

NHDES Residuals Management Section: PFAS Investigation



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Outline

- ▶ **NHDES Residuals Management Section (RMS)**
- ▶ **Sludge Quality Certification Program (SQC)**
- ▶ **2017 – 2021 NH Sludge Quality Certificate (SQC) PFAS Investigation**
- ▶ **Northeast Biosolids Improvement Program**
- ▶ **USGS Soil Leaching Study**

Residuals Management Section

NHDES

- ▶ Water Division
 - ▶ Wastewater Engineering Bureau
 - ▶ Residuals Management Section

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*Sludge Quality
Certification
Permitting*

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**Permitting &
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**Sludge & Septage
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Jim Talvy
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*Sludge & Septage
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Sludge Quality Certification

Beneficial Use is the utilization of the nutrients and organic matter from the biosolids for the agronomic need as long as it does not pose a significant threat to human health or environment. Beneficial use applies to agricultural, forest, and land reclamation management practices

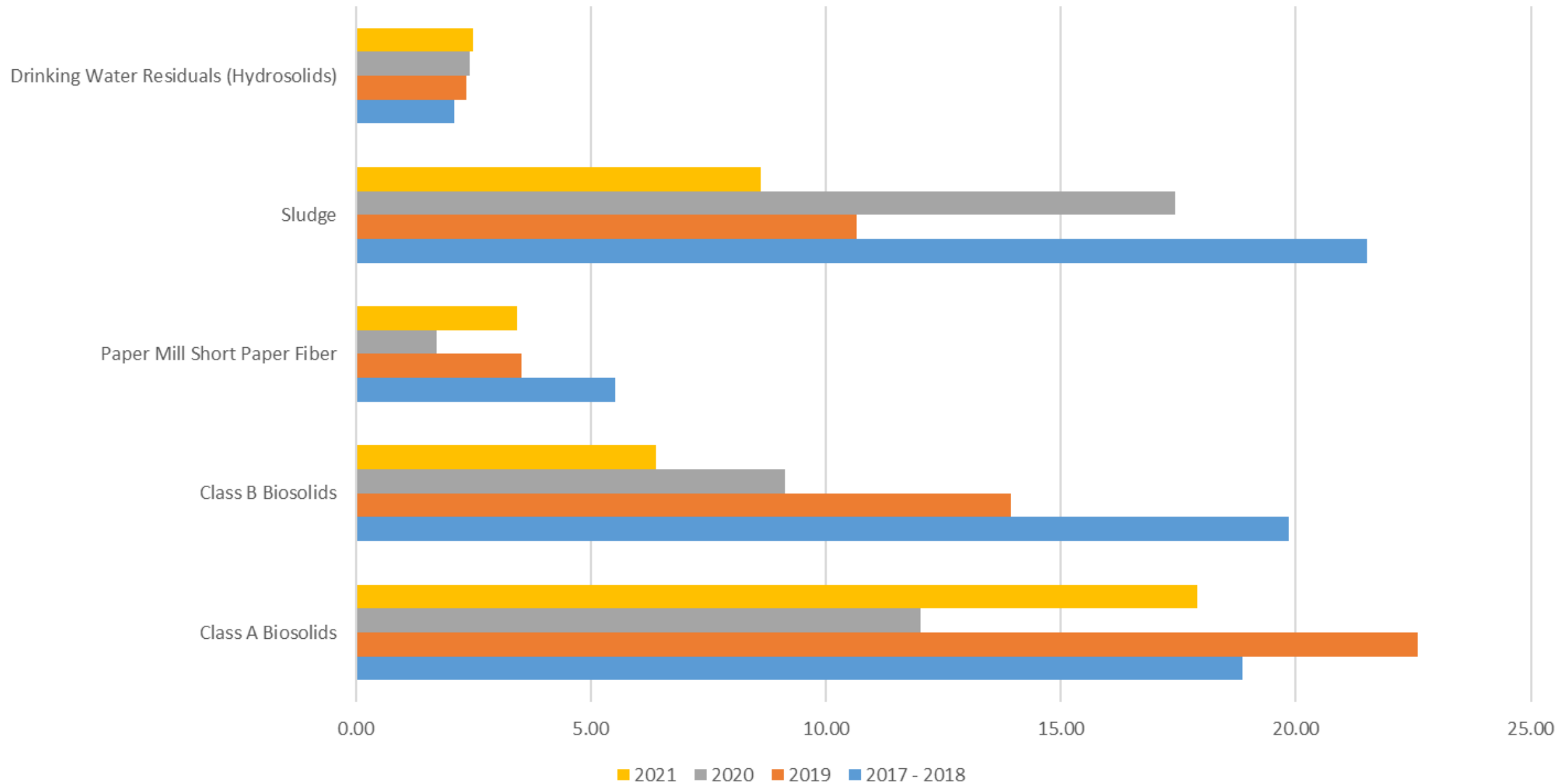
- Bulk biosolids must obtain an SQC to be distributed in NH
- Annual soil test determine crops nutrient demand supplied from biosolids (UNH BMP)
- Class B land application must obtain a site permit through RMS
- Concentration limits and screening standards set for VOC, SVOC, PCB's, Dioxin, & Metals



2018 NH Sludge, Septage, and Leachate

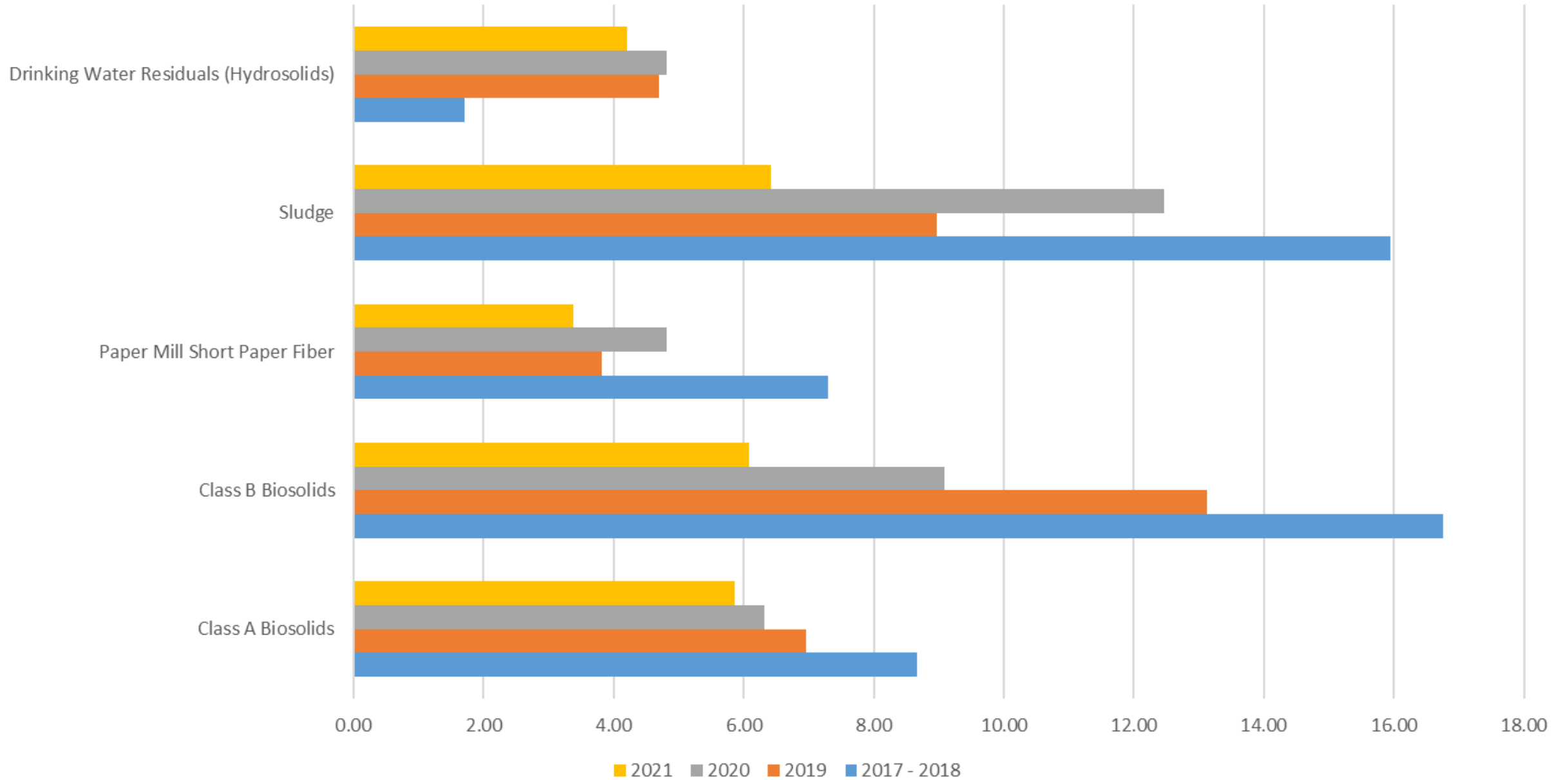
- NH Biosolids Recycled to Land Application : **39,902 wet tons**
- NH Sludge that was disposed at a landfill : **50,176 wet tons**
- NH Sludge that was incinerated : **17,450 wet tons**
 - *Sludge managed to lagoon not accounted for
 - **NH WWTF, no paper mill sludge accounted for
- Over **100,000,000 gallons** of septage was managed in NH
- 6 Operating lined landfills in NH : **99,331,519 gallons** of leachate
 - 79,036,610 gallons** managed at WWTFs within state
 - 19,115,003 gallons** managed at WWTFs out of state

NH SQC 2017 - 2021 PFAS Residuals Investigation (ng/g) (sum of PFOA, PFOS, PFHxS, & PFNA)

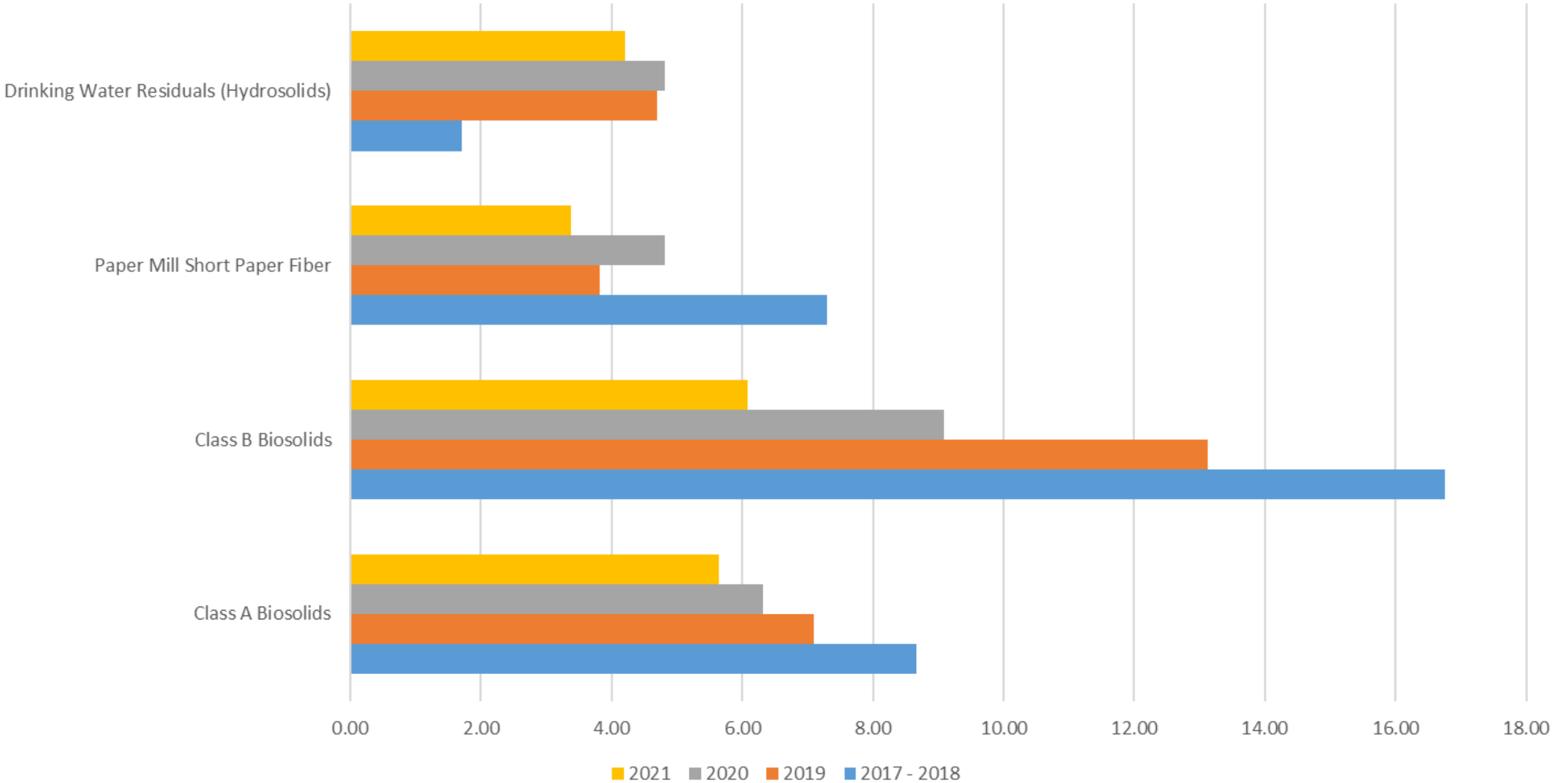


Samples analyzed for PFAS were analyzed using isotope dilution. Some compounds from sample reports' QA/QC report were flagged for being outside of percent recovery acceptable criteria.

NH SQC 2017 - 2021 PFOS Residuals Investigation (ng/g)

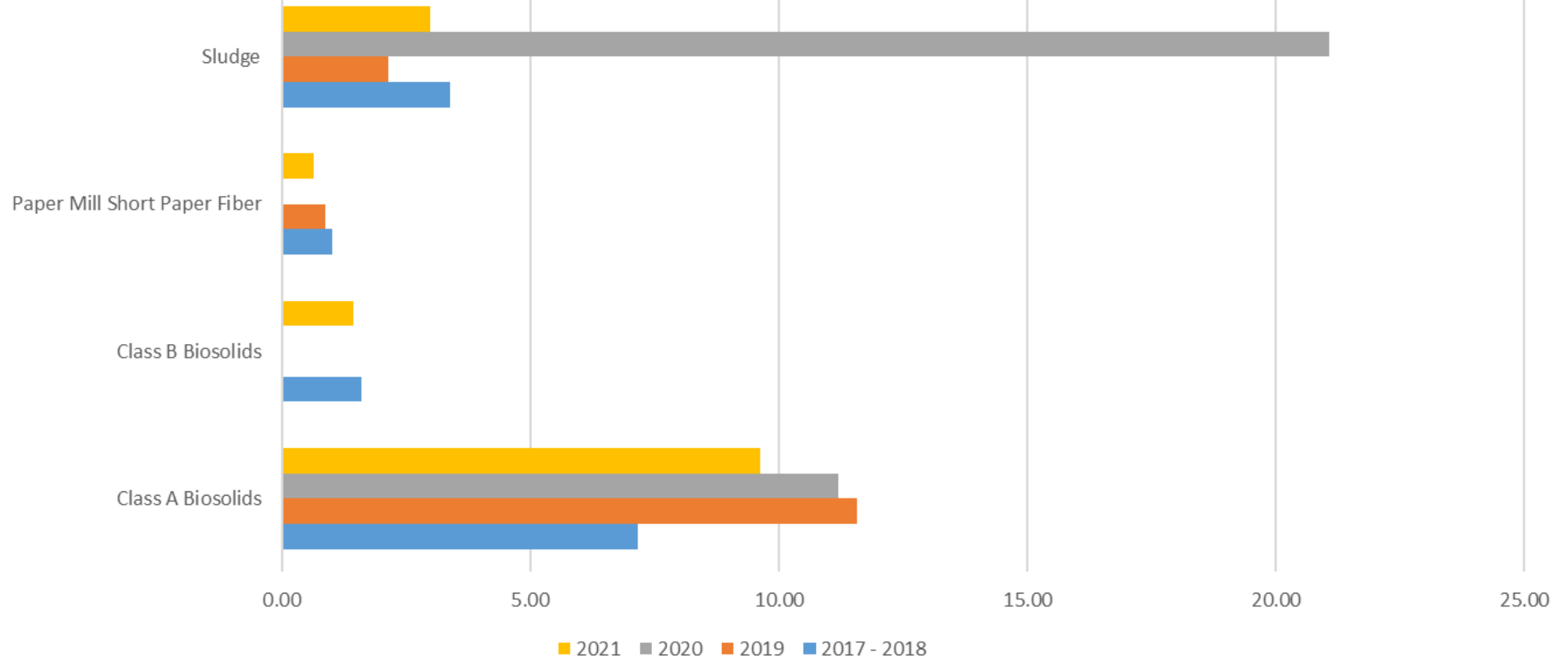


NH SQC 2017 - 2021 PFOS Residuals Investigation (ng/g)

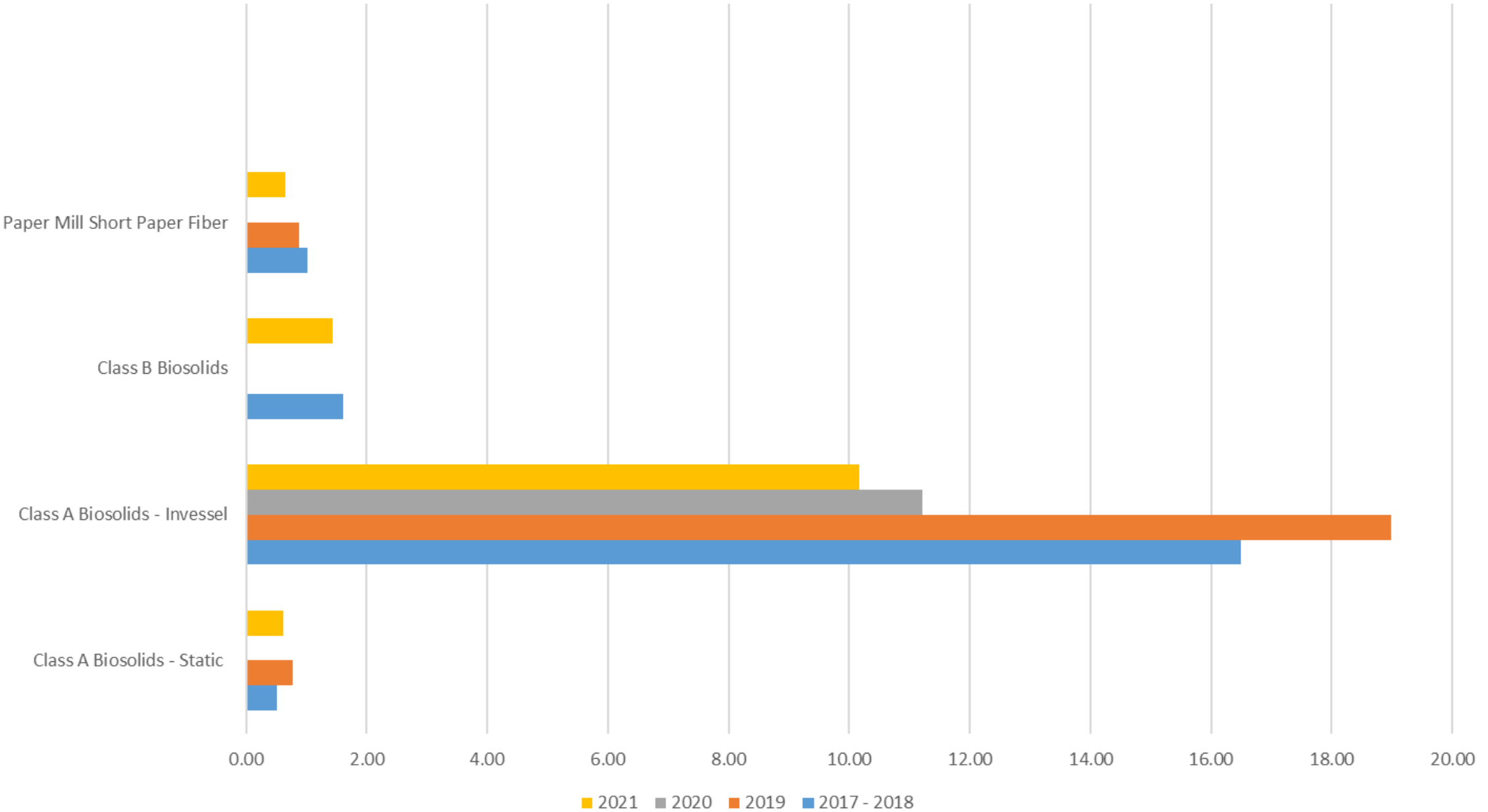


NH SQC 2017 - 2021 PFOA Residuals Investigation (ng/g)

Drinking Water Residuals (Hydrosolids)



NH SQC 2017 - 2021 PFOA Residuals Investigation (ng/g)



Samples analyzed for PFAS were analyzed using isotope dilution. Some compounds from sample reports' QA/QC report were flagged for being outside of percent recovery acceptable criteria.

Other Notable PFAS Sampling Events

- ▶ **Rural NH community Septage Lagoon Solids sampled in 2020**
 - ▶ Total PFAS (24 compounds) – **222.8 ng / g**
 - ▶ Total of NH DW Regulated Compounds (PFOS, PFOA, PFNA, PFHxS) – **86.6 ng / g**

- ▶ **Compostable Toilet Compost sampled in 2021**
 - ▶ Total PFAS (24 compounds) – **13.3 ng / g**
 - ▶ Total of NH DW Regulated Compounds (PFOS, PFOA, PFNA, PFHxS) – **9.6 ng / g**

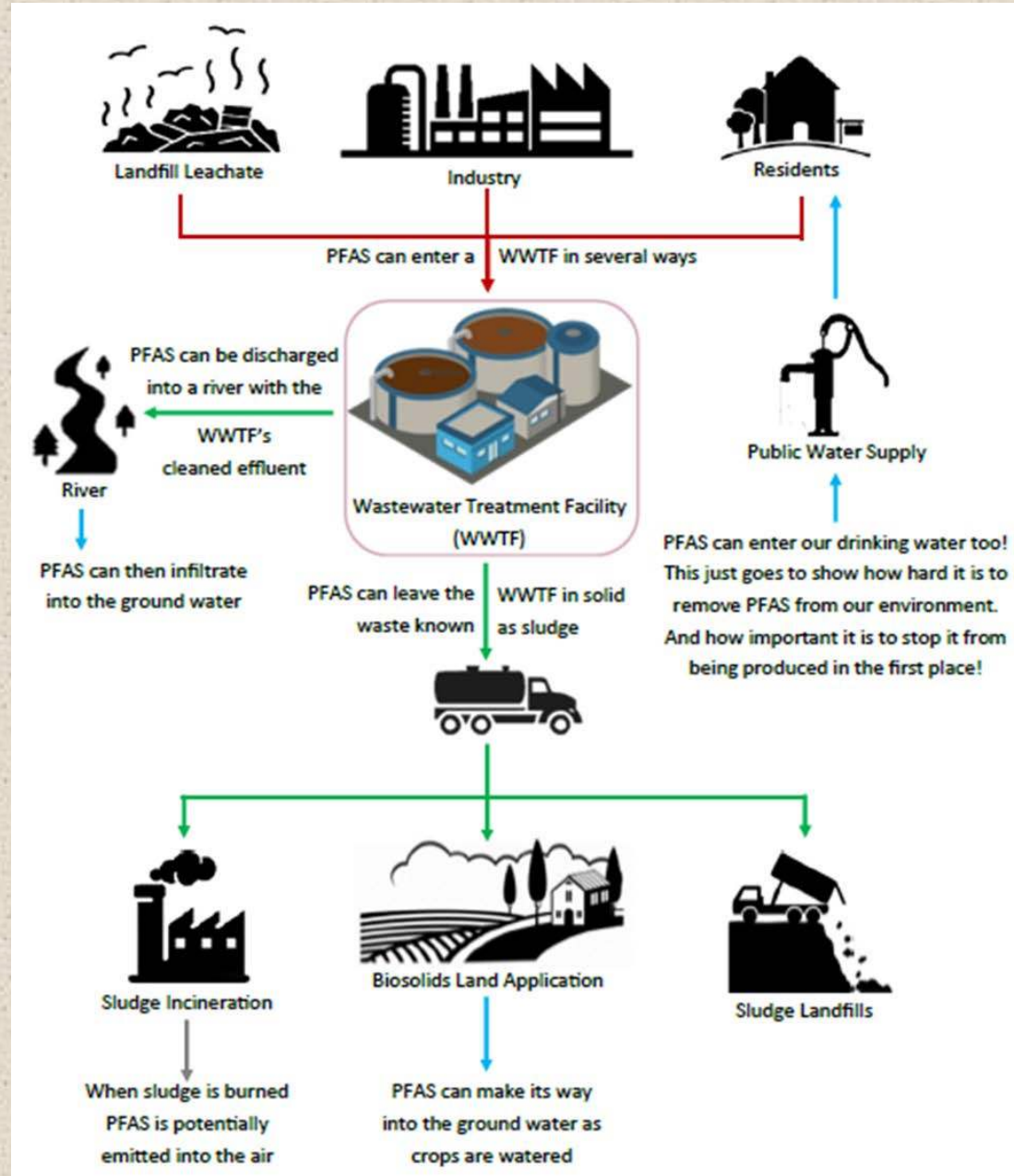
- ▶ **Elementary School Septic Tank Septage sampled in 2021**
 - ▶ Total PFAS (24 compounds) – **59.6 ng / g (bottom) / 421.4 ng / g (top)**
 - ▶ Total of NH DW Regulated Compounds (PFOS, PFOA, PFNA, PFHxS)
 - ▶ **0.0 ng / g (bottom) 3.8 ng / g (top)**

- ▶ **Aerated Lagoon Sludge Blanket sampled in 2020**
 - ▶ Total PFAS (24 compounds) – **388.3 ng / g (lagoon 1) / 533.5 ng / g (lagoon 2)**
 - ▶ Total of NH DW Regulated Compounds (PFOS, PFOA, PFNA, PFHxS)
 - ▶ **0.0 ng (lagoon 1) / g / 31.6 ng / g (lagoon 2)**
 - ▶ Higher concentrations in precursors analyzed than terminal compounds
 - ▶ Equipment blanks were ND

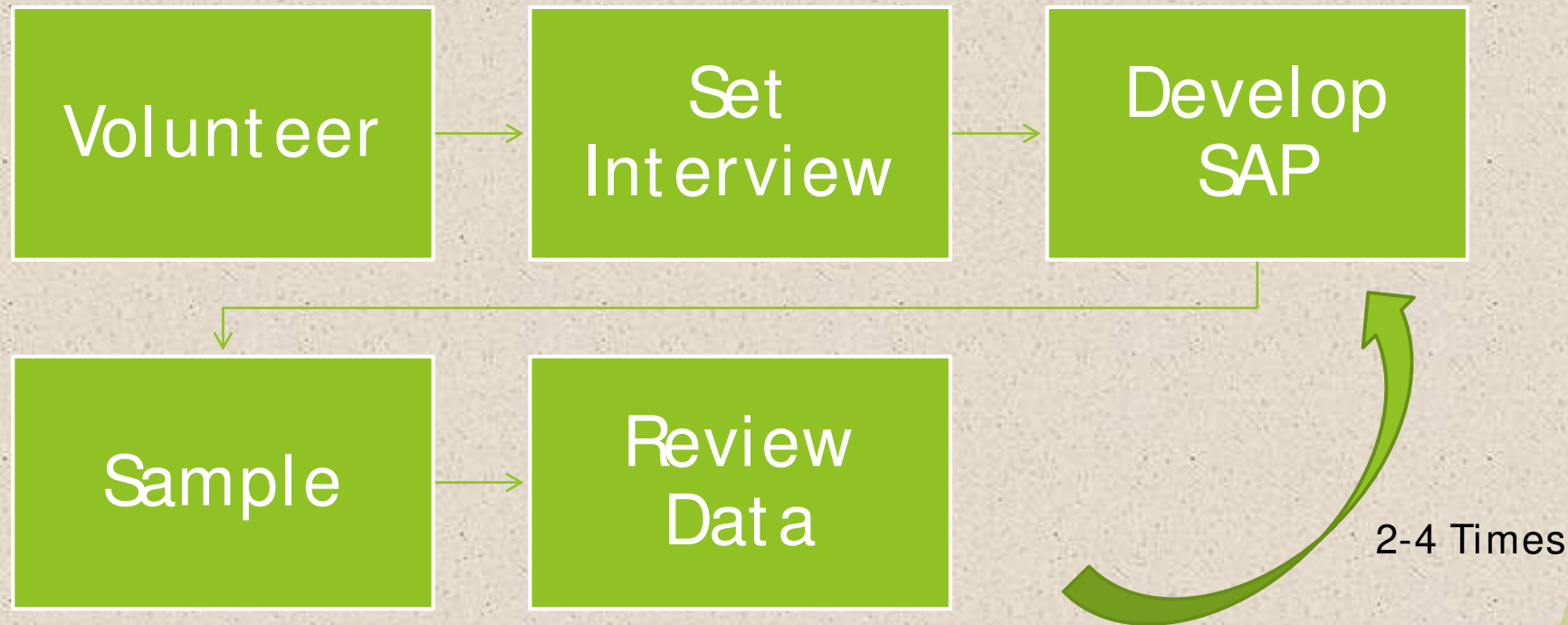
Northeast Biosolids Improvement Program – 2019 to present

- ▶ Focus is developing education outreach for the northeast region on the impacts from contaminants of emerging concern (PFAS) on wastewater and sludge management programs
 - ▶ Residential / Operator education outreach
 - ▶ ***SOURCE POLLUTION PREVENTION***
- ▶ Regional effort (northeast states)
 - ▶ Municipal managers / operators, state and federal regulators, residual managers, septage haulers, engineers, outreach specialist, pollution prevention specialist

Possible Sources of PFAS Releases



NHDES RMS Collection Systems Sampling Effort



USGS Soil / Sludge Leaching Study

- ▶ Three phase study
 - ▶ NH soil background sampling (100 samples)
 - ▶ Batch Experiments on 5 major biosolids and PFAS contaminated NH soils
 - ▶ Field Investigation to prove accurate coefficients were developed
- ▶ Phase 1 : 100% complete – PFOS detected in all samples taken
- ▶ Phase 2: In Process
- ▶ Phase 3: Fall 2021
- ▶ Full Completion: Spring 2022
- ▶ Rule revisions: 2023?

Thank you! Any Questions?

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