

The Geochemical Society of Japan's response to and after the Fukushima Nuclear Power Station accident

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On March 11 in 2011, a great earthquake hit the eastern part of mainland Japan. It triggered several gigantic tsunami waves that destroyed the coastal areas in Tohoku and north Kanto districts, which face the Pacific Ocean. The earthquake that was coupled with a tsunami fatally damaged the Fukushima Daiichi Nuclear Power Station (FDNPS), which was operated by the Tokyo Electric Company, taking over the nuclear reactors. When the backup electricity supply was lost, nuclear fuels were partly melted, causing a couple of hydrogen explosions that eventually released a large amount of radioactive materials into the environment. Radioactive nuclides, mostly produced by the nuclear fission of ²³⁵U, were detected in a wide area, not only in the immediate vicinity surrounding the FDNPP but also in remote areas such as the Kanto district and metropolitan Tokyo. Subsequently, some radioactive nuclides were detected in the United States and in some European countries. Apparently, radioactive materials released into the atmosphere and oceans are carried by global atmospheric and oceanic circulations all over the world.

The Geochemical Society of Japan (GSJ) initiated several actions soon after the earthquake and the FDNPP accident. For instance, in response to the society's appeal, many GSJ members joined the project to map the distribution of several radioactive nuclides in soil samples in the Fukushima Prefecture under the supervision of the Cabinet Office and Ministry of Education, Culture, Science, Sport and Technology (MEXT). The members' contributions led to the creation of several distribution maps of radioactive nuclides, such as ¹³⁴Cs, ¹³⁷Cs, ¹³¹I, and ¹³²Te, trapped in soils in Fukushima (MEXT, 2011). The GSJ members also performed several experiments from various aspects individually or in groups in collaboration with researchers from neighboring fields. Considering these situations, the GSJ proposed to organize special sessions on research activities related to the FDNPS accident on the occasions of the 2011 Goldschmidt Conference and 2011 Annual Meeting of the GSJ.

For the Fukushima Review session of the 2011 Goldschmidt Conference in Prague, nine papers (all invited) were orally presented on August 16, 2011. After the session, a statement was appealed by the presidents of three societies, Drs. Mitsuru Ebihara, Bernard Bourdon, and Samuel Mukasa, on behalf of the GSJ, the European Association of Geochemistry, and the Geochemical Society, respectively. In this statement, the disclosure of monitoring data on radioactive material, continued monitoring of the spread of radioactive materials, and international alliance of researchers for the global monitoring of radioactive materials was strongly appealed.

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