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Fukushima Nuclear Power Plant Accident And Nuclear Physicists

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The Fukushima Dai-Ichi Nuclear Power Plant caused a major accident in March, 2011 after the plant suffered huge Tsunami waves. While no major destruction of the reactors has been reported, a large amount of radioactive materials leaked out. The earthquake destroyed external power lines to the plant, and Tsunami damaged all emergency power generators. Due to the lack of electricity, the cooling of the reactors was lost. The resultant high temperature produced hydrogen gas by the reaction of water and fuel rod (Zr metal), and this hydrogen gas exploded, emitting fission products into the air. Details of the accident have not been clarified yet.

Emitted radioactive materials important to human being and environments are ^{131}I, ^{134,137}Cs, *etc*. These were spread over a wide area soon by air streams and have fallen onto the earth by rain. It was very urgent to examine how much inhabitants and the environment were contaminated. This survey had to be done very quickly, accurately and widely. The knowledge, skill and experience of nuclear physicists match very well to this need, and there were two big operations starting right after the accident. One is the survey on human beings aiming at ^{131}I, particularly for young generations. The other is the survey of radioactivity from the soil. For both, many nuclear physicists over the nation have participated and contributed. The latter, for instance, yielded a “map” of ^{134,137}Cs and ^{131}I in Fukushima region based on the γ-ray data from 11000 soil samples taken at 2200 locations. A summary of such activities will be presented including some others, as well as possible contributions to future energy issues.