Biosolids: Areas of Concern & Risks to Mitigate and Manage

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Biosolids Nutrient Management Training • Franklin, NH
Doing it right... Quality is key...

- Regulations designed to reduce risks
- Biosolids quality: pretreatment & P2 to minimize chemical & element contaminants; typical metals/contaminant levels for various biosolids products (with context of soils & manures)
- Biosolids quality: treatment & testing for compliance & handle-ability
- Biosolids quality: low metals leads to minimal accumulation over years
- Water quality: nutrient-rich materials – leaching & runoff of N & P
- Water quality: leaching & runoff carrying trace contaminants
- Air quality: potential odor impacts
- Crop quality: typical crops used, trace element & chemical contaminant plant uptake
- Social quality: neighbor & community understanding
The U.S. EPA Part 503 Rule….

- For this information – and details on state regulations - presented at the biosolids training March 15, 2017, in Franklin, NH, please see the “DETAILED 3-PART SLIDESHOW,” Part 1, at: https://www.nebiosolids.org/about-biosolids/ (includes resources, references, & links).
40+ Years of Research & Experience...

- For this information presented at the biosolids training March 15, 2017, in Franklin, NH, please see the “DETAILED 3-PART SLIDESHOW,” Part 2, at: https://www.nebiosolids.org/about-biosolids/ (includes resources, references, & links).
Microconstituents (TOrCs, PPCPs, etc.): For this information, presented at the biosolids training March 15, 2017, in Franklin, NH, please see “Biosolids & Soil: Remarkable Media for Managing Trace Organic Chemicals of Potential Concern” at https://www.nebiosolids.org/resources/#/microconstituents/
Innovative uses

- Biosolids as tools to solve environmental challenges & advance sustainability
  - Carbon sequestration / GHG emissions mitigation
  - Fertilizer replacement
  - Methane mitigation
  - Reclamation
  - Fertilizing energy crops
  - Interest in mining metals, rare earth elements, etc. in wastewater.
Early growth of corn on control (left) and compost amended (right) plots on Woodstown silt loam soil (Epstein and Chaney, 1974).
Revegetated coal mine spoil at Frostburg, MD, treated with composted biosolids (Armiger et al., 1975).
Slide courtesy of Rufus Chaney, PhD, USDA ARS

Palmerton, PA, 1980; Dead Ecosystem on Blue Mountain.
Appalachian Trail ("protected" area)

Palmerton, PA: Blue Mountain – 1999
Foreground = Biosolids+Limestone+FlyAsh; Background = untreated Control

Slide courtesy of Rufus Chaney, PhD, USDA ARS
Land reclamation
superfund sites, minelands, etc...

Colorado, photos courtesy of Sally Brown
Land reclamation
superfund sites, minelands, etc...

Pennsylvania, photos courtesy of Nora Goldstein
Landfill Closure / Methane Mitigation

Slide courtesy of Sylvis, Vancouver, BC
Landfill Leachate Treatment

Slide courtesy of Sylvis, Vancouver, BC
Carbon Sequestration Plantations

Slide courtesy of Sylvis, Vancouver, BC
Acid Rock Drainage Mitigation

Slide courtesy of Sylvis, Vancouver, BC
Forest Productivity

Slide courtesy of Sylvis,
Vancouver, BC
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