



enviromanagement

Environmental Consulting & Project Management

*Celebrating 21 Years*  
*2002 - 2023*

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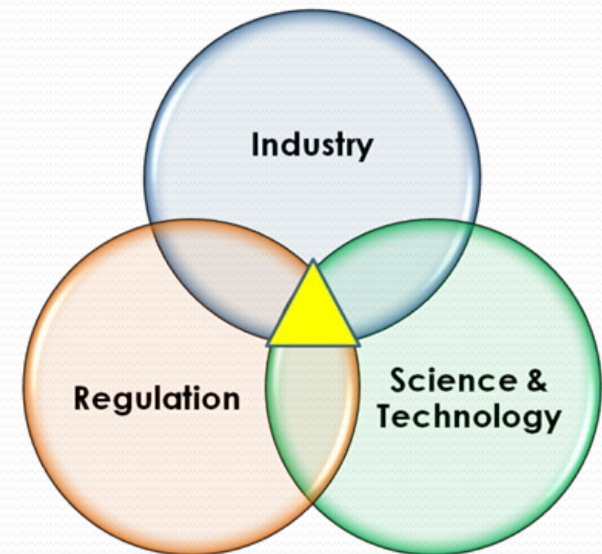
Pacific Ballast  
Water Group

Experience &  
Views on Vessel  
Discharge  
Implementation  
& Compliance

Environmental Consulting & Project Management

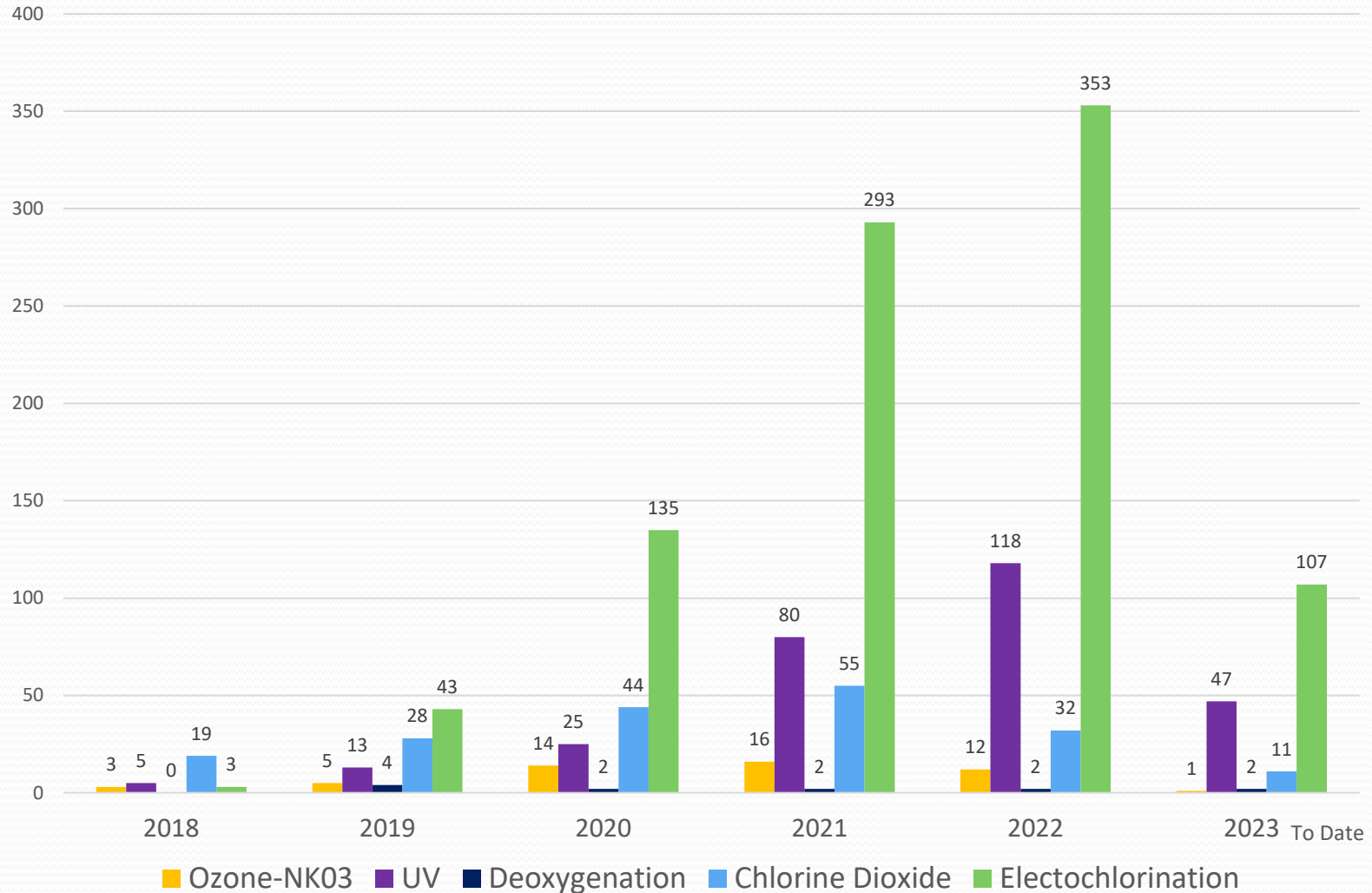
# EnviroManagement, Inc.

- Founded in 2002, partners have combined 50+ years in environmental science and engineering. Involved with ballast water industry for 22 years.
- **Who we service**
  - Ship Owners / Operators / Managers
  - BWMS Manufacturers
- **Services Offered**
  - Vessel Environmental Compliance
    - IMO & EPA VGP sampling in ~120 global ports
      - Ballast Water
      - Gas Scrubber Wash Water
      - Bilge, Black and Gray Water
    - Drinking water
  - Ballast Water Consulting
    - IMO
    - USCG
    - USEPA
    - Classification Societies
  - BWMS Type Approvals
  - General Project Management/Consulting



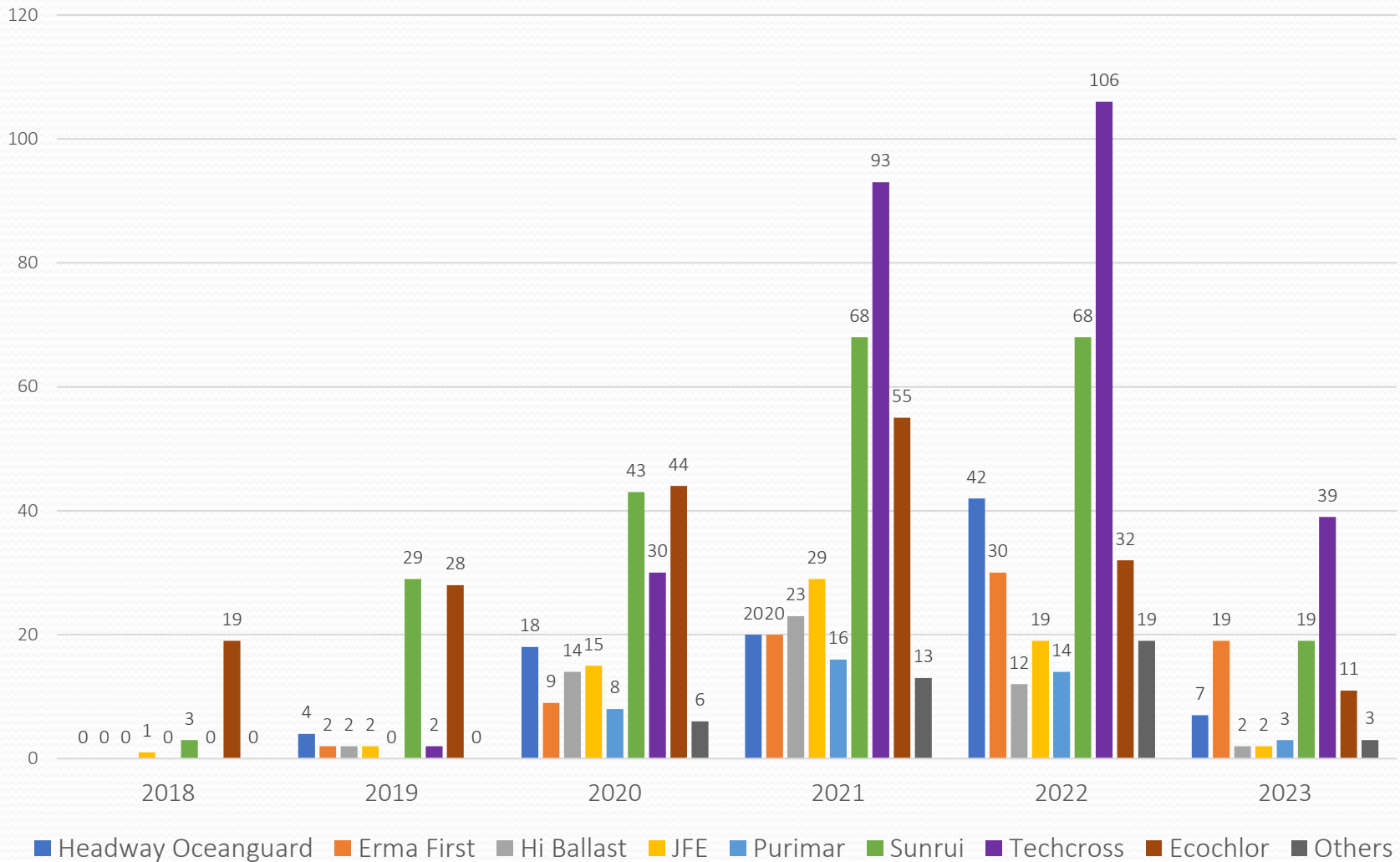
# Implementation Trends – Technology Type

VGP Sampling Events by BWMS Technology Type



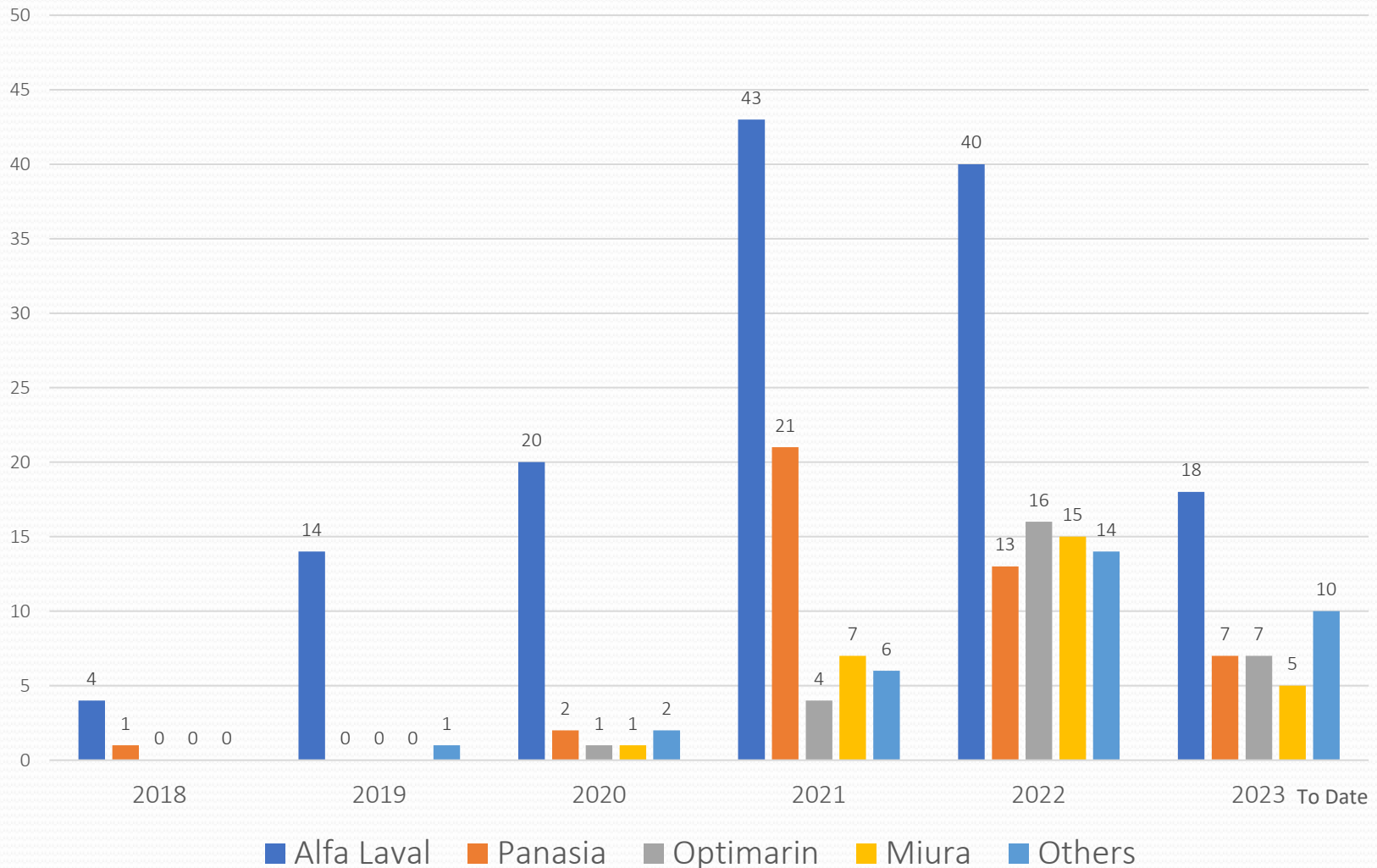
# Implementation Trends – BWMS Manufacturer

## Oxidant Systems

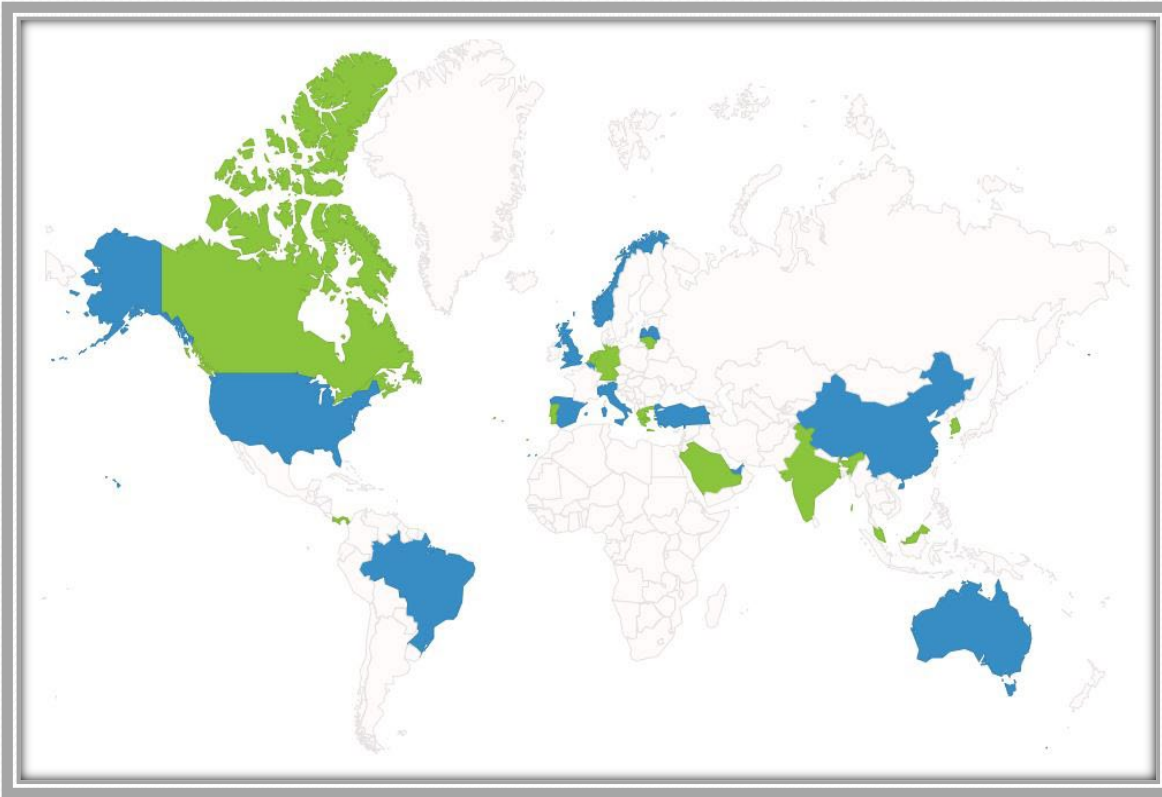


# Implementation Trends – BWMS Manufacturer

## UV Systems



# Implementation Trends – Locations



**~75% US**

- Texas
- New Orleans
- Pacific NW
- Florida

**~25%  
International**

- Singapore
- Turkey
- Caribbean
- Eastern Europe

# Implementation Trends

**Increase in ship owner  
& crew knowledge -  
BUT...**

**Sampling for more  
discharge types**

Ballast water, sewage, gray,  
bilge and gas scrubber

Drinking  
water testing

**Increase in sampling /  
testing service  
providers**



# Implementation Trends

**VGP Compliance:  
Mix of Good and Poor**

**Increased PSC  
knowledge and support  
when issues arise**



# Implementation Trends



TRO >0.1 mg/L limit  
Not OK to discharge

## TRO challenges

- Early years: ~50% of events
- More recently: ~25% of events\*\*

### Key Issue:

Incorrect TRO sensor readings causes neutralizing solution to not be applied – crew is unaware because the BWMS displays TRO concentration  $\leq 0.1$  mg/L

### Common Causes:

- Clogged TRO analyzer
- Sensor solutions - empty or expired
- Neutralizer pump not working
- Improper sensor location / engineering

### Methods to Address:

- Detailed training by BWMS maker
- Crew implementation of prescribed maintenance procedures
- Focus on knowledge transfer at crew change out
- Reconsider TRO sensors and BWMS response programming

# BEMA Updates



- Association entering its 6<sup>th</sup> year
- Expanding to include other emerging environmental technologies
- IMO Activities:
  - Ports with challenging water quality (CWQ) – supporting development of IMO guidance, MEPC 80
  - Improvements to BWMS approval process – a need for streamlining to allow innovation & BWMS changes, MEPC 80
  - Compliance – encourage inspections and enforcement, MEPC 80
  - Correspondence Groups –
    - Protocol for Verification of Compliance Monitoring Devices
    - BWM Convention Review Plan
  - Potential work with the Paris MoU

# QUESTIONS?



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*Thank you!*

