

## Conference Outline

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The Great East Japan Earthquake on March 11th 2011 turned out to be a colossal multiple disaster. The big earthquake and tsunami not only devastated an extended range of the Pacific Coast of the Tohoku Area, but also caused a critical dysfunction of cooling system owing to total blackout at the Fukushima Dai-ichi Nuclear Power Plant of the Tokyo Electric Power Company (TEPCO). A large amount of radioactive substances were released to atmosphere by emergency vent operations and hydrogen explosions, and caused serious radioactive contamination of environment over extended regions. Repercussions of the colossal multiple disaster manifest themselves in a variety of ways; direct versus indirect, immediate versus gradually-emerging, short-term versus lingering, and local versus global.

Even though two and half years have already passed, the recovery/restoration process still has a long way to go. The multiple nature of the disaster, in particular the radioactive contamination, overshadows and hinders the efforts toward recovery and restoration. Control of radiation exposure and health care should be duly exercised not only for local residents but also for workers involved in the clearing-up of the nuclear plant accident. It is essential to form social consensus on the utilization of nuclear power for future, based on the investigation of TEPCO Fukushima Dai-ichi Nuclear Plant Accident. Irrespective of the outcome of social choice of nuclear power generation as energy source, decommissioning of aged nuclear reactors and disposal of used nuclear fuels remains important long-term tasks that have to be taken up for many years to come. It is also necessary to promote public understanding on nuclear power usage other than electricity generation such as applications to radiation therapy, materials engineering and agriculture, and on the role of research reactors and their proper management.

### [Session 1]

#### **Repercussions on Agriculture Fields and Fishery Areas and Recovery from Disaster**

The great earthquake occurring in coastal and offshore areas introduces the big tsunami, which changes coastal ecosystem and further devastate local towns and villages facing seashores. Furthermore, when such tsunami heavily attacks atomic power plants locating coastal areas and subsequently causes them to lose controls, an enormous fallout of radioactive materials contaminates wide areas of forest, soil and water system, resulting in a colossal multiple disaster.

The session consists of three presentations. The first presentation reviews the changes in coastal ecosystem caused by tsunami. The second presentation deals with the repercussions of a colossal multiple disaster on agriculture fields and the recovery from the disaster along with future perspective. The third presentation is devoted to the repercussions and recovery similarly in fisheries and related people.

## **[Session 2]**

### **Health management and radiation protection for residents and workers**

Many people are showing increasing concern about the effects on health of radioactive materials after an explosion accident at Fukushima Daiichi Nuclear Power Station on March 11, 2011. In this session, we overview external and internal exposures to radioactive materials in Fukushima residents. Basic and detailed surveys of the Fukushima Prefecture Health Management Program such as thyroid examinations and the follow-up survey of pregnant women are also included. Next, our session focuses on the radiation protection for many workers at the Fukushima Daiichi Nuclear Power Station who were possibly more exposed to high-dose radiation compared to the residents in general. This company consists of multiple subcontractors, and therefore, comprehensive health management is required; a protection program for those suffering from not only exposure to radiation but also heat attacks, infectious disease and serious accidents is needed in addition to other common occupational health management.

## **[Session 3]**

### **Investigation and Analysis of the Nuclear Power Plant Accident and Radioactive Pollution**

Following the three (government, diet and non-government) Investigation Reports by domestic Investigation Committees on TEPCO Nuclear Plant Accident given in the last year's meeting of this conference series, three new reports are presented in this session; one by TEPCO itself, one by French Academy, and one by National Academy of Science, USA. Discussions will be made on the results of fact-finding and analysis of the cause of the accident and on the outcome of screening of the resident's radiation exposure. It is hoped that the relevant knowledge and vision for the future will be shared in the course of such discussions.

## **[Session 4]**

### **Abolition/Decommission of Nuclear Reactors and Future Utilization of Nuclear Energy**

Toward international collaborations and knowledge-sharing on the process of recovery and restoration from the nuclear power plant accident, we discuss mid- and long-term roadmaps and action plans for abolition of the failed reactors and decommission of aged reactors, in particular, materials scientific aspects that command the central position of the issue. On the basis of the discussion, we reconfirm the critical importance of the backend technologies for nuclear energy utilization and promote international knowledge-sharing on the future use of nuclear energy. In the course of discussions, we deepen our understanding on the role of science and technology for the active support of recovery/restoration process and for the future use of nuclear energy.