

## **Postmortem Examination and Personal Identification of Victims of the Great East Japan Earthquake**

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After attending this presentation, attendees will be familiar with an outline of the forensic investigation of victims of the Great East Japan Earthquake Disaster, which was carried out with the assistance of members of the Japanese Society of Legal Medicine (JSLM).

This presentation will impact the forensic science community by providing foundational knowledge on the features of the Japanese medico-legal system and mass disaster management, and highlighting the role of forensic personnel in the response to overwhelming natural disasters.

A massive earthquake of magnitude 9.0 struck eastern Japan at 2:46 pm on March 11, 2011. The epicenter was around 130 km off the Pacific coast of northeast Japan. Strong tremors were observed across a wide area. However, both human casualties and property damage were concentrated on 3 prefectures, Iwate, Miyagi and Fukushima, located along the Pacific coast of the northeastern part of the main island of Japan (Honshu). This was mostly due to the huge tsunami triggered by the earthquake, over 15 m in amplitude and 40 m in run-up height, which engulfed the coastal areas of those prefectures.

Faced with the devastation, the JSLM established the *ad hoc* Disaster Response Headquarters on March 12 and dispatched member pathologists, physicians and dentists to the 3 prefectures in cooperation with the National Police Agency. This was the first time such a headquarters had been set up since the society issued a guideline in 1997 for an integrated support system of mass disaster management based on the experience of the 1995 great Hanshin-Awaji (Kobe) earthquake. The first response team consisting of 3 pathologists and 3 dentists departed Tokyo at 10:00 pm on the same day, traveling in vehicles provided by the police due to paralysis of the public transportation network. Examination of victims in Rikuzentakata, Iwate began the following afternoon. Most of the remains were immersed in water and covered with mud, and some victims had suffered extensive burns. Hypothermia would have also caused death in some cases. The Headquarters successively organized and dispatched JSLM members through July 6. Some 122 pathologists and physicians contributed a total of 1,090 person-days of work, and 31 dentists performed a total of 298 person-days of work at the disaster sites. Aside from local physicians and dentists associations, the Japan Dental Association and Japan Self Defense Force also sent support teams to the affected areas.

As of July 29, 2011, the remains of 15,645 victims, including 27 non-Japanese, had been recovered, and another 4,984 people were still listed as missing. Approximately 90% of the victims were positively identified, in most cases from personal belongings and body features including dentition. In some cases identity was established by DNA profiling, and more extensive identification attempts using a computer-assisted dental comparison system and kinship analysis of DNA profiles, which will be important for identification of as yet unidentified victims and yet to be discovered victims, are now in process. The latter is being conducted by the National Research Institute of Police Science and scientific criminal investigation laboratories of regional police headquarters. Fingernails and blood are the first choice DNA source.

No fewer than 25 countries, regions, and international organizations have sent rescue teams and other specialists to the disaster areas. However, partly because of the language barrier, direct overseas assistance in the examination and identification of bodies has not been possible thus far.

Recently, the Japanese police departments have been increasing the number of prefectural police officers, especially those in charge of the investigation of death scenes and victims. This was effectual for handling the large number of remains through wide-range mobilization from outside of the devastated areas. On the other hand, the medico-legal investigation system, such as the medical examiner system, is immature and remains as an issue to be addressed from the standpoint of mass disaster management.

**Natural disaster, Personal Identification, Japan**

