

Hazards Plenary Session – 28 August 2011

Hazards Plenary: The Gulf of Mexico Oil Spill and the Japanese Tsunami

Moderated By: Dr. Bob Summers, Secretary, Maryland Department of the Environment

Dr. Don Boesch, President, University of Maryland Center for Environmental Science - Gulf of Mexico Oil Spill

Mr. Bob Perciasepe, Deputy Administrator, U.S. Environmental Protection Agency

Dr. Tomoya Shibayama, Professor of Science and Engineering, Waseda University - Japanese Tsunami

Mr. Bob Perciasepe

Mr. Bob Perciasepe mainly discussed the oil spill in the Gulf of Mexico in the spring and summer of 2010. For the oil spill both the Environmental Protection Agency (EPA) and the United States Coast Guard were responsible for mediating the oil spill. The Coast Guard works on offshore problems and the EPA works on those problems that are land based. It was very important for both agencies to keep the public informed on a daily basis regarding the status of the spill. Both agencies worked together and were in contact with the National Oceanic and Atmospheric Administration (NOAA) who was in charge of fisheries closures in the gulf region. Communication documents and messages for the public were disseminated in English and Spanish as well as Vietnamese so that the large populations speaking these languages in the area were able to receive correspondence.

Because of the unusual circumstances concerning this oil spill there were new challenges that the agencies had to confront. The use of chemical dispersants on this kind of spill was challenging due to the large magnitude of the spill. The fact that the spill also lasted for such a long time was another variable that impacted management of the spill. There were many discussions concerning whether or not dispersants should even have been used for this particular type of spill.

Some positive changes in the management of oil rigs and oil spills have come about after this one event. After the spill, there have been continued restoration and recovery efforts for the gulf region. This region and the gulf ecosystems were already damaged before the oil spill. This region contains the second largest hypoxia zone in the world. The oil spill has led to improvements in response measures and planning, the regulation of offshore oil facilities through the Bureau of Ocean Management, and long-term restoration efforts.

Dr. Don Boesch

Dr. Don Boesch also mainly covered the events surrounding the Gulf of Mexico Oil Spill. The Deepwater Horizon oil spill occurred when the Macondo Well exploded, April 21, 2010, about a mile (1.6 km) below the surface. The blowout preventer for the rig didn't work, as sand and other debris damaged it and activation occurred too late. The effects of this manmade disaster were not as horrific as the tsunami that occurred in Japan, but still kept the public attention for quite some time after the event. To relieve the tension growing between local, state and federal governments, the President of the United States appointed a commission

to examine the oil spill events one month after the spill occurred. This commission was tasked with examining exactly what went wrong and to then find out what could be done in the future to prevent the situation from happening again.

The commission produced reports and websites in January 2011 at www.oilspillcommission.gov. The key findings from the commission were that, the disaster was foreseeable and preventable; the mistakes were made by BP, Transocean and Halliburton and that there were systemic failures in risk management in government and industry that put in doubt the safety of this industry.

The commission came up with several recommendations. The recommendations included to improve safety, safeguard the environment, strengthen oil spill response planning and capacity, advancing well-containment capabilities, overcome impacts and restore the gulf, ensure financial responsibility, promote congressional engagement to ensure responsible drilling, and moving to frontier areas. Recently, discussion has arisen that there could be a fine levied in billions of dollars due to Clean Water Act violations.

Dr. Tomoya Shibayama

Dr. Tomoya Shibayama mainly spoke about the Japanese Tsunami Disaster of Tohoku Region Pacific Coast earthquake and environmental impacts. There were many impacts after the earthquake and resulting tsunami. One of the main short term impacts was erosion, and a serious long term impact was the release of nuclear materials into the coastal environment.

Over the past few decades there have been increased tsunamis and storm surges. In Myanmar recently over 140,000 people died after a large tsunami hit the region. The most recent tsunami even was the 2011 Tohoku Tsunami in Japan. Lately there has been an organized and united team in Japan that was developed with more than twenty universities to unite the researchers together. This team has been tasked to compare the epicenters of tsunamis, from Hokkaido to Chiba whenever there was a severe tsunami attack between 1896-2011.

For reconstruction efforts, there is a debate between using hard and soft measures to protect life and property. The hard measures unfortunately do not protect against loss of life, but they can help protect property and help the evacuation process during low-level events that occur more frequently. Soft measures should be used to protect lives and should be designated for higher-level severity of events. The soft measures to be taken are transferring people to the highlands, dealing with garbage in water and meeting with residents to discuss precautions in the case of these national disasters.

In Japan, there is a classification system made up of three types of evacuation plans. The first plan is to evacuate to hills or higher terrain, this is the safest category, which is labeled "A". The second plan involves evacuating into robust buildings that have six or more floors and are more than 20 meters high. These areas are likely to be safe for most events and the category is labeled "B". Category "C" has the highest risk of being toppled by tsunamis, which is to evacuate into buildings with only 4 floors high. Knowing which category to use depends on how soon the tsunami is going to hit the area.

The earthquake off of the Japanese coast was the trigger of the accident at Fukushima Nuclear power station. This was a high momentum wave with land turbulence leading to land subsidence, a release of chemicals, and the release of radioactive materials, as well as coastal erosion, and debris in water and land. Now Japan is dealing with the reconstruction of infrastructure, fisheries contamination and losses, coastal ecosystem problems and health effects.

Discussion:

In northern Japan, coastal beaches and ecosystems such as estuaries have been heavily impacted by the tsunami. In order to have a successful reconstruction it is necessary to use some artificial structures to restore and improve coastal health. Since the driving force in this case is the tsunamis, the ecosystem is destroyed. In the case of the oil spill, the ecosystems are still there they have just been dirtied and contaminated.

Tsunami events are more frequent globally than most people may understand. Human habitation of tsunami-inundated areas is similar to human habitation on flood plains. For flood plains though, the frequency is different and usually effects are not as severe. Most of the time the motto is to be hoping for the best and preparing for the worst, but we do not prepare for the worst very well. For oil spills we have 89% of oil coming from deeper water wells, which is inherently risky because we were not prepared for controlling deep pressures and the new issues that they might have. We are not prepared for rare events, that turn out not to be so rare after all.

Usually we talk about pollution, fisheries, and people. We almost never talk about energy. Energy almost always trumps all other issues and does not get integrated. One of the interesting questions is to ask if there will be development changes to help facilitate storm problems in Japan? The Japanese cannot come to an easy conclusion for this. Hard structures cannot protect human life, but having them is the only option people will accept most of the time. People prefer to live in coastal areas because their ancestors lived there for hundreds of years. It is hard to get people to change their habits in these situations even if the change could save their lives.

What is not easily determined is the appropriate level of risk. It is necessary to educate the public, but once they know and have a solid understanding it is equally important to have a debate on the issues with residents as well as professionals. In the case of flooding in Louisiana after the hurricane there, people were actually choosing to move away from the coast because of flood insurance prices being raised. Maybe we can put things in place to prevent horrible circumstances by taking actions to reduce negative impacts.

Questions:

Is there any way to improve our ability to predict these situations?
Unfortunately, earthquakes and tsunami predictions are impossible at this time. Currently researchers are examining past records as well as using soil cores to find out if there has been a pattern for tsunamis in Japan over the last 1000 years. Hurricanes, on the other hand, are becoming easier to predict.

Can natural shoreline features help protect the coast? Generally, some natural structures such as mangroves can help to protect areas, but in Japan's case this did not occur because of the destructive force of the earthquake and tsunami. There was so much destruction that the mangroves were completely obliterated. In India, mangroves did help to prevent some damage during a less severe tsunami that occurred there. There needs to be ecosystem management and implementation of new ocean policies that have been developed. It is difficult to understand and plan for the risks of natural as well as man made hazards.