Regional Biosolids Symposium

Friday, June 8th, 2018

8:00 am – 4:00 pm

Speaker: Sam Amerson P.E.
Each day we collect and process approximately 4.5 million gallons of raw sewage.

Wastewater contains feces, urine, greases, pathogens, food, and other daily wastes.

After processing, the result is highly treated reclaimed water used to irrigate residential, golf courses and other public areas in Martin County.

Tropical Farms Facility
FDEP permitted 5.900 mgd

North Jensen Facility
FDEP Permitted 2.760 mgd
Our Biosolids story

Over the years we observed these emerging challenges:

- Population growth- Serving approximately 100k people
- Higher sludge removal operating costs
- No true vision of a sustainable sludge disposal method
- Landfills facing tougher restrictions and limitations
- Increased operating and regulatory challenges
Martin County is on the right road to a greener biosolids management plan.

- 1997: Alkaline stabilization
- 1985: Drying beds
- 2002: Mobile centrifuge
- 2015: Chemical injection
Martin County Utilities

Biosolids Handling Treatment Facility

- Strategic goal of becoming a more green and sustainable county
- A beneficial use of our biosolids
- Class AA-EQ biosolids

Completed April 2015
Neutralizer Process Class AA-EQ

Waste ~ 1.0% Solids

Thicken Sludge to 4% solids using polymer → Fill process tanks & add Ferric Sulfate & Chlorine Dioxide → Lower pH & add Sodium Nitrite → Raise pH & add polymer & Dewater

Waste ~ 1.0% Solids
Our Biosolids Treatment

Chemical Process

**Sulfuric Acid**
- Sulfuric Acid & Sodium Chlorite combines to form chlorine dioxide
- **Most** used chemical in the process with dual purposes

**Sodium Chlorite**
- Sodium Chlorite & Sulfuric Acid combines to form chlorine dioxide

**Ferric Sulfate**
- Iron in the chemical binds to phosphorous drawing it out of the water in the sludge
- **Least** used chemical in the process

**Sodium Nitrite**
- Sodium Nitrite is added to neutralize pathogens

**Sodium Hydroxide**
- Sodium Hydroxide is used to bring the pH up close to a neutral level prior to dewatering

**The 3 Sodium Amigos**
Sulfuric Acid & Sodium Chlorite combine together to form Chlorine Dioxide to **significantly reduce pathogens**

**CLASS “B” TREATMENT**

- **Sulfuric Acid** \[\text{H}_2\text{SO}_4\]
- **Sodium Chlorite** \[\text{NaCLO}_2\]
- **Chlorine Dioxide** \[\text{ClO}_2\]
Chemical Process

Sulfuric Acid & Sodium Chlorite combine to form Chlorine Dioxide and Sodium Nitrite to eliminate pathogens.

CLASS “A, AA” TREATMENT

Sulfuric Acid $\text{H}_2\text{SO}_4$

Sodium Chlorite $\text{NaCLO}_2$

Sodium Nitrite $\text{NaNO}_2$
Sludge thickening & Process room

- Thickening equipment
- Bulk chemical tanks
- Chemical pumps
- Process trains/pumps

Image description:
- A photograph of a sludge thickening and process room, showing various equipment and components.
Processing Tanks

Process tanks
Dewatering operations
We operate our dewatering equipment to achieve a minimum of 18% solids or higher in the end product.
Where does Biosolids go?

- Landfilled
- Land Application
- Distribution and Marketing

It is estimated that two-thirds of biosolids are beneficially used.
McGill Environmental Systems
February 27, 2015

The JFE-Brighton Regional Composting Facility has opened in Central Florida. It is a public-private partnership between the Seminole Tribe of Florida and the Johns Family Enterprises (JFE)/AgriCycle Alliance joint venture. It is an industrial-scale operation utilizing designs and technologies licensed by McGill.

http://www.mcgillcompost.com/jfe-brighton-composting
Okeechobee Landfill
Land application sites are typically located in rural areas.
Different Classes of Biosolids in Florida

- **Class B**
  - Lowest quality for beneficial use
  - Significantly reduce pathogens - FDEF permitted sites only

- **Class A**
  - Intermediate quality for beneficial use
  - Eliminate pathogens – Fertilizer, No regulation

- **Class AA (EQ)**
  - Highest quality for beneficial use
  - Exceptional quality
  - Eliminate pathogens, Fertilizer, No regulation, Lower ceiling metal limits
Thank you all!