

## **APPENDIX VIII. EMERGENCY RESPONSE GUIDANCE**

---

This Appendix provides tsunami response guidance to emergency agencies. It is based on Annex III of the Operational Users Guide for the Pacific Tsunami Warning and Mitigation System (PTWS) ([IOC Technical Series No 87, Second Edition](#). UNESCO/IOC 2011).

It is the responsibility of the Tsunami Warning Focal Point (TWFP) and the National Tsunami Warning Center (NTWC) for each country where PTWC products are received to assess the level of threat to country coastlines, and then to inform disaster management offices so they make take action to save lives and reduce property damage.

To respond quickly: tsunami emergency response plans and standard operating procedures should be prepared and practiced by stakeholders in order to familiarize the response prior to a real event. The procedures are advised to take into account and include:

- 1) Rapid enactment of emergency response procedures
- 2) Delegated decision-making regarding the ordering of evacuations and other protective measures, notification of authorities and recall of disaster response personnel
- 3) If warranted, rapid and comprehensive notification of the public at risk
- 4) Emergency procedures for evacuations including establishment of tsunami or multi-hazard coastal evacuation zones, routes, and public shelters
- 5) Pre- and Post-Emergency procedures in case of a tsunami disaster impact

Procedures can include pre-determined decisions, such as automatically notifying the public and media for nearby local tsunami events when time is very limited.

The following are alert level definitions and associated emergency response actions.

### **TSUNAMI WARNING**

#### Definition

The highest level of tsunami alert. Warnings are issued to particular areas i) when there is an imminent threat (usually within the next three hours) of a tsunami from a large, shallow, undersea earthquake; or ii) following confirmation that a potentially destructive tsunami is crossing the Pacific that may destructively impact coasts along part or all of the named areas. They may initially be based only on seismic information as a means of providing the earliest possible alert. Warnings advise that appropriate actions be taken in response to the tsunami threat. Warnings are updated at least hourly (or regularly) or as conditions warrant to continue, expand, restrict, or end the warning.

#### Action

A TSUNAMI WARNING MEANS... ALL COASTAL RESIDENTS IN THE WARNING AREA WHO ARE NEAR THE BEACH OR IN LOW-LYING REGIONS SHOULD MOVE IMMEDIATELY INLAND TO HIGHER GROUND AND AWAY FROM ALL HARBORS AND INLETS INCLUDING THOSE SHELTERED DIRECTLY FROM THE SEA. THOSE FEELING THE EARTH SHAKE... SEEING UNUSUAL WAVE ACTION... OR THE WATER LEVEL RISING OR RECEDING MAY HAVE ONLY A FEW MINUTES BEFORE THE TSUNAMI ARRIVAL AND SHOULD EVACUATE IMMEDIATELY. HOMES AND SMALL BUILDINGS ARE NOT DESIGNED TO WITHSTAND TSUNAMI IMPACTS. DO NOT STAY IN THESE STRUCTURES.

A TSUNAMI WARNING MEANS EMERGENCY RESPONSE AGENCIES WITHIN THE DESIGNATED WARNING REGIONS SHOULD IMMEDIATELY ENACT PRE-DETERMINED EVACUATION PROCEDURES, SUCH AS AUTOMATICALLY NOTIFYING THE PUBLIC AND MEDIA, AND RECALL THEIR STAFFS FOR POTENTIAL 24 X 7 DUTY.

ALL RESIDENTS WITHIN THE WARNED AREA SHOULD BE ALERT FOR INSTRUCTIONS BROADCAST FROM THEIR LOCAL CIVIL AUTHORITIES. DO NOT RETURN TO EVACUATED AREAS UNTIL AN ALL CLEAR IS GIVEN BY LOCAL CIVIL AUTHORITIES. AN INITIAL TSUNAMI WARNING NEAR AN EARTHQUAKE EPICENTER IS BASED SOLELY ON EARTHQUAKE INFORMATION – THE TSUNAMI HAS NOT YET BEEN CONFIRMED.

TSUNAMIS CAN BE DANGEROUS WAVES THAT ARE NOT SURVIVABLE. WAVE HEIGHTS ARE AMPLIFIED BY IRREGULAR SHORELINE AND ARE DIFFICULT TO PREDICT. TSUNAMIS OFTEN APPEAR AS A STRONG SURGE AND MAY BE PRECEDED BY A RECEDING WATER LEVEL. WAVE HEIGHTS WILL INCREASE RAPIDLY AS WATER SHALLOWS. TSUNAMIS ARE A SERIES OF OCEAN WAVES WHICH CAN BE DANGEROUS FOR SEVERAL HOURS AFTER THE INITIAL WAVE ARRIVAL.

## **TSUNAMI WATCH**

### Definition

The second highest level of tsunami alert. Watches are issued by the TWCs based on seismic information without confirmation that a destructive tsunami is underway. It is issued as a means of providing an advance alert to areas that could be impacted by destructive tsunami waves. Watches are updated at least hourly (or regularly) to continue them, expand their coverage, upgrade them to a Warning, or end the alert. A Watch for a particular area may be included in the text of the message that disseminates a Warning for another area.

### Action

A TSUNAMI WATCH MEANS... ALL COASTAL RESIDENTS IN THE WATCH AREA SHOULD PREPARE FOR POSSIBLE EVACUATION. A TSUNAMI WATCH IS INITIALLY ISSUED TO AREAS WHICH WILL NOT BE IMPACTED BY THE TSUNAMI FOR LESS THAN THREE HOURS. WATCH AREAS WILL EITHER BE UPGRADED TO WARNING STATUS OR CANCELED.

A TSUNAMI WATCH MEANS EMERGENCY RESPONSE AGENCIES WITHIN THE DESIGNATED WATCH REGION SHOULD NOTIFY AND RECALL THEIR STAFFS FOR THE POSSIBILITY OF THE WATCH BEING UPGRADED TO A WARNING IN THE NEAR FUTURE.

## **TSUNAMI INFORMATION**

### Definition

A message issued to advise customers of the occurrence of a major earthquake in the Pacific or near the country, with an evaluation that there is either: i) no widespread tsunami

threat but the small possibility of a local tsunami or ii) there is no tsunami threat at all because the earthquake is located inland or deep inside the earth. A supplement or higher level of alert will be issued if tsunami waves are observed on nearby gauges. A message is issued to inform that an earthquake has occurred and to advise regarding its potential to generate a tsunami. In most cases, a Tsunami Information Bulletin indicates there is no threat of a destructive tsunami, and are used to prevent unnecessary evacuations as the earthquake may have been felt in coastal areas.

A supplemental Tsunami Information Bulletin may be issued if important additional information is received such as a sea level reading showing a tsunami signal. A Tsunami Information Bulletin may also be upgraded to a watch or warning if appropriate.

#### Action

A TSUNAMI INFORMATION BULLETIN MEANS EMERGENCY RESPONSE AGENCIES NEAR THE EPICENTER SHOULD ENSURE THAT THE PUBLIC IS NOTIFIED THAT AN EARTHQUAKE HAS OCCURRED, BUT BASED ON THE EARTHQUAKE MAGNITUDE AND HISTORIC TSUNAMI INFORMATION A DAMAGING TSUNAMI IS NOT EXPECTED ALONG THE COASTS. HOWEVER, AT COASTAL LOCATIONS WHICH HAVE EXPERIENCED STRONG GROUND SHAKING LOCAL TSUNAMIS ARE POSSIBLE. MODERATE EARTHQUAKE MAY CAUSE UNDERWATER LANDSLIDES THAT GENERATE TSUNAMIS.

#### **NOTE TO MARINERS:**

Mariners in water deeper than 100 meters (or a water depth specified by local or national officials) should not be affected by a tsunami. Do not return to port if you are at sea and a tsunami warning or watch has been issued for your coastal area. For a distant tsunami, listen for official tsunami wave arrival times. Consider how much time you have to possibly remove or deploy vessels to deep water if a tsunami warning is declared. If time allows, remove or deploy vessels to deep water. However, for a locally-generated tsunami, there will be no time to deploy a vessel because waves can come ashore within minutes. Leave your boat at the pier and physically move to higher ground.