CA Biosolids & Biogas Challenges and Opportunities
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California Association of Sanitation Agencies

- Formed in 1956
- Represent more than 125 public wastewater agencies (more than 90% of wastewater flow) and 80 private firms (engineering, financial, technology, legal, management, etc.)
- State and Federal Legislative Advocacy
- Regulatory expertise and engagement
- Communication
California Biosolids Management 2020

- Generated: 658,000 Dry Metric Tons (DMT)

- Land Application: 441,000 = 67%
- Landfill: 150,000 = 23%:
  - 74,000 ADC 11%; 76,000 Burial 12%
- Incinerate: 15,000 = 2%
- Surface Disposal: 20,000 = 3%
- Deep Well Injection: 9,000 = 1%
- Storage, long-term treatment: 23,000 = 3.5%
Biosolids Regulatory Foundation

- USEPA adopted risk based federal standards for the use of biosolids in 1993 (40 CFR part 503)
- Biennial review required by CWA which has been done since 2003
- SWRCB adopted Programmatic EIR and General Order in 2004
- Biosolids are dually regulated by USEPA and SWRCB
- Both regulatory frameworks promote the land application of biosolids
- Two reviews by the NAS have supported the US regulations and land app
Land application requires regulatory compliance with all of the following:

- Pathogen control (Engineered process requirements) – Class A or Class B with Class B + management = Same level of safety as Class A

- Biosolids cannot be a food source for disease carrying organisms – Vector Attraction Reduction required

- Meet Pollutant Concentration limits set by comprehensive risk assessment conducted by USEPA

- Limit the application rate of biosolids to the nitrogen need of crop to be grown (taking all N sources into account)
Biosolids Regulatory Foundation

- Regulation of biosolids is dynamic and must remain based on sound science.

- This is true for any regulation designed to protect public health and the environment and has been for biosolids since the CWA was adopted.

- An overarching finding of the NAS Committee in 2002 was to continually pursue research – not because one would expect to find adverse impacts, but because it’s the responsible course of action.

- When evaluating new constituents, it is important to consider practical experience based on decades of land application and net environmental impacts.
Biosolids Opportunities in California

- Land application of biosolids provides all the following:
  - Improves soil tilth, increasing soil organic carbon
  - Increases water holding capacity, reducing irrigation demand
  - Reduces crop drought stress
  - Increases crop yields
  - Sequesters carbon long-term
  - Displaces fossil fuel-intense inorganic fertilizer (0.22 gallons of fossil fuel needed for every pound of inorganic nitrogen)
  - Conserves non-renewable resources (like phosphorus) and recycles them

- Can help reclaim disturbed sites such as superfund and other mines, brownfields, and fire-impacted land

- Potential for SF Bay restoration efforts underway
SWRCB Investigative Order for PFAS

- Requires quarterly monitoring for 31 PFAS for influent and effluent if design flow is over 1 MGD and for biosolids if over 5 MGD

- Annual monitoring for biosolids if design is between 1 and 5 MGD and for groundwater if monitoring is already included in permit

- Required for 1 year

- Results are in Geotracker but still being tabulated

- Discussions continue with Water Board Staff as we urge pragmatism
CA Legislation to Mitigate Climate Change

- Achieve 40% reduction in GHG emissions below 1990 levels by 2030

- 50% Clean/Renewable Electrical Energy by 2026, 60% by 2030, 100% by 2045

- 20% reduction in Carbon Intensity of transportation fuel by 2030

- Short-Lived Climate Pollutant Reduction through SB 1383 implementation

- Healthy Soils Initiative

- Natural & Working Lands Climate Change Implementation
SB 1383

- Reduce Short-Lived Climate Pollutants

- Legislation Adopted in 2016 and requires
  - 40% reduction in methane emissions with 2013 as the baseline by 2030
  - 75% organics diversion from landfills (including biosolids) relative to 2014 levels by 2025
SB 1383

- Regulations adopted November 2020 by CalRecycle

- Become effective January 1, 2022

- State can begin enforcement on effective date (mainly against jurisdictions who have not executed franchise hauler agreements)
  - State has agreed to use enforcement discretion
  - Pending legislation to delay enforcement for 1 year (awaiting Governor signature)

- Local jurisdictions can begin enforcement on January 1, 2024 (mainly against franchise haulers not fulfilling obligations of agreements)

- Compliance with landfill diversion mandates is required on January 1, 2025
SB 1383

- Considers biosolids anaerobically digested and/or composted and land applied to be a reduction in landfill disposal
  
  - But all other treatment and end uses, including surface disposal and incineration, are considered to be landfill disposal

- Nothing will compel agencies to change management option, but will be considered to be landfill disposal

- Since biosolids are likely among the cleanest organic waste, they will be considered low hanging fruit and thus easiest to divert
SB 1383

• State recognizes that Wastewater Sector is key to successful implementation

• To that end, they included two incentives intended to create markets

• Disallow local ordinances which *unreasonably restrict or prohibit* the land application of biosolids

• Every jurisdiction which must divert organic waste must then procure a product of that diversion: *compost and/or beneficial use of biogas*
SB 1383 Regulatory Process Update

- SWRCB General Order for land applied biosolids will become increasingly relied upon as law of the state

- Thus CASA has recommended several revisions to it, including:
  - It allows more restrictive local ordinances
  - Cumulative pollutant loading rates conflict with part 503
  - Animal grazing waiting time in conflict with part 503
  - Applies to EQ products
Biosolids Land Application in California - 2020

County Ordinance Requirements and Biosolids Bans

- **Red**: Ban on All Land Application
- **Orange**: Ban on Class B
- **Pink**: Conditional Use Permit Required
- **Green**: Class B Land Application Allowed
- **Light Blue**: No Regulations/Ordinances Enacted

This map is based on a search of online available Codes and may have missed County other requirements such as non-codified requirements or requirements of city or regional agencies. This map presents findings for individual county requirements and deals only with the unincorporated areas of the counties, all area in California are subject to California and Federal biosolids regulations.
Biosolids Land Application in California – 2022?

County Ordinances Requirements

Class B and Class A Allowed

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SB 1383 Regulatory Process

- Each jurisdiction which must divert organic waste has to procure a product of that diversion

- Assume 0.08 tons organic waste/resident/year

- Eligible procurement products include compost and all beneficial uses of biogas

- May be used on-site, purchased, or required by contract

- Financial transaction not required
Opportunities Offered by the Wastewater Sector Contributing to State Mandates/Goals

- **Use of existing infrastructure** to accept at least 75% of food waste currently landfilled for anaerobic digestion

- **Increase biogas production** to generate renewable energy, low carbon transportation fuel, and pipeline grade RNG, in turn decreasing fossil fuel based greenhouse gas emissions

- Build healthy soils, sequester carbon, and reduce fossil fuel based inorganic fertilizer use through **land application of biosolids**

- **Develop collaborative partnerships** with private sector
Existing AD Infrastructure Can Accelerate Diversion of Organics from Landfills

**Opportunity**
- ~150 WWTPs utilize anaerobic digestion
  - Often located in urban areas near waste generation → shorter hauling distance

**Challenges/Needs**
- Must build partnerships with solid waste sector to maximize effective diversion
- Cleanliness of organic waste stream must be assured (whether for co-digestion, digestion, or compost)
- Markets must be assured for both biogas & biosolids
Co-digestion Increases Biogas Production

Opportunity
- 10 - 30% volumetric increase in food waste can double the biogas produced

Challenges/Needs
- Local air districts impose limitations on combustion emissions, biogas volumes, & other restrictions which limit use
- CPUC heating and siloxane standards – revised heating reqm’t better
- IOUs much more accepting but cost and access issues limit interconnection
- US EPA’s interpretation of RIN values under Renewable Fuel Standard decreases value as transportation fuel
- Need market certainty to support capital investments that maximize biogas production
- CARB developed new calculators for LCFS credits
Challenges in Scaling Up Food Waste Acceptance

- **Cost**
  - Capital: Pre-processing, receiving facilities
  - Operating: Grit management, solids handling

- **Risk**
  - Pre-processing technology is immature
  - Not core business
  - Lack of interested partners
  - Competition for feedstock
  - Uncertain market for end products
    - Biosolids
    - Biogas
Purpose:
“Enable the Water Board to work with wastewater agencies, local governments, community members and other stakeholders to inform approaches to better coordinate and cost-effectively maximize organic waste diversion from landfills, co-digestion at wastewater treatment plants, and beneficial biogas and biosolids utilization.”
Federal RIN issues

- USEPA assigns highest value credit to sewage sludge AD

- Devalues the credit when introducing organic waste directly into digester for co-digestion (10-25% value)

- Met with EPA officials multiple times since 2017 to gain re-interpretation

- Cautiously optimistic after July 2021 meeting

- Gathering supporting data from across nation
Federal RIN issues

- Argued that food waste is an integral part of sewage sludge

- It is already received through the sewerage system and at the headworks (up to 40% energy loss by doing so)

- Much more efficient and effective to introduce it directly into the digester

- Thus requested all biogas from wastewater AD be awarded D3 RINs

- HOWEVER, received letter declining our request in 2019
Federal RIN issues

- Met again in DC in February 2020 and via zoom in July 2021 to advocate Plan B

- Plan B is to determine base line biogas production from sewage sludge alone (based on VS feed)

- Advocating for baseline production of 15 scf/lb VS destroyed

- Assign that volume a D3

- Assume all other biogas is product of co-digestion and award it a D5

- Also compiling data on MCRT and VSR
EPA Office of Inspector General Report

- Released in November 2018 – Biased and sensational indictment of EPA biosolids program
- Implied land application is unsafe until full risk assessment is conducted on 352 constituents
- CASA worked with U of AZ, Ohio State, Purdue, SFPUC, others to rebut report conclusions
- Rebuttal report released July 24, 2020 by W4170 Committee
Questions?

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