Biosolids: Does Belmont want sewage products in our land & water?
What goes in sewage

- **Household**
  - Human waste
  - Poisons
  - Detergents
  - Pharmaceuticals

- **Industrial**
  - Discharge of 33 pounds/month of hazardous waste allowed!!!
  - Hospitals
    - Pharmaceuticals
    - Pathogens
    - Radioactive material
  - Industry
    - Solvents
    - Chemicals

- **Runoff from**
  - Landfills
  - Industrial cleanup projects
  - Streets

*Disease causing microbes*

*Synthetic & Organic chemicals*

*Heavy metals*
Sludge vs Biosolids: What is removed from sewage?

- **Sludge** – solid remaining after liquid removed from sewage at waste water treatment plant
  - Toxic slurry of industrial, hospital and residential waste

- **Biosolid** - any sludge derived from a sewage wastewater treatment facility that meets the standards for beneficial reuse by the NH DES (RSA 495:A-2, XXII)
  - Treated sludge
Treatment of SLUDGE to produce BIOSOLIDS

- Remove water
  - Centrifuges, vacuums, drying beds, presses

- Treat with chemicals & minerals
  - Lime stabilization
  - Pasteurization

- Heat

- Stabilized by digestion (aerobic or anaerobic)
Classes of Biosolids

- **Class A**
  - No detectable pathogens

- **Class B**
  - Reduced level of pathogens

To prevent the dumping of pathogens on our land and leaching into our water supply - CLASS B SHOULD BE PROHIBITED

What about Class A?
What does Class A contain?

- Class A has the same contaminants as Class B, with the exception of the levels of disease causing organisms (pathogens)
  - Possibly pathogens
    - If pH is not controlled at all times prior to spreading, pathogens can grow
  - Heavy metals
  - Chemicals
    - Hormone disrupting chemicals
    - PCBs,
    - Dioxins
  - Pharmaceuticals
Testing of Biosolids

- NH DES runs treatment plants, regulates sewage, sets standards, pays to get rid of biosolids

- Only tests every 4 months at the water treatment plant
  - Easily can miss heavy loading “events”
  - NH requires tests for only 14 metals

- No long-term soil testing required
Health concerns

Long-term effects are UNKNOWN!

- Respiratory problems
- Chronic disease
- Food poisoning
- Infections
- Nausea
- Vomiting
- Burning eyes
- Odors
- Uptake of toxins by plants
- Toxic plants eaten by animals or humans
- Animals grazing on toxic land eaten by humans
- Air borne pollutant exposure
- Several human deaths reported
- Dairy herd deaths
Potential impacts to farmer

- No two loads have same composition of chemicals or pathogens
  - Don’t know what is being applied

- Cornell study found using sludge as fertilizer may reduce crop production after several years

- Farmer liable for litigation due to exposure?

- Accountable to clean property if high levels of metals or toxins in soil or water tests?

- Dioxins gather in meat, fats & milk
  - Causes birth defects and cancer
  - No research on impact of dioxin in sludge
## Metal Content (ppm)

Snyder, 2006. Citizens for Sludge-Free Land

<table>
<thead>
<tr>
<th>Metal</th>
<th>Biosolids</th>
<th>Poultry Manure</th>
<th>Cattle Manure</th>
<th>Phosphate Fertilizer</th>
<th>Recomm. For NE</th>
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</table>

High concentrations of these can cause crop growth problems
- all higher in biosolids than fertilizer/cow manure

Particularly toxic to animals & humans

Much higher in biosolids than recommended
Alternative uses for Sludge

- Fuel for vehicles and home heating
- Construction materials
  - Asphalt
  - Concrete
  - Cement
  - Bricks
  - Aggregate
- Push for innovative uses or disposal means
Bottom line on Biosolids

- Ban on ocean dumping in late 1980’s
  - Based on dead zones created in ocean

- "EPA cannot assure the public that current land application practices are protective of human health and the environment” (Land Application of Biosolids, EPA, OIG Report 2002-S-000004)

- Health of humans and animals may be compromised from exposure to biosolids

- Land & water contamination from repeated applications

- Long term cumulative effects unknown
Neighboring Town Ordinances

**OUTRIGHT BAN**
- Alton
- Barnstead
- Bridgewater (moratorium)
- Brookfield
- Farmington
- Ossipee
- Strafford
- Tilton
- Wakefield
- Webster

**VERY RESTRICTIVE**
- Alexandria
- Loudon
- Sandwich

**SOMEWHA getUsername RESTRICTIVE**
- New Hampton
- Northfield

**ADOPTED STATE REGS**
- Ashland
- Center Harbor
- Gilmanton
- Pittsfield

Many neighboring towns ban biosolids
Most Cost-Effective Solution for Belmont

- **PREVENTION** of problems by banning biosolid dumping on our land
  - Both Class A & Class B

- Support voter approved Aquifer Protection Ordinance by ensuring biosolids do not potentially contaminate our drinking water

- Educate residents & farmers of risks
The Precautionary Principle

- There is a responsibility to intervene/advise and protect the public from exposure to harm where scientific investigation shows a plausible risk.

- Application of a Precautionary Principle would support prohibition of spreading of any biosolids (both Class A & B) in BELMONT.