

The Time is Right

Evolving Noise Reduction Requirements for Commercial Shipping

**Kathy J Metcalf
Chamber of Shipping of America
May 17, 2021**

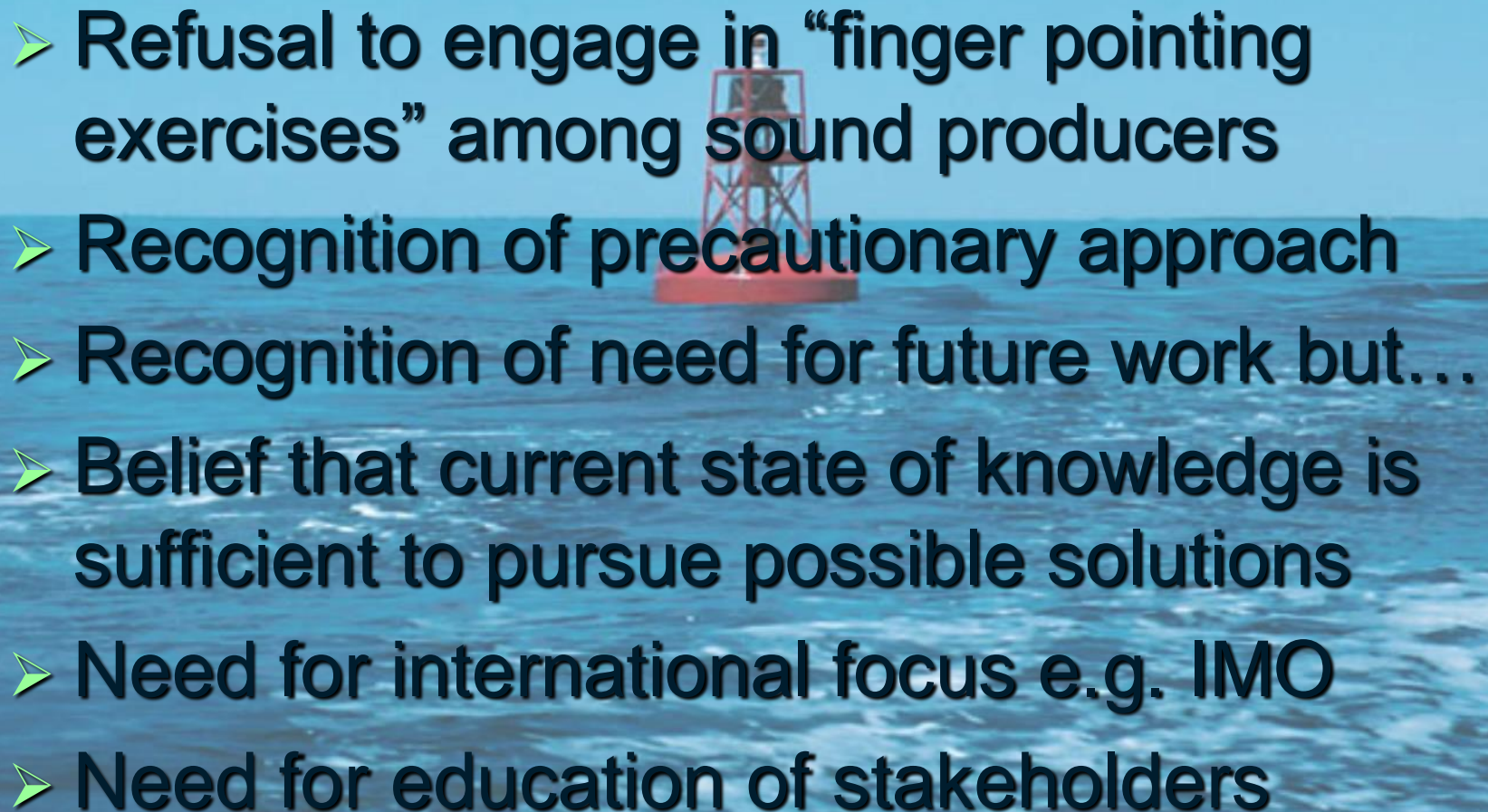
Chamber of Shipping of America

- 35 US based companies
- Own, operate or charter vessels
- Trading in coastwise and international trades
- US and non-US flag registries
- Variety of vessel types including tankers, bulk carriers, containerships, ro-ro's and others

CSA Historical Involvement

- Industry advisor on US and ICS delegations to IMO
- Involvement in marine ecosystem issues associated with normal operating scenarios
- Sole marine industry representative on US federal advisory committee on Acoustic Impacts on Marine Mammals
- Steering Committee and presenter at both NOAA conferences (2004, 2007)

Marine Industry Caucus Report (FACA Committee)

- 
- Refusal to engage in “finger pointing exercises” among sound producers
 - Recognition of precautionary approach
 - Recognition of need for future work but...
 - Belief that current state of knowledge is sufficient to pursue possible solutions
 - Need for international focus e.g. IMO
 - Need for education of stakeholders

IMO History

- DE 57 finalized guidelines – March 2013
- MEPC 66 approved guidelines – April 2014
- IMO issued MEPC.1/Circ.833 – April 2014
- ISO Working Group (measurement protocols)
- Workshops over past 6 years

MEPC Expectations

- ❖ minimize the introduction of incidental noise from commercial shipping
- ❖ reduce potential adverse impacts on marine life
- ❖ emphasis on practical, effective solutions
- ❖ **reassess use of non-mandatory technical guidelines on potential design and construction technologies**
- ❖ also look at potential navigation and operational practices

IMO Guidelines – What They Include

- Prediction of underwater noise levels (modeling at design stage)
- Design considerations (propellers, hull design, onboard machinery)
- Other technologies
- Ops/Maintenance issues (hull surface, speed, rerouting)

IMO Guidelines – What They Do Not Include (need for future work)

- Specific noise reduction target
- Multiple point source contributors assessment to determine contribution
- Quantification of relationship between individual ship as point source and as contributor to regional ambient noise
- Operating guidelines for special areas
- Noise profiles for multiple ship types
- Baseline ambient noise levels

Key Considerations

- Mariners are not marine biologists
- Mariners are not acoustical engineers
- Mariners generally are not aware of negative impacts of underwater noise
- Mariners do want to operate in an environmentally responsible manner
- Progressive approach to assess alternative vessel designs

Ship Design and Construction

- Large vessels based on marketplace demands and owner specifications (but note smaller vessels in coastwise/offshore applications)
- Design criteria including propulsion systems, cargo capacity, operating equipment and economics
- Water borne noise generation is NOT yet a design criteria in new ship construction
- Reduced cavitation = increased fuel savings
- Reduced GHG/CO₂ and UWM (Maersk study)
- Win/Win situation

Sound Producing Activities

- **Propeller cavitation**
- **Propulsion machinery including engines and power train**
- **Auxiliary machinery including generators, pumps, fans, blowers**
- **Cargo equipment**
- **Hydrodynamic flow over hull**
- **Depth finders**

Ship Generated Noise Characteristics

- **Ships as point source and collective contributors to background noise**
- **85% of ship radiated noise due to excessive cavitation**
- **Geographic patterns depend on transoceanic and coastal routing**
- **Other variations due speed, load and onboard operations**
- **Sound respects no legal boundaries**

Policy and Legal Challenges

A faint background graphic featuring a purple balance scale and a green book. The scale is tilted, with the right pan being higher. Above the scale, a series of red triangles form a curved path. The book is open, with its pages visible.

- Variations in vessel and engine design
- **Shipbuilding industry practices**
 - Few “custom” ships built for owners
 - Shipyards build for marketplace expectations
 - Build multiple vessels in class (one design)
 - Some opportunity for customization but little relevance to underwater noise mitigation
- Existing international and national treaty, legislative and regulatory frameworks
- Legal jurisdictions e.g. high seas, EEZ, territorial sea

What's Next?

- **Continue to quantify impacts**
- **Assess technological feasibility of possible solutions**
- **Assess economics associated with alternative design processes**
- **Integrate solutions into normal ship operating and design scenarios**

Presenter's Contact Information

Kathy J Metcalf

President and CEO

Chamber of Shipping of America

1730 Rhode Island Avenue, NW

Suite 702

Washington, DC 20036

202.775.4399

kmetcalf@knowships.org