

# **Safety at sea and in ports in times of Tsunami crisis**

**Japan Captains' Association**

**President**

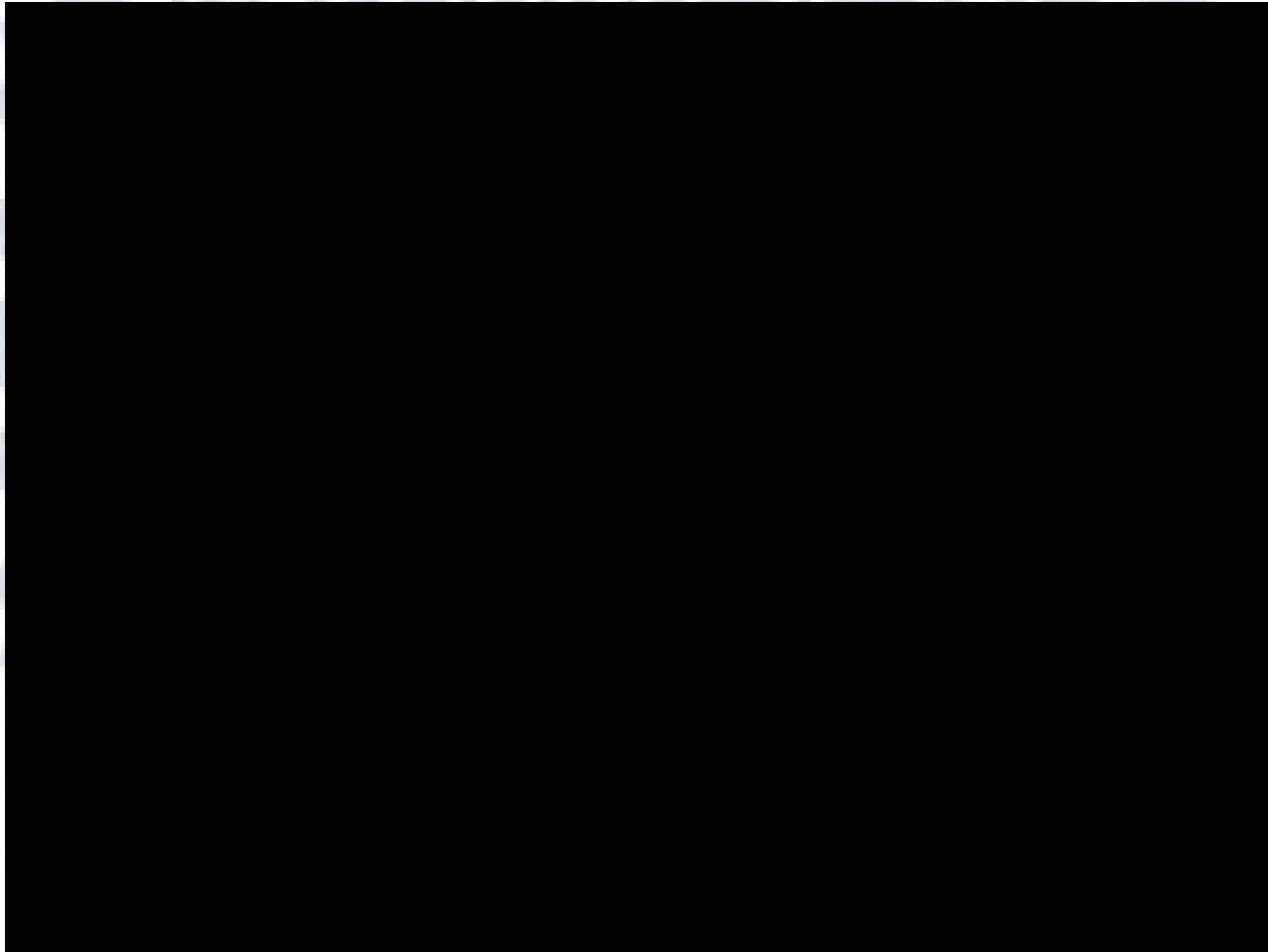
**Capt. S. Kojima**

**<http://www.captain.or.jp/>**

# Great East Japan Earthquake, Tsunami and Nuclear Power Plant

I would like to express our deepest appreciation for the support, encouragement and friendship our friends around the world have shown to us.

# Great East Japan Tsunami



# Purpose of this paper

To brief

- Damaged ports up date.
- Current Radiation condition.
- Crisis management under Tsunami disaster

# Damaged ports up date.



Seismic Center

Sendai Shiogama Port

Kashima Port

# Damaged ports up date.

## Sendai Shiogama Port Photo



18<sup>th</sup> Apr. 2011



16<sup>th</sup> Dec. 2011

# Damaged ports up date.

## Kashima Port Photo



March. 2011



Recovered

# Damaged ports up date.

## Kashima Port Photo



March. 2011

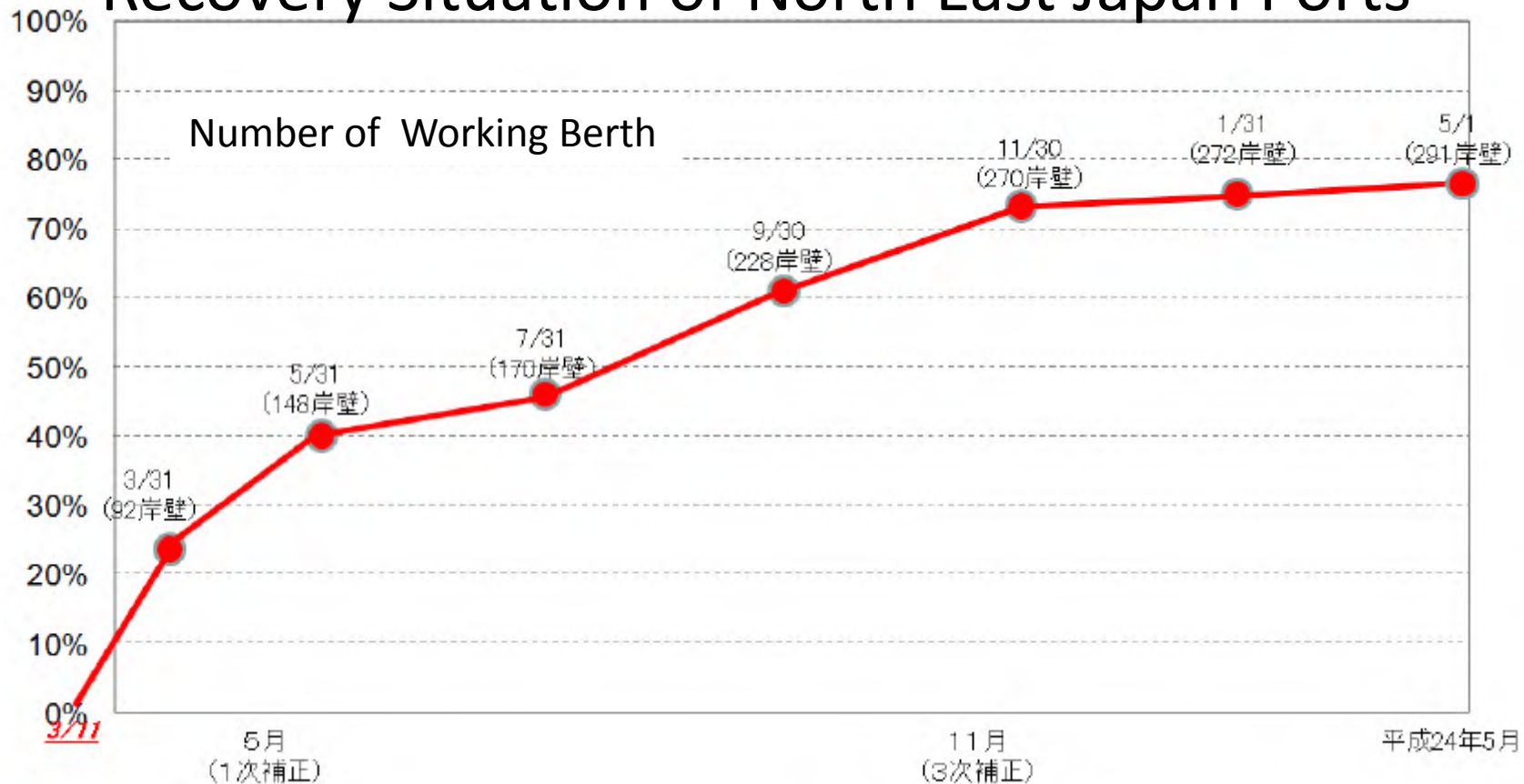


Recovered



# Damaged ports up date.

## Recovery Situation of North East Japan Ports



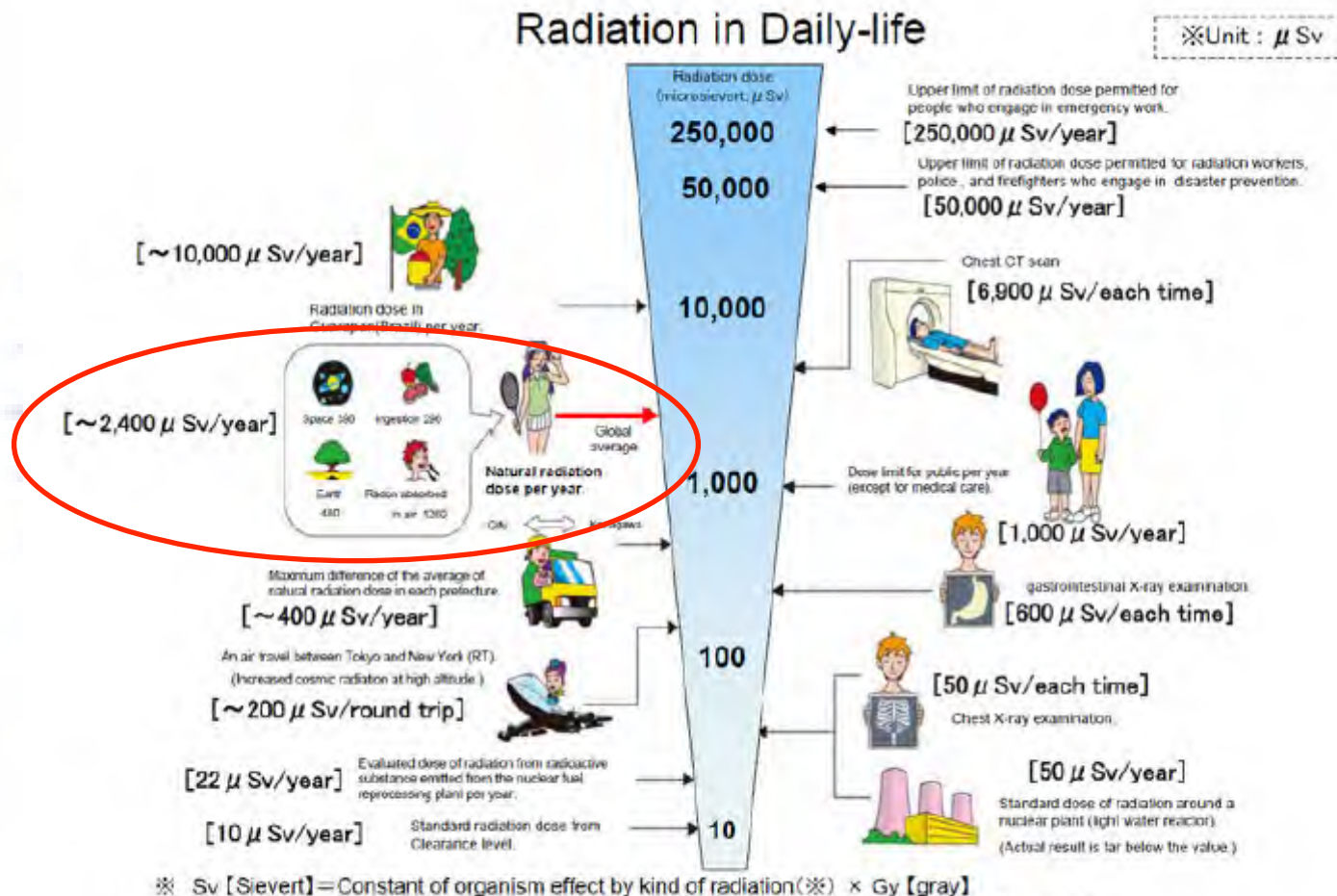
On 1<sup>st</sup> June 2012 320 berth are working out of 373 86% are recovered

All berth should be available by Apr. 2013

## Current Radiation condition.

- IMO issued a circular on 15<sup>th</sup> April 2011 which contained “Current radiation Levels in Japan”.
- According to the circular, Radiation monitoring around seaports in Japan to confirm that levels remain well within safe limits from a health perspective.

# Current Radiation condition.

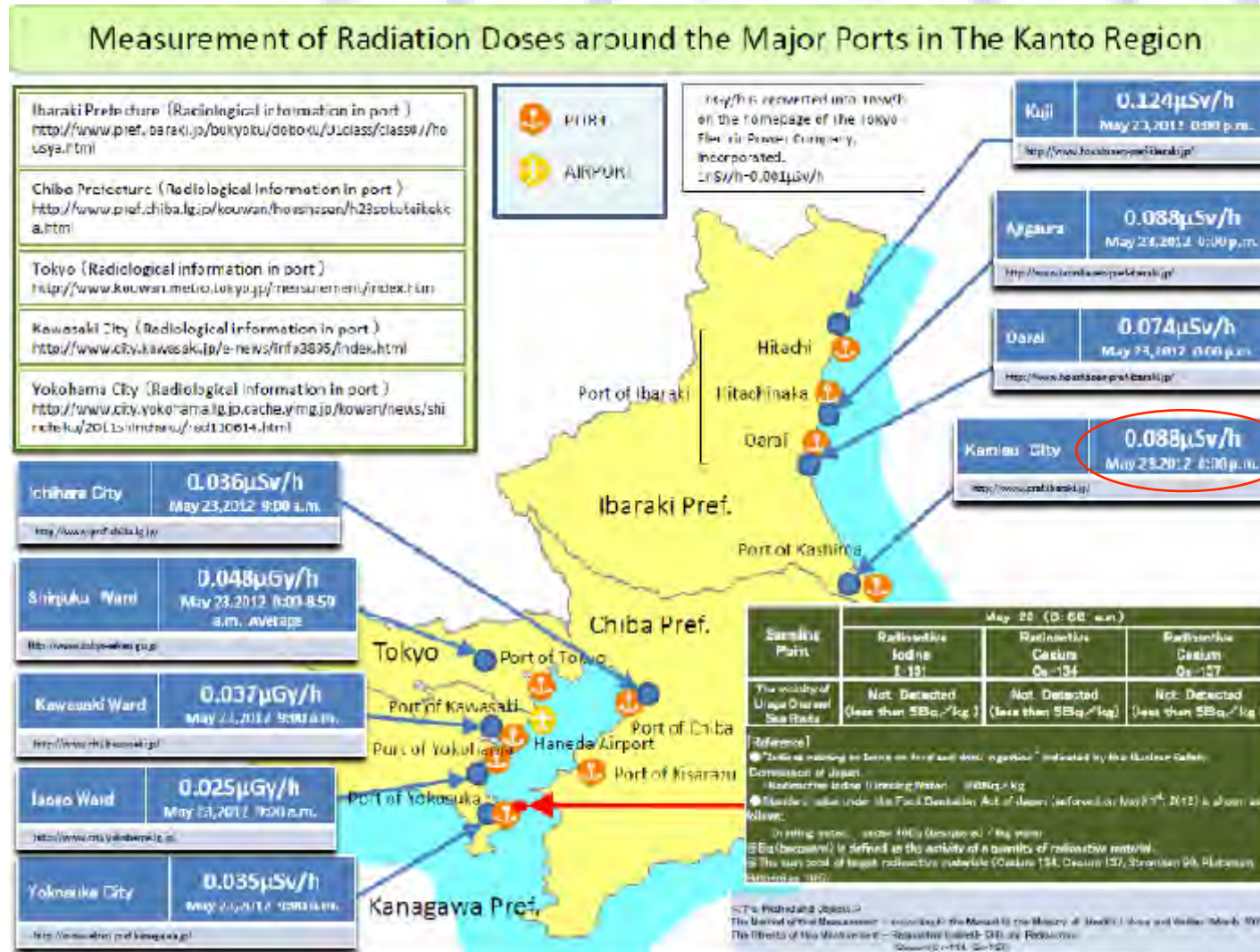


※ Sv [Sievert] = Constant of organism effect by kind of radiation (※) × Gy [gray]

※ It is 1 in case of X ray and  $\gamma$  ray.

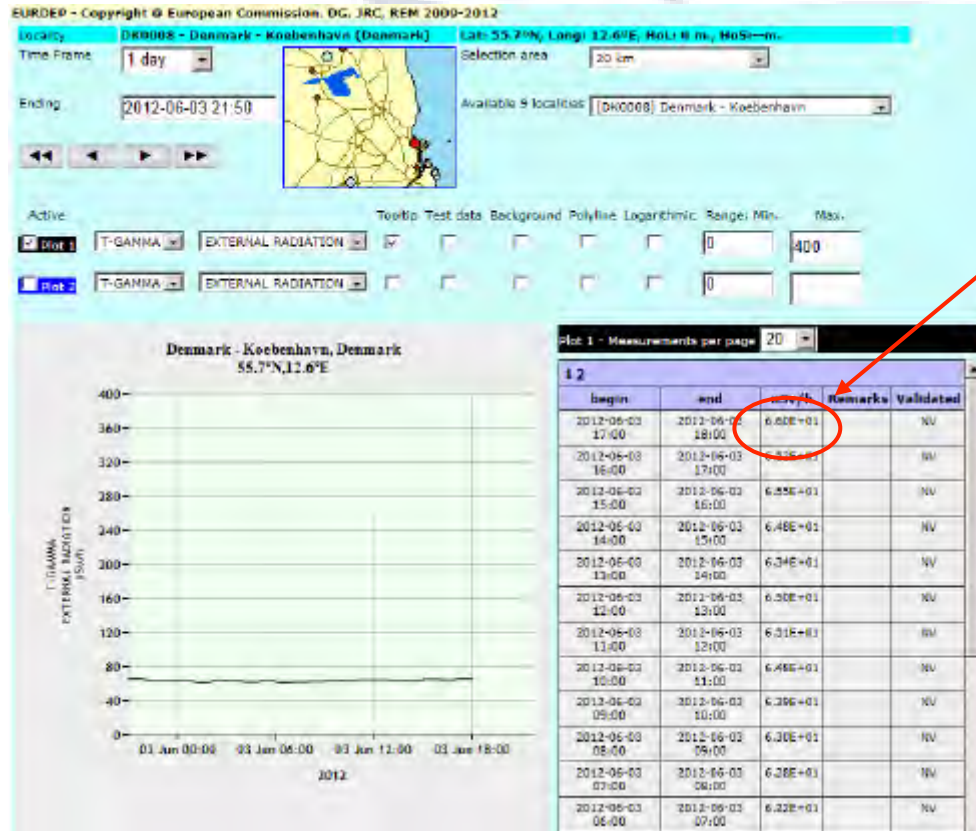
MEXT makes this, based on "Nuclear power 2002" made by Agency of Natural Resources and Energy.

# Current Radiation condition.

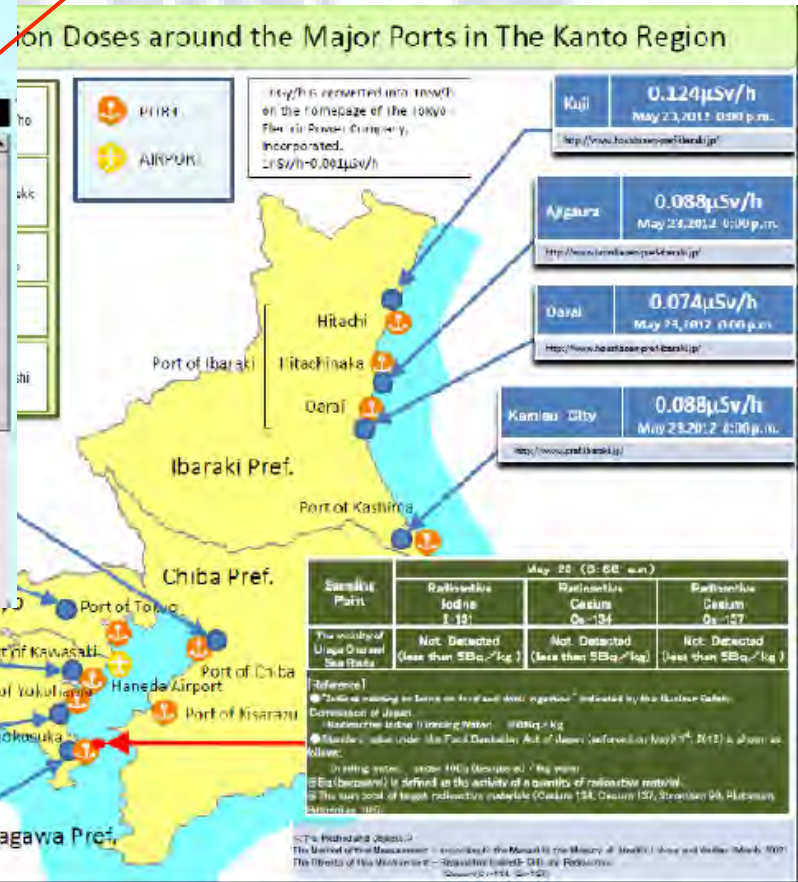


Kashima Port  
 Radiation Dose  
 0.088  $\mu\text{Sv/h}$   
 ↓  
 2.112  $\mu\text{Sv/day}$   
 ↓  
 770.88  $\mu\text{Sv/Year}$

# Current Radiation condition.



Denmark  
0.066μSV/h



Yokohama  
0.035μSV/h

Current Radiation condition.

Reference URL

**Ministry of Land, Infrastructure, Transport and Tourism**

Measurement of Radiation doses around Ports and Airports in Japan

[http://www.mlit.go.jp/en/seisakutokatsu/freight/  
seisakutokatsu\\_freight\\_fr1\\_000000.html](http://www.mlit.go.jp/en/seisakutokatsu/freight/seisakutokatsu_freight_fr1_000000.html)

# Crisis management under Tsunami disaster

- Tsunami warning
- Tsunami Risk Assessment
- Procedural consideration for Risk Assessment

# Crisis management under Tsunami disaster

- Tsunami warning

Earthquake ⇒ Tsunami

Japan Metrological Agency

<http://www.jma.go.jp/jma/indexe.html>



# Crisis management under Tsunami disaster

- Tsunami Risk Assessment

## Preparation before approaching the ports

- Updated information from Agent
- Any rules and procedures set by the Port
- Emergency contact information from the Port
- Information routing and source once earthquake is anticipated
- Communication with ship's staff on shore-leave
- Local news' availability in ship

# Crisis management under Tsunami disaster

- Tsunami Risk Assessment
- Preparation before approaching the ports
  - Any rules and procedures set by the Port

**Measures to be Taken in Response to Tsunami**  
(A recommendation by the captain of the port is deemed to have been issued in the event of an advisory or warning by the Meteorological Agency, Captain of Port (Kaiyuan))

Appendix Table 1

Categories of Tsunami Prediction and Tsunami Alert	Time Available Before Arrival of Tsunami	Measures to be Taken by Vessels				Vessels to Evacuate		
		Vessels Underway at Port		Vessels Anchored	Large Vessels, Medium Vessels (Including Fishing Boats)	Small Vessels (Including Fishing Boats, etc.)		
		Large Vessels and Medium Vessels (Including Fishing Boats)	Small Vessels					
Tsunami Advisory (Port Tsunami Alert)	Down to Possible Tsunami 0.5 meters		Pay attention to warnings (suspend loading, unloading, and other work, strengthen mooring, or evacuate outside of the port)	Pay attention to warnings (suspend loading, unloading, and other work, strengthen mooring, or evacuate outside of the port)	Pay attention to warnings (land and other vessels, or evacuate outside of the port)	Pay attention to warnings (or evacuate outside of the port, and possible equipment)	Evacuate outside of the port (if any)	Land and other vessels, mooring outside of the port, or strengthen mooring
Tsunami Warning (Sector Tsunami Alert)	Tsunami 1 meters, 2 meters	No	Suspend loading, unloading, and other work. Evacuate outside of the port (default)	Suspend loading, unloading, and other work. Evacuate outside of the port. Evacuate ashore, or strengthen mooring	Evacuate ashore	Operate equipment	Evacuate outside of the port	Evacuate outside of the port or ashore, and evacuate ashore
		Yes	Suspend loading, unloading, and other work (Evacuate outside of the port)	Suspend loading, unloading, and other work (Evacuate outside of the port)	Land and other vessels, or evacuate outside of the port	Evacuate outside of the port	Evacuate outside of the port or ashore, and other vessels	Evacuate outside of the port or ashore, and other vessels
	Large (Hazard) 5 meters, 4 meters, 3 meters, 2 meters, 1 meters to 0.5 meters	No	Suspend loading, unloading, and other work (Evacuate outside of the port (default))	Suspend loading, unloading, and other work. Evacuate ashore	Evacuate ashore	Operate equipment	Evacuate outside of the port	Evacuate outside of the port or ashore, and evacuate ashore
		Yes	Suspend loading, unloading, and other work (Evacuate outside of the port)	Suspend loading, unloading, and other work. Evacuate outside of the port	Land and other vessels (or evacuate outside of the port)	Evacuate outside of the port	Evacuate outside of the port or ashore, and other vessels	Evacuate outside of the port or ashore, and other vessels

**(Terms and Definitions)**  
 Time Available Before Arrival of Tsunami  
 No: There is sufficient time for evacuation from the time of a tsunami warning (for a large vessel in a safe state, e.g., evacuating vessels outside of the port, or landing and refueling vessels).  
 Yes: There is not sufficient time for evacuation from the time of a tsunami warning (for a large vessel in a safe state, e.g., evacuating vessels outside of the port, or landing and refueling vessels).  
 Since the time available for evacuation depends on the size and type of vessels, the specific evacuation time for one's own vessel should be identified prior to disaster response plans.  
 Small Vessels: Such vessels, including pleasure boats and fishing boats, as are capable of loading/unloading operation in the port (except for loading/unloading at wharves).  
 Evacuate ashore: Since evacuation by vessels is expected to be very dangerous, crews and other persons involved should evacuate to higher ground. Measures should be taken to the extent possible to prevent vessels from leaving anchor, mooring, or tether.  
 Evacuate outside of the port: Evacuation off the bay to waters with sufficient water depth and wide shores.  
 Pay attention to warnings: Immediate evacuation is not necessary, but attention should be paid to information and observations of the Tsunami Advisory, and safety indicators (such as behavior by the vessel).  
 Land and other vessels: Landing and other vessels (small vessels including pleasure boats and fishing boats) so as not to be impeded or swept up by the tsunami.  
 Strengthen mooring: Do check about damage to mooring ropes due to the tsunami or other causes, and take measures such as adding more mooring ropes.  
 Operate equipment: Ashore and other personnel who are needed to respond to the tsunami.

**(Precautions)**  
 1. Vessels with AHS equipment should consistently monitor VHF channels (International VHF Channel 16).  
 2. Vessels with AIS equipment should keep the AIS equipment operated, and make appropriate filings.  
 3. Efforts should be made to gather any available information on the tsunami.

# Crisis management under Tsunami disaster

- Procedural consideration for Risk Assessment

When the Master notices the occurrence of an earthquake while at berth, Master should start collecting information about Tsunami risk.

- The reducing depth of the sea.
- Whether the evacuation advisory/command was issued by the Harbor Master.
- How long it will take to put the Engine in stand-by.
- The traffic situation in the port.
- etc

# Crisis management under Tsunami disaster

- JCA assertion

In order to survive under Tsunami disaster, JCA are insisting on parties concern as follows.

- Vessel is used as rescue boat.
- Emergency radio or line are installed between the Agent and vessel.
- All ships owner are advised to prepare Tsunami disaster counter measure procedure in SMS Manual.
- English subtitle is displayed on the TV.



Thank you very much for your attention