

# The Status of California's Ballast Water Performance Standards and an Update on Available Ballast Water Treatment Technology

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# Prevention First

## Preventing the Spread of Invasive Species

- ▶ “An ounce of prevention is worth a pound of cure.”



# Prevention First from California Legislation

## ▶ **2003 Marine Invasive Species Act**

“...move the state expeditiously toward the elimination of the discharge of nonindigenous species into the waters of the state..., based on the best available technology economically achievable.”

## ▶ **2006 Coastal Ecosystems Protection Act**

- Standards and implementation schedule set in statute
- Requires the review of available technology

# Performance Standards

Organism Size Class	California	IMO Regulation D-2/ U.S. Federal
Organisms greater than 50 $\mu\text{m}$ in minimum dimension	No detectable living organisms	< 10 viable organisms per cubic meter
Organisms 10 – 50 $\mu\text{m}$ in minimum dimension	< 0.01 living organisms per ml	< 10 viable organisms per ml
Living organisms less than 10 $\mu\text{m}$ in minimum dimension	< $10^3$ bacteria/100 ml < $10^4$ viruses/100 ml	
<i>Escherichia coli</i>	< 126 cfu/100 ml	< 250 cfu/100 ml
Intestinal enterococci	< 33 cfu/100 ml	< 100 cfu/100 ml
Toxicogenic <i>Vibrio cholerae</i> (O1 & O139)	< 1cfu/100 ml or < 1cfu/gram wet weight zoological samples	< 1 cfu/100 ml or < 1 cfu/gram wet weight zooplankton samples

Implementation Schedule ?

# Review of Treatment Technology

- ▶ Report mandated 18 months prior to the scheduled implementation date
  
- ▶ Consultation with the
  - State Water Resources Control Board
  - United States Coast Guard, and
  - Advisory panel (CADFW, EPA, shipping, port, conservation, fishing, aquaculture, agriculture, and public water agencies)

# Review of Treatment Technology

- ▶ **Submit to the Legislature a review of currently available technologies for ballast water treatment systems**
  - efficacy
  - availability
  - environmental impacts, including the effect on water quality
  
- ▶ **If technologies are unavailable, the commission shall include in that review an assessment of why the technologies are unavailable.**

# Review of Shore-Based Treatment Technology

- ▶ Reports from 2013 and 2014
  - ▶ No shore-based systems are available
  - ▶ Technology feasibility report
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# Assessment

## Why is Shore-based Technology not Available?

- ▶ Shore-based systems are allowed but not required
  - ▶ Research and development focus is on the use of shipboard systems
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# Review of Shipboard Treatment Technology

- ▶ Reports from 2013 and 2014
  - ▶ Systems are most likely capable of complying with other water quality/environmental regulations
  - ▶ Systems can be purchased
  - ▶ **No shipboard systems can be proven to meet the CA Ballast Water Standards**
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# Assessment

## Why is Shipboard Technology not Available?

- ▶ Data(?)
  - Discharge data versus trial data
  - Not sampling discharged ballast water
- ▶ Methods of sample analysis are unavailable for 3 of the 7 organisms classes
  - Organisms 10 – 50 Microns in Minimum Dimension
  - Total Living Bacteria
  - Total Living Viruses

# Result of the Lack of Available Treatment Technology

## Performance Implementation Schedule Delayed

<b>Ballast Water Capacity of Vessel</b>	<b>Standards apply to new vessels in this size class constructed on or after</b>	<b>Standards apply to all other vessels in this size class beginning in</b>
< 1500 metric tons	<b>2016</b>	<b>2018</b>
1500 – 5000 metric tons	<b>2016</b>	<b>2016</b>
> 5000 metric tons	<b>2016</b>	<b>2018</b>

# Questions

- ▶ Shore-based treatment technology Feasibility report?
- ▶ How are shipboard treatment systems performing?

# We Need Time

- ▶ Get results from shore-based feasibility report
  - ▶ Collect data from shipboard systems
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# Questions?

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