EAST BAY DISCHARGERS AUTHORITY
Peracetic Acid Full-Scale Trial Tour

September 13, 2017

EAST BAY DISCHARGERS AUTHORITY
Peracetic Acid Full-Scale Trial Team

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

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Agenda

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

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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**

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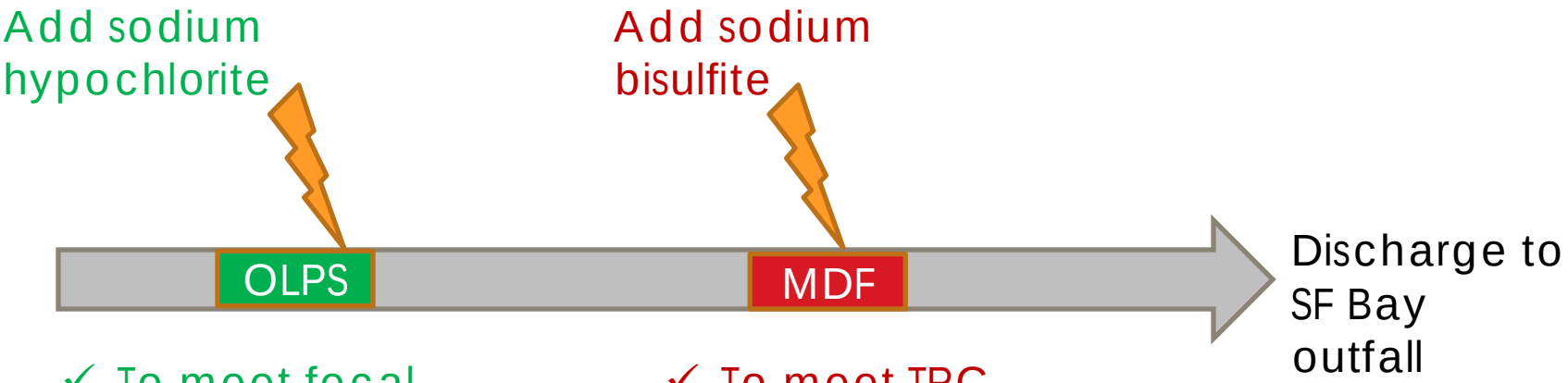
EBDA Operations



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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**

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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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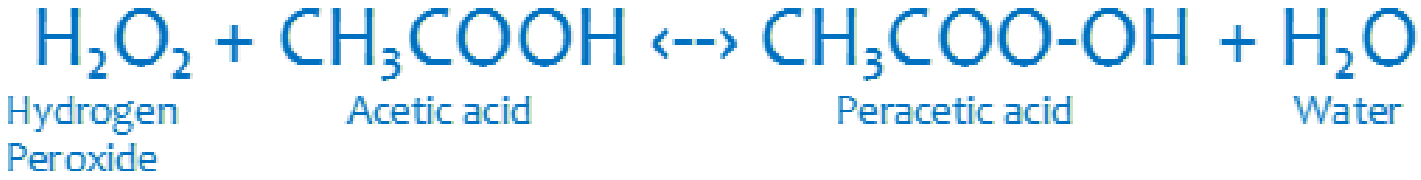
What is peracetic acid (PAA)?



- **Organic acid used in food production, paper production**
- **Widely used in Europe, dozens of applications in US**

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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**

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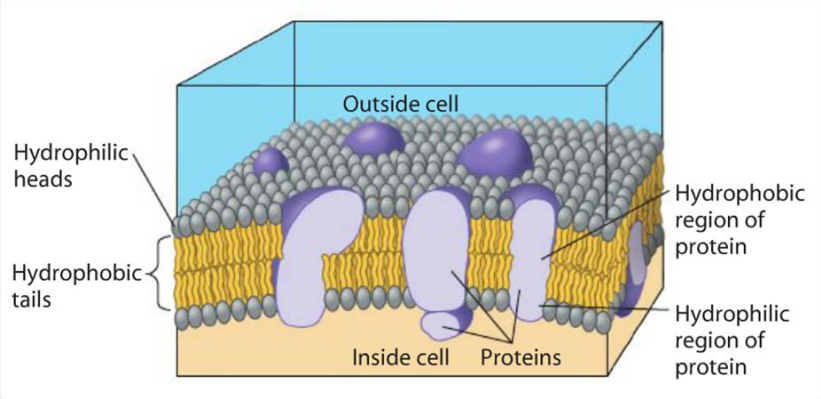
Mechanism of PAA disinfection

- **Antimicrobial mode of action has chemical specificity[1]**
  - **Active oxygen disrupts -SH and S-S bonds in enzymes**
  - **Reacts with base pairs in DNA and RNA**
- **Reaction specificity results in low doses**



[1]*Kitis, M. (2004). Disinfection of Wastewater with Peracetic Acid: A Review. Environment International, (30):47-55.*

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Like any technology, application-specific considerations...

- **BOD**
- **pH**
- **Dose/residual**
- **Economic evaluation**

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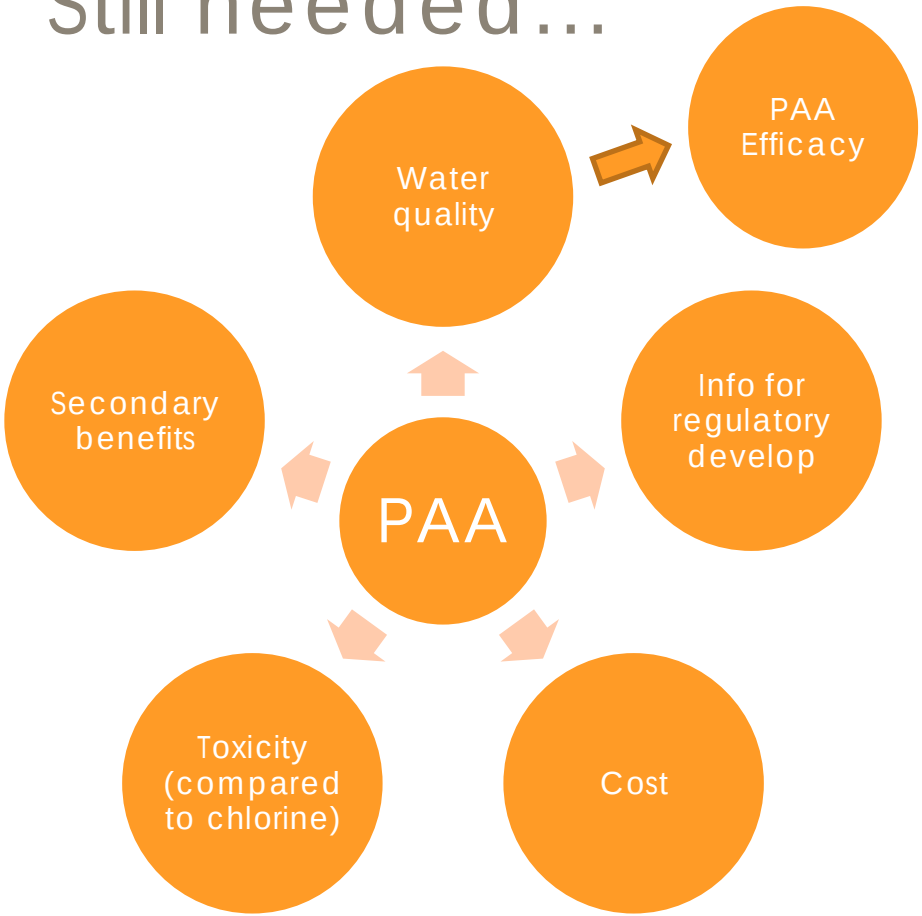
Still needed...



WERF LIFT14T16

Guidance document

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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**

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EBDA Full-Scale Trial Schematic

OR/CV
Avg Flow
12 MGD

Oro Loma
Effluent Pump
Station

San
Francisco
Bay Outfall

P4

NPDES
Compliance

P2

Effluent
Pump

CLS[2]

COH
Avg Flow
6.6 MGD

South Wet
Well

North Wet
Well

MDF

P3

2. To remain dosing Cl_2 during Pilot Test

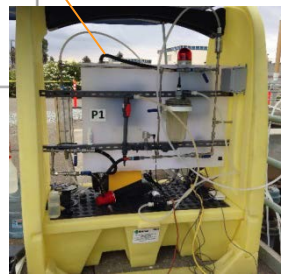
PO

P1

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

HM
Avg Flow
3.2 MGD

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)



USD*
Avg Flow
22.5 MGD

1. Cl_2 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

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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**

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EBDA Full-Scale Trial initial results

- **INSERT DATA HERE…**

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QUESTIONS?

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