EAST BAY DISCHARGERS AUTHORITY
Peracetic Acid Full-Scale Trial Team

East Bay Discharges Authority
Oro Loma/Castro Valley Sanitation District
EnviroTech Chemical Services
Stantec
Agenda

1. **EBDA introduction** (David Stoops)
2. **Peracetic acid basics** (Melanie Holmer)
3. **Full-scale trial** (Joseph Donabed)
Who is EBDA?

- Oro Loma Sanitary District, Castro Valley Sanitary District, City of San Leandro, Union Sanitary District, and City of Hayward
- Combines with flows from LAVWMA to Marina DeChlor then SF Bay
EBDA Operations

- Add sodium hypochlorite
- Add sodium bisulfite

To meet fecal coliform and Enterococcus permit limits

To meet TRC permit limits

Discharge to SF Bay outfall
Why look at other disinfectants?

- **Better way to meet zero TRC per permit?**
- **Reduce volumes of chemical/s added (chlor/dechlor) and sent to Bay?**
  - Environmental
  - Cost
  - Sea Level Rise
Path to EBDA Full-scale Trial

- Initial bench testing at each member agency
- Work with EnviroTech to develop trial test plan with technical guidance from Stantec
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What is peracetic acid (PAA)?

\[ \text{H}_2\text{O}_2 + \text{CH}_3\text{COOH} \leftrightarrow \text{CH}_3\text{COO-} + \text{H}_2\text{O} \]

- Organic acid used in food production, paper production
- Widely used in Europe, dozens of applications in US
Why consider peracetic acid (PAA)?

- Second to ozone in oxidation potential
- Doesn’t form chlorinated DBPs
- Similar equipment/operations to hypo
- Lower toxicity
- Long shelf life
- No RMP needed
- Doesn’t persist in environment
Mechanism of PAA disinfection

- Antimicrobial mode of action has chemical specificity:
  - Active oxygen disrupts -SH and S-S bonds in enzymes
  - Reacts with base pairs in DNA and RNA
- Reaction specificity results in low doses

Like any technology, application-specific considerations...

- BOD
- pH
- Dose/residual
- Economic evaluation
Still needed...

- PAA
- Water quality
- PAA Efficacy
- Info for regulatory develop
- Secondary benefits
- Toxicity (compared to chlorine)
- Cost

WERF LIFT14T16 Guidance document
EBDA Full-Scale Trial Goal

- Demonstrate efficacy of PAA for EBDA’s permit limits
  - Dose
  - Residual
  - Aquatic toxicity
  - Process control
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EBDA Full-Scale Trial Overview

• 21-day trial, started September 5
• Range of doses, starting at 4 mg/L
• Monitor:
  – pH
  – Fecal coliform & enterococcus
  – PAA residual
  – WET tests
  – BOD
EBDA Full-Scale Trial Schematic

OR/CV Avg Flow 12 MGD

COH Avg Flow 6.6 MGD

HM Avg Flow 3.2 MGD

USD Avg Flow 22.5 MGD

Oro Loma Effluent Pump Station

South Wet Well

North Wet Well

Effluent Pump

PO - Pre Peracetic Acid Injection
P1 - Peracetic Injection Point
P2 - Post Peracetic Injection Point
P3 - Post Peracetic Injection Point (30 min)
P4 - Post Peracetic Injection Point (120 min)

San Francisco Bay Outfall

NPDES Compliance

CLS

2. To remain clasifiying CI, during Pilot Test

LAVWMA Avg Flow 6.6MGD (9:00am - 6:00am)

MDF

1. CI, dose to meet HM permit requirements

USD - Union Sanitary District
HM - Hayward Marsh
COH - City of Hayward
OR/CV - Oro Loma/Castro Valley
MDF - Marina DeChlor Facility
CSL - City of San Leandro
LAVWMA - Livermore-Amador Water
EBDA Full-Scale Trial status

- **Doses used:**
  - 4 mg/L
  - 3 mg/L
  - 2 mg/L
- **WET testing this week**
- **Next week**
  - Dose optimization
  - Process control demonstration, if possible
EBDA Full-Scale Trial initial results

• INSERT DATA HERE..
QUESTIONS?

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