St. Mary's University WWTP	1	PFOS	111									0.14											
		PFOA	36									0.028											
Ocean City WWTP	6	PFOS	3.7			5.9				5.6				1.5					1.6				
		PFOA	ND			0.79				0.98				0.3					0				
Parkway WWTP	6	PFOS	6.2			4.6		5.4				6.6				0							
		PFOA	2.7			1.4		0				6.6				1							
Patuxent WWTP	6	PFOS	4.2	3.1				3.8				5.4											
		PFOA	2.8	1				0				1.9											
Philadelphia Renewable Bio-Fuels, LLC (Pelletizer)	12	PFOS	12	9.5		8.5		9.86		9.6		13.2		11.9		10.5			11				
		PFOA	1.4	1.3		0.74		0.836		1.1		1.15		1.25		0.95			0.94				
Piscataway WWTP-Bioenergy	6	PFOS	28.8	36		36		40	39	42		29	28	31		27	25						
		PFOA	5.3	1.7		2.8		2.4	2.4	2.6		6.2	9.8	1.7		0	2.7						
Fort George G. Meade _Fort Meade WWTP	4	PFOS		2.1						17.1													
		PFOA		13.3						2													
QA 1-Kent Island WWTP _ Kent Narrows/Stevensville/Grasonville WWTP	4	PFOS	23.9			2.4						15.9							27				
		PFOA	7.4			7						4.26							6.1				
Rock Hall WWTP	1	PFOS	55.7																				
		PFOA	10.8																				
Seneca Creek WWTP	6	PFOS	16.6			8.3		13	7.1			11				21							
		PFOA	5.7			2.5		2.9	1.8			6.6				0							
Sod Run WWTP	6	PFOS	10.5	7.1				6.4				2.3				2.1							
		PFOA	2.1	2.3				1.2				2.4				2.2							
Synagro-Baltimore, LLC - Pelletech at Back River went offline	6	PFOS								0.311						10							
		PFOA								0						0.81							
Taneytown WWTP	1	PFOS	40.5					13															
		PFOA	8.5					5.2															
Valley Forge WWTP	1	PFOS		4.7				6.2				5.2				2.4							
		PFOA		2.3				2.6				2.4				2.5							
Watershed Resource Center-Baltimore	6	PFOS		1.7	3.1			0.36	4.6			2.1	3.2			1.6	1.9	3.6					
		PFOA		2	2.3			0.4	5.3			1.5	5.2			1.2	1.8	2.2					
Western Branch WWTP	6	PFOS	17.9	7.4				8.7				11	17			13	16						
		PFOA	7.9	0.71				1.6				6	6.7			1.7	6.8						
Wicomico Shores WWTP	1	PFOS		15																			
		PFOA		6																			

MD PFAS Biosolids Sampling (2025)

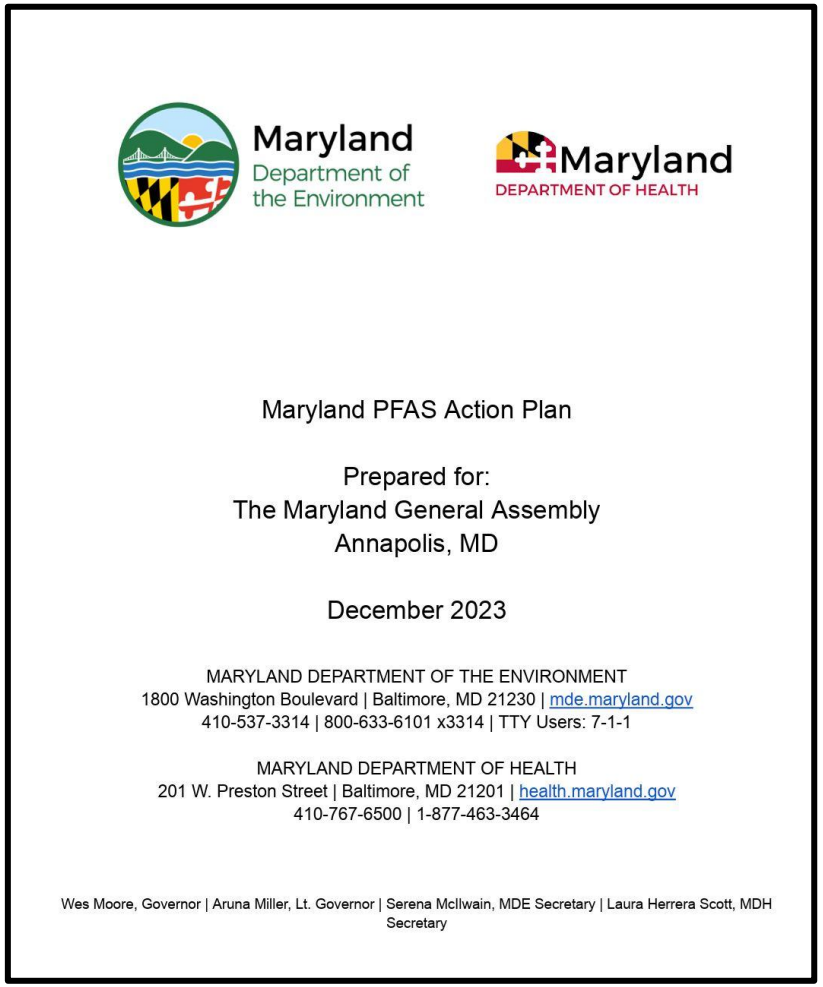
	Average PPB	25 Percentile (2025)	50 Percentile (2025)	75 Percentile (2025)	90 percentile (2025)	Max	Sample count
PFOS	9.5	3.2	7.1	12.6	22.6	42	210
PFOA	3.0	0.8	1.6	2.6	6.6	29	248
Total	**12.5**	**4.0**	**8.7**	**15.2**	**29.2**	**71**	**458**



280 cases

MD State PFAS Laws

- 2022: George Walter Taylor Act
  - State Action Plan
  - Ban on PFAS Fire Fighting Foam, certain products (carpets, food packaging)
- 2024: Protecting State Waters From PFAS Pollution Act (biosolids monitoring, significant industrial user action levels and mitigation planning)
- 2025: Proposed PFAS limits in biosolids (withdrawn), pesticides (withdrawn)



Maryland Department of the Environment

Maryland DEPARTMENT OF HEALTH

Maryland PFAS Action Plan

Prepared for:
The Maryland General Assembly
Annapolis, MD

December 2023

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Wes Moore, Governor | Aruna Miller, Lt. Governor | Serena McIlwain, MDE Secretary | Laura Herrera Scott, MDH Secretary

MD Actions to Reduce PFAS Loading to WWTPs

Industrial Discharge to WWTPs	• Mandatory state monitoring and investigation • PFAS action levels for significant industrial users • Mitigation plan development through pretreatment control program
Infiltration (contaminated sites, air emissions, industrial discharge and stormwater)	• Source trackdown investigations • Industrial Discharge General Permit conditions (stormwater pollution prevention plans) • Statewide surface-water PFAS survey • Air permit conditions (early stage) • Fire fighting foam takeback program
Landfill Leachate	• Monitoring requirements in refuse disposal permits at 91 facilities • Data just starting to come in late 2025 • Exploring assessment and cleanup standards • Possible federal limits still years away
Consumer Products	• PFAS in carpets, food packaging (early implementation) • PFAS pesticide bill (2025) - proposed, withdrawn • PFAS product phase-out bill (anticipated 2026)

Biosolids Actions

- Monitoring of facilities that have their biosolids land applied (~35 Class B facilities)
- Out-of-state facilities required to submit PFAS data
- MDE Biosolids Land Application Guidance (August 2024)
    - 3 Tiers of concentration levels and adjusted application rates (Michigan approach)
- Monitoring requirement for all facilities generating biosolids for land application
- Deploying funding to pilot treatment and destruction

Key Takeaways

- MD's approach and direction is NOT an attempt to ban land application
- MDE and utilities are essential partners
- Collaborative risk mitigation planning will be key
- Significant work already underway to identify sources and reduce PFAS loading
- A backstop limit for high levels in biosolids is important…
- …but the long-term solution must be stronger upstream source control.
- Funding and flexibility to pilot innovative solutions is essential
- State leadership is driving progress…
- …but there is no substitute for federal leadership.
- PFOA and PFOS are where we are now, but they are not the end of the story.

Thank you

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