NEBRA Perspective

Stakeholder Meeting (1st of 3)

May 10, 2021

for project:

Integrated assessment of alternative management strategies for PFAS-contaminated wastewater residuals

Sen. Mitchell Center for Sustainability Solutions
University of Maine, Orono

NEBRA Maine Members

Public Water Resource Recovery Facilities

Bangor WWTF

Bethel ME WWTP

Boothbay Harbor Sewer District

Camden Wastewater Department

City of Saco WWTP

Kennebec Sanitary Treatment District

Kennebunk Sewer District

Lewiston-Auburn WPCA

Lisbon Sewer Department

Ogunquit Sewer District

Portland Water District

Sanford Sewerage District

South Portland Water Resource Protection

Town of Falmouth Wastewater Department

Yarmouth, ME WPCF

Private Companies

Weston & Sampson

Woodard & Curran, Inc.

Wright-Pierce

Northern Tilth

Casella

And we work with MEWEA.

Key perspectives

PFAS in Biosolids ("sludge") and Residuals

Recycling organic "wastes" benefits society and the environment.

Throughout the U. S. and Canada, biosolids (treated and tested sewage sludge), septage, paper mill residuals, composts, and other organic residuals are commonly recycled to soils. This recycling does amazing things:

> "Let's move fast to stop non-essential uses of PFAS. Then let's work carefully and more slowly on research and balanced regulation."
>
> — Dr. Linda Lee, Professor of Agronomy, Purdue University, MI WEA Biosolids Conference, Aug. 2020

- enhances soil health
- recycles nutrients
- sequesters carbon (mitigating climate change)
- reduces fertilizer & pesticide use
- strengthens farm economies (thousands of farmers choose to use biosolids, because they work)
- restores vitality to degraded lands
- puts to productive use residuals that every community has to manage.
  (Wastewater treatment is a vital public health service, and it creates residual solids that have to be managed!)

Sustainability & healthy soils require recycling organic residuals. Explore our website to see why.

https://www.nebiosolids.org/pfas-biosolids

Key perspectives (con'd)

- Have you toured a WWTP, biosolids land application, and/or composting operation? (If not, can we organize such a tour, live or virtual?
- Wastewater solids – sludge – has to be managed. It is a public responsibility for public health and environmental protection, paid for by everyone.
- Industrially-impacted vs. background sludge PFAS
- 3 options: incinerate, landfill, apply to soils

"When it comes to sludge, you can't say "no" without saying where." - Donella Meadows, lead author of *The Limits to Growth* and *The Global Citizen* essays

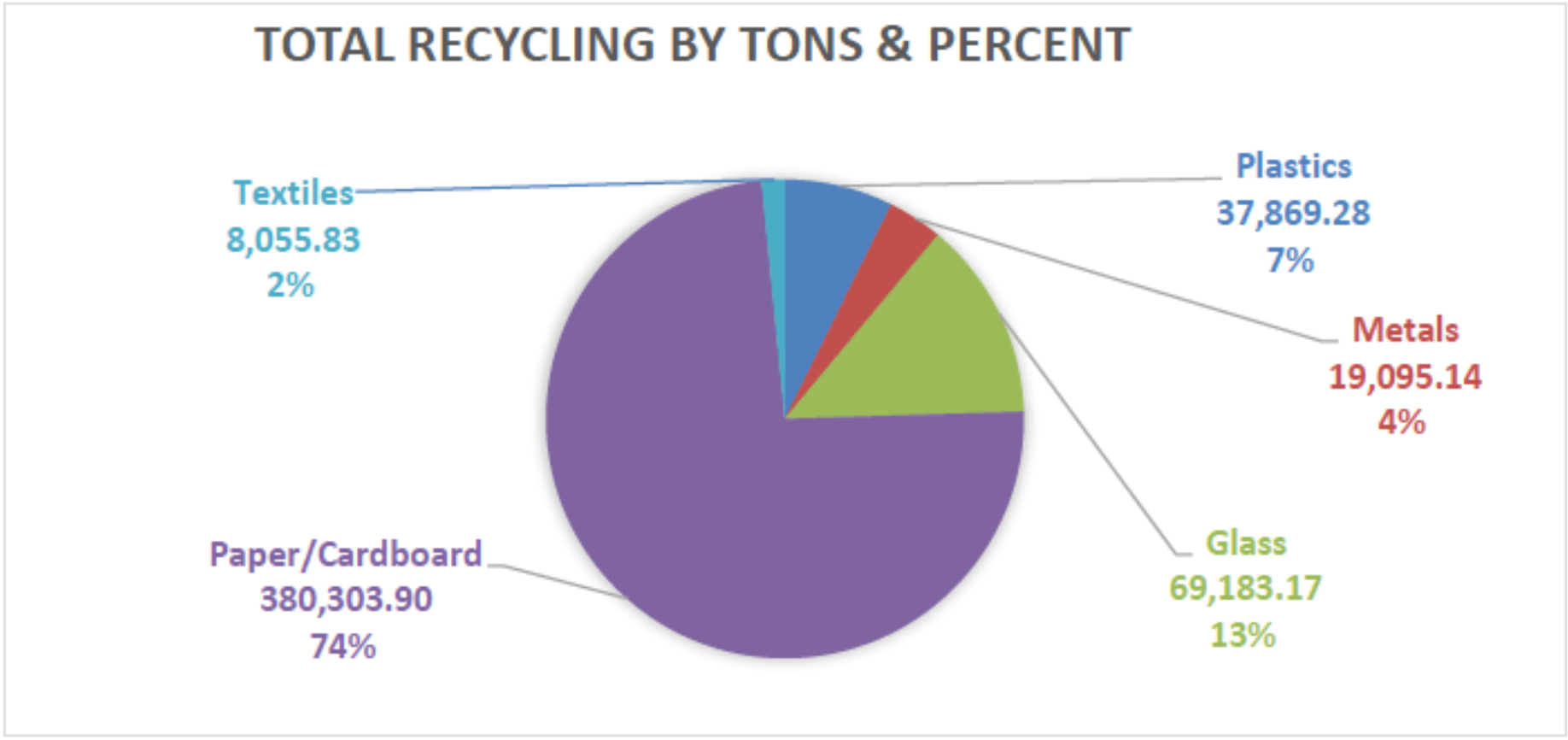


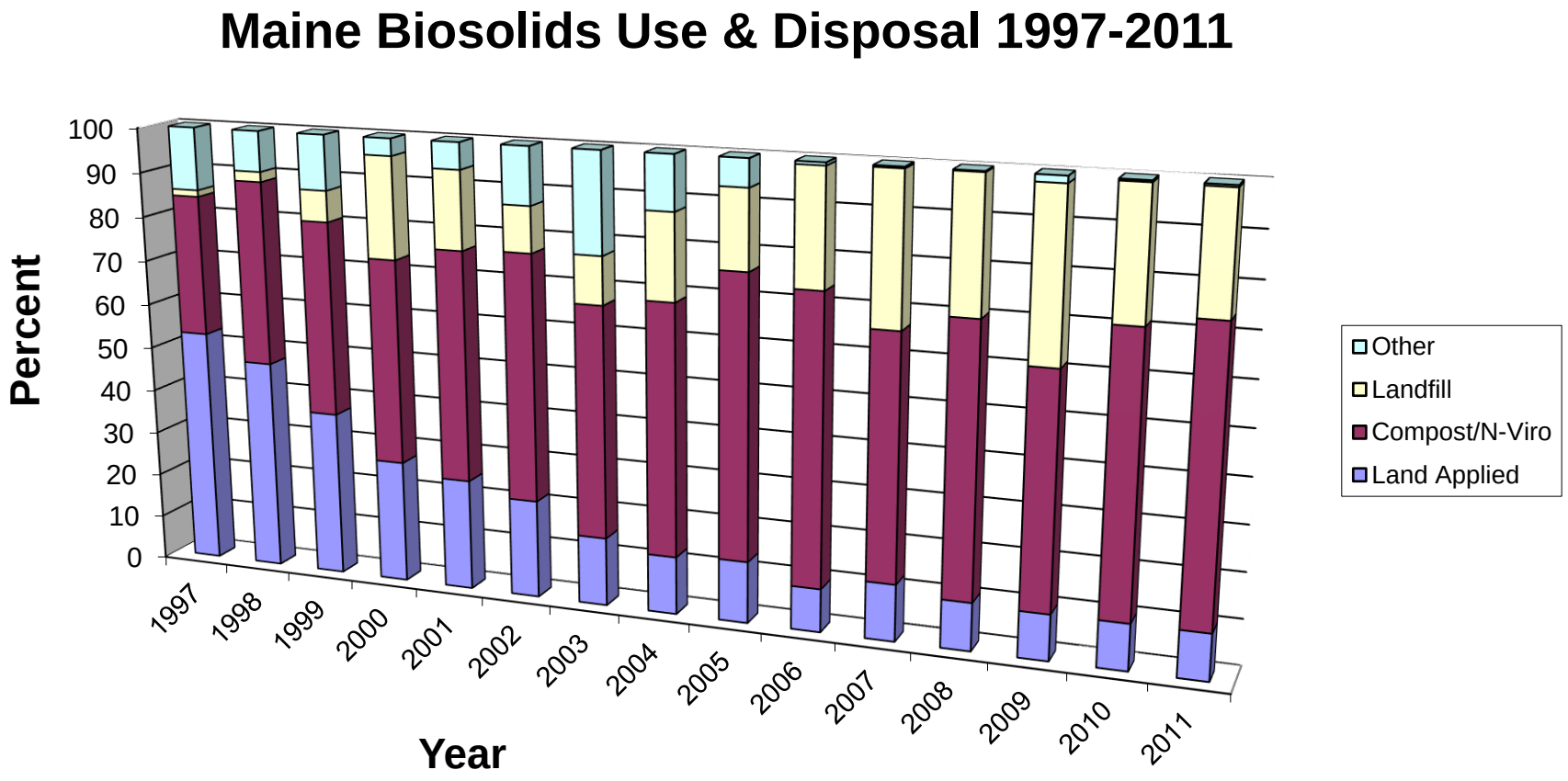
Figure 1. Recycling by tons, material, and percent in 2018 & 2019 (combined).

Recycled organics: 271,212 tons

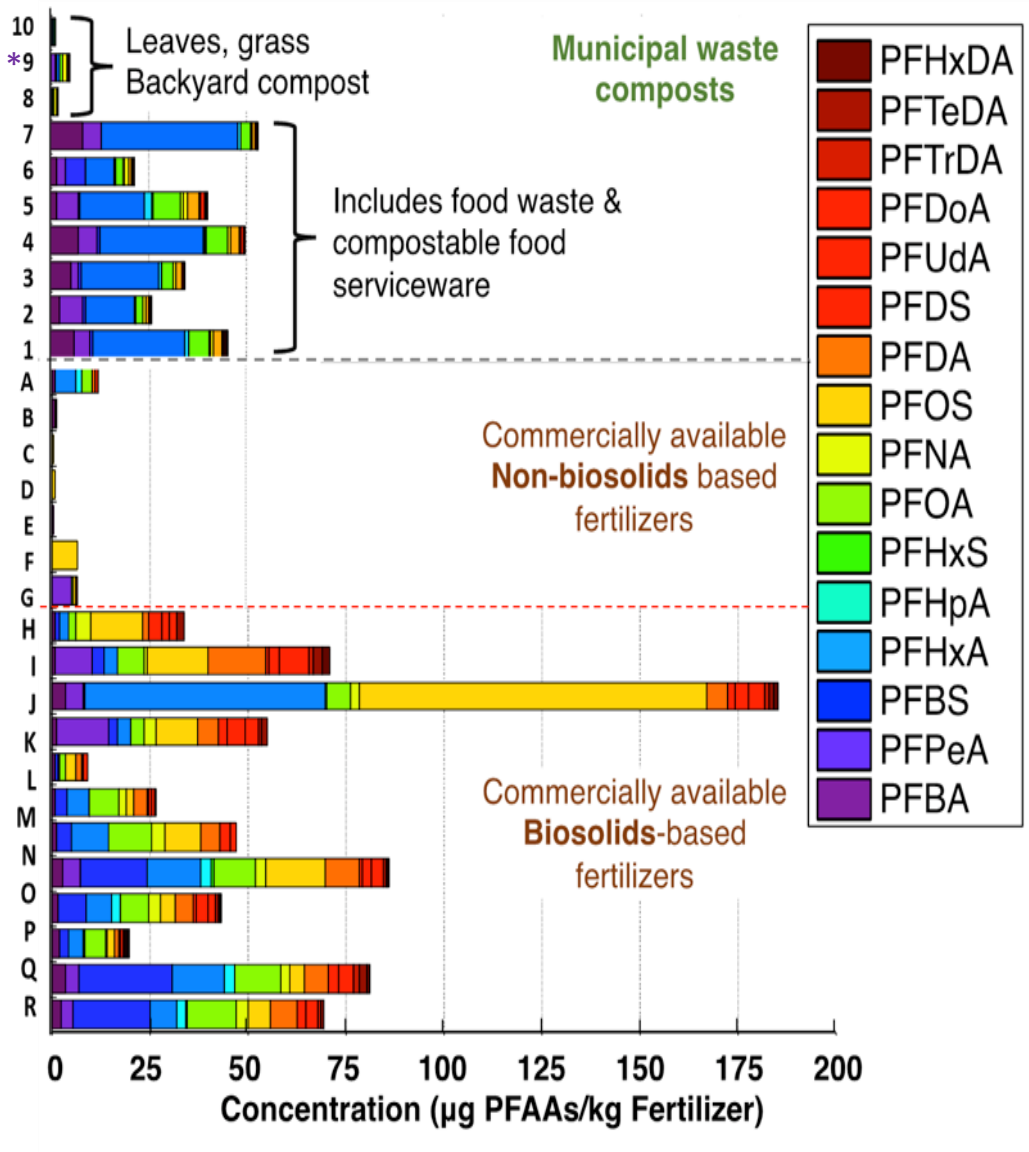
- 121,130 tons food scraps, yard & leaf, etc.
- 150,082 tons from commercial operations, wood ash, WWTP sludge, FOG (fats, oils, and grease), etc.

ME was long the regional leader in recycling biosolids to soils: 70 – 80%

In 2011 (per DEP data): Total wastewater solids = 176,622 cu. yds. (150,000 wet tons)



PFAS Occurrence in Biosolids-based Products and Composts



- Higher PFAA loads in biosolids-based products
- Range for the biosolid-based products: 30 – 185 µg/kg (ppb)
- Longer chains ($CF_n \geq 6$) dominant in 2014 biosolid-based products versus $CF_n \leq 6$ in 2017 municipal waste composts
- Higher [PFAA] in municipal waste composts with compostable food packaging (#1-7)
- * #9 included food wastes, coffee grounds, unbleached coffee filters
- Background levels include atmospheric deposition, insecticides, and contaminated water.

Choi, Lee et al. *ES&T Letters*, 6 (6):372–377 https://doi.org/10.1021/acs.estlett.9b00280
Kim-Lazcano, Lee et al. *ES&T* 54(14):8640-8648. https://doi.org/10.1021/acs.est.9b07281

Key perspectives (con'd)

- PFAS science is still developing, uncertain:
  - This project can't solve the uncertainty re health impacts of PFAS; that's a huge complex topic.
  - Test methods for solids, soils, dirty water are still in development.
  - Behavior of PFAS carried in biosolids, composts, septage, septic systems, etc. is still being researched, and confounding factors like precursor transformation make it really challenging.
    - However, Maine & others' data do not find PFAS in groundwater & surface water above EPA health advisories at many long-term non-industrially-impacted biosolids sites.

Key perspectives (con'd)

- Practical solutions are needed
  - Step-by-step
  - Use interim steps
  - Be transparent and clear so public utilities know what's coming and do sound planning & budgeting
- Prioritize PFAS risks & address risks methodically, from higher to lower
  - Protect drinking water
  - PFAS in industry & firefighting are biggest threat, and there are sites in ME with significant levels – prioritize those
  - PFAS in most biosolids is background and relatively lower risk
  - Address industrially-impacted wastewater & solids first thru industrial pretreatment / source reduction
- Phasing out non-essential uses of PFAS is a proven, cost-effective immediate strategy option we may all be able to agree on.

Documents

- NEBRA web page, including factsheets for farmers, USDA webinar, etc.
  - https://www.nebiosolids.org/pfas-biosolids
- CDM Smith PFAS & biosolids Cost study 2020, with Maine case example (right side of NEBRA page – link above)
- Maine DEP Materials Management report - solids/sludge fits into that larger scheme
- Michigan Interim Strategy (thanks Patrick!): https://www.michigan.gov/documents/egle/wrd-PFAS-Biosolids-Strategy_720326_7.pdf