Safety concerns as a result of fish consumption in the Tsunami affected regions

1- Fish plays a major role in the nutrition of the populations of all the Tsunami affected countries, where the average annual per caput consumption is within the highest in the world (e.g. 191.4 kg in Maldives, the highest in the world and 58.5 kg in Malaysia). It is probably more so for the most affected coastal populations as consumption is generally higher in coastal areas, often more than twice. However, several rumors have circulated and concern is growing among the populations regarding the impact of the earthquakes and Tsunami on the safety of fish from the waters of the affected regions.

2- In light of the information available, **there is no evidence**, epidemiological or of any other nature, **of an increased risk of fish and seafood- borne illnesses in the affected regions**, and the **rumors of increased risk** from fish that has fed or came in contact of human cadavers **are simply not founded**.

3- Unfortunately, the situation can evolve if the damaged water and sanitation systems contaminate fishing grounds and aquaculture ponds. In this case, urgent safety concerns should be **enteric viral, bacterial and parasitic infections** and more likely in areas where epidemics of typhoid and enteric fever develop and for **people eating raw or lightly cooked fish**. The table below from WHO, indicating the risk of diseases to each affected country, cites typhoid, shigellosis and hepatitis A, which can be water-borne or food-borne, including from seafood.

	Sri Lanka	Indonesia	Maldives	Thailand	India
Cholera	+	+	-	+	+
Typhoid	+	+	-	+	+
Shigellosis	+	+	-	+	+
Hepatitis A & E	+	+	+	+	+
Dengue fever	+	+	+	+	+
Malaria	+	Not in coastal areas	-	Not in south	Not in south
Scrub typhus	+	+	+	+	+
Leptospirosis	-*	+*	?	+*	-*

The best advice in this case remains to **avoid eating any fish or seafood with visible signs of spoilage**, and most importantly to ensure that **fish is eviscerated and well cooked before consumption.**

4 - Concerns over biotoxins (ciguatera for finfish and PSP, DSP,NSP,…for bivalves such as oysters, mussels, cockles,...) have been also raised. Events of the tsunami amplitude can lead to algal bloom and accumulation of ciguatoxin in some finfish species and biotoxins in bivalves. Ciguatoxin producing dinoflagellates accumulate in association with macro algae, usually attached to dead corals, which is plentiful currently in the affected sea regions. In extreme cases, red tides or massive fish deaths signal the risks and the fishing areas should be closed for harvesting. Also reef disturbances increase the risk of ciguatera by increasing benthic substrate for dinoflagellate growth. However, the current ambient conditions (lowest temperature and salinity for the region in this humid season) are unlikely to create favorable conditions for ciguatera, except in the unlikely event that the level of nutrients increases significantly following important runoffs from land because of heavy rains and other drainage. Increased concentration of silicates and oxides from land lateral soils and with algal detritus have been shown to result in the development peculiar algae.

5- Regarding chemical contaminants, **immediate safety risks are also unlikely for fish and seafood**. Substances eventually released following the earthquakes would have settled by now and not dispersed far away from the epicenter. Increase of risk from heavy metals such as mercury is unlikely. Evidence indicates that even though mercury levels of fish caught around underwater volcanic areas such as Hawaii are high, these levels are still below those considered safe for human consumption.

6- As in normal situations, when in doubt or in case of suspicion, bivalves will present a higher risk, especially raw, as compared to finfish or crustaceans. Therefore, consumption of bivalves, especially raw should be avoided if suspicious conditions occur.