

Chapter 2

Unforeseeable Accidents from the Point of View of the Legal System

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Abstract The legal system regulating nuclear power generation in Japan had never taken into account the possibility of an accident as severe as the Fukushima accident. There were no countermeasures in place to respond to such an accident, which left people and agencies in confusion in a time of great need. By delaying the provisioning of well-considered countermeasures, Japan has not been able to adopt them properly and in a timely fashion. Even if there had been such proper countermeasures in place, the manner in which the response occurred after the accident made it hard for authorities to gain the trust of citizens. Agencies that regulate power companies and ensure the safety of nuclear power generation are part of the same governmental organisations that promote nuclear power. Therefore, the regulatory organisations had no other choice but to be passive in creating appropriate regulations on nuclear power. The disaster prevention drill that had been held before the accident was of no help in evacuations during this nuclear accident, as only small-scale accidents had been considered in the drill. Evacuation standards and food safety standards were put in place only after the Fukushima accident; simultaneously, the processing of radioactive waste was placed outside the jurisdiction of the Ministry of the Environment. The fact that there were no specific standards for compensation increased the burden and anxiety of victims. It is critical to learn the lessons of Fukushima and create specific legal disaster countermeasures based on the assumption that a severe accident can and will occur again sometime in the future.

Keywords Legal systems • Nuclear emergency preparedness • Response for severe accident • Trust of citizens • Unforeseeable accident

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2.1 Introduction

The national government and local governments, as well as the Tokyo Electric Power Company (TEPCO), were not able to generate proper responses to ‘unforeseeable accidents’ because the legal system for governing nuclear power generation in Japan had not taken into account the possibility of a nuclear accident as severe as the Fukushima accident. There was significant loss of life, damage and confusion because countermeasures for such a severe accident had not been stipulated in the laws governing nuclear power. Such laws had to be hastily improvised and developed almost as an afterthought after this accident occurred. This lack of foresight made it difficult for authorities to gain the trust of citizens, even when proper countermeasures were put in place after the accident.

Within the legal system of safety regulations, this paper focuses on postaccident nuclear disaster responses, the state of agencies within the nuclear power regulatory organisations, evacuation plans, standards for food safety, processing of radioactive material and standards for compensation regarding damage from nuclear power.

2.2 Promotion of Utilisation of Nuclear Energy and Safety Regulation Under the Same Organisation

Prior to the accident at the Fukushima Daiichi Nuclear Power Plant, the Nuclear and Industrial Safety Agency’s (NISA) main mandate was overseeing safety regulations for nuclear power (including postaccident responses) in a dual-check structure that comprised both primary regulations from administrative agents overseeing plant operators and an additional check on those primary regulations. The former regulations were undertaken by NISA and the latter by the Nuclear Safety Commission (NSC).

In 1999, the Japan Nuclear Fuel Conversion Company (JCO) criticality accident occurred at a facility in the village of Tokai, which in 2001 caused the Ministry of Economy, Trade and Industry’s (METI) Agency for Natural Resources and Energy (ANRE) to lose oversight of nuclear safety regulations. ANRE was an agency for promoting rather than regulating nuclear energy. Nuclear safety regulations were then placed under the jurisdiction of NISA. NISA was entrusted by the METI minister to regulate nuclear reactor facilities, implement regulatory affairs and make decisions independent of ANRE. The goal of this reform was to separate regulation from promotion, although in actuality, NISA itself was a METI agency (legally speaking, it was a special organ belonging to ANRE, itself an external agency of METI).

The status and functions of NSC had been prescribed in the Atomic Energy Basic Act (Act No. 186 of 1955), which is the basic law for nuclear power safety regulations (Fig. 2.1). Under this act, further legislation was enacted regarding regulations for nuclear source materials, nuclear fuel materials, nuclear reactors

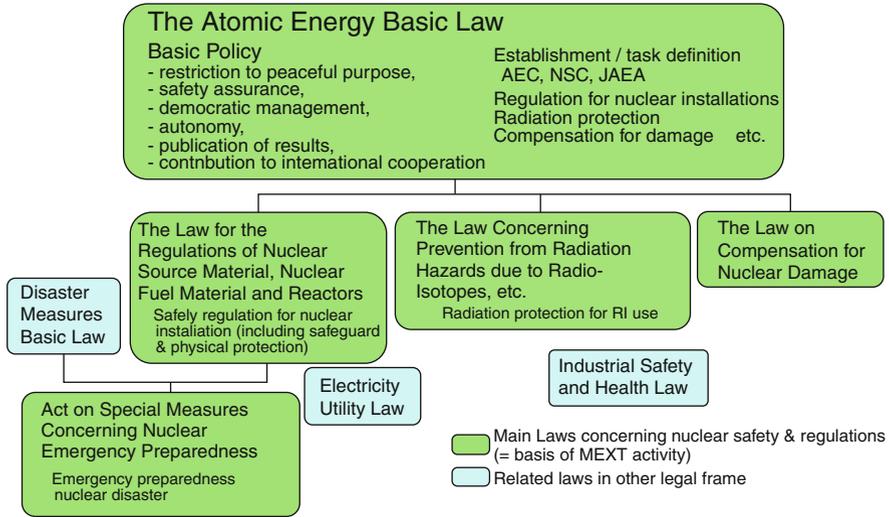


Fig. 2.1 Legal system for nuclear power safety regulations in Japan (Source: MEXT (http://www.mext.go.jp/english/science_technology/1303809.htm))

(the Nuclear Reactor Regulation Act, Act No. 166 of 1957) and for preventing radiation hazards due to radioisotopes (Radiation Hazards Prevention Act, Act No. 167 of 1957). Procedures covering everything from the construction to operation of nuclear power plants were set forth in the Electricity Utilities Business Act (Act No. 170 of 1964). NSC was established under the Cabinet Office according to Article 4 of the Atomic Energy Basic Act in a manner similar to the Atomic Energy Commission (AEC), whose mandate is executing policies for nuclear power research, development and use. Article 5, paragraph 2 of the same act states that ‘the Nuclear Safety Commission shall plan, deliberate on and determine matters related to the safety of nuclear power from among the matters related to the research, development and use.’

After the radiation leakage that occurred in 1974 aboard the nuclear-powered ship *Mutsu*, criticism grew over the fact that the AEC, an organisation that promotes nuclear power, had jurisdiction over safety regulations. In October 1978, the NSC split from the AEC and was established as a new agency. With the JCO accident and TEPCO’s damage cover-up and data falsification that were uncovered in 2002, the Nuclear Reactor Regulation Act was revised, and NSC’s functions and disaster countermeasures were strengthened.

Even prior to the Fukushima accident, the independence of these organisations and agencies had been an issue. NISA was situated within METI, which promotes nuclear energy, thus inhibiting NISA from providing sufficient regulation, not to mention the fact that it was sometimes even charged with promoting nuclear energy. The role of the NSC, which was to monitor NISA regulations, was beginning to become a mere façade [1]. Article 8 of the Convention on Nuclear Safety (ratified by Japan in 1995) demands the effective separation of duties between

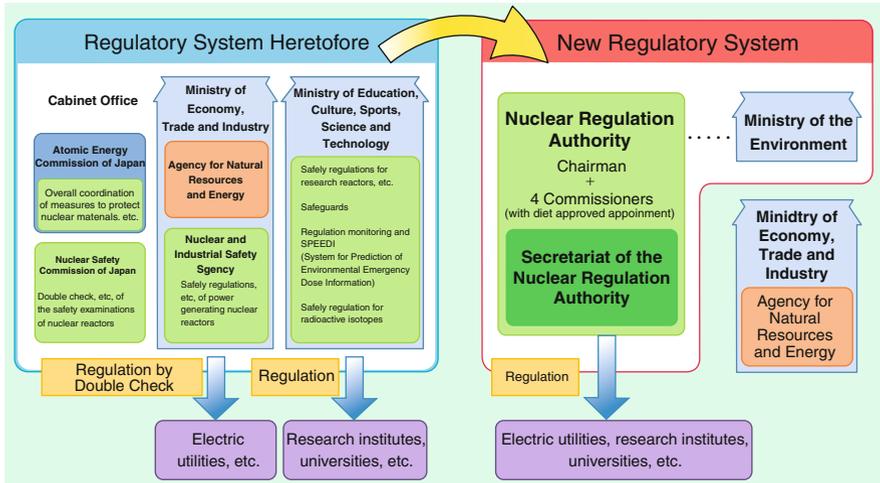


Fig. 2.2 Reform of regulatory agencies for nuclear power safety (Source: NRC (<http://www.nsr.go.jp/data/000067218.pdf>))

agencies promoting nuclear power use and regulatory agencies. In addition, the International Atomic Energy Agency's Fundamental Safety Principles (1996) also demand the independence of regulatory agencies. Moreover, 'The Efforts towards Ensuring the Safety of Nuclear Power Plants in the Future' compiled by Fukushima Prefecture in June 2005 points out that 'NISA should be separated from METI and its promotion of nuclear power generation' in order to establish a more objective structure and gain the trust of citizens and regions [2].

In October 2012, after the Fukushima accident, the Nuclear Regulatory Commission (NRC) was created as an external agency of the Ministry of the Environment to do away with the negative effects of vertically siloed administrative agencies dealing with nuclear power use and to resolve issues stemming from one organisation being responsible for both nuclear power promotion and regulation (Fig. 2.2). In addition to the work done by the NSC and NISA, the NRC now has jurisdiction over nuclear safety regulations of the Ministry of Education, Culture, Sports, Science and Technology and the Ministry of Land, Infrastructure and Transport as well as having jurisdiction over measures that guarantee nuclear non-proliferation.

2.3 Evacuation Plans That Did Not Plan for Severe Accidents

When nuclear power plants were first built in Japan, nuclear emergency responses were based upon the Basic Act on Disaster Control Measures (Act No. 223 of 1961), with 'large emissions of radioactive materials' defined as one type of disaster

falling under this Act by government decree. The disaster prevention structure was created on the basis of the Basic Disaster Management Plan set forth by the Central Disaster Management Council and the 'Disaster Prevention Measures for Nuclear Power Plants and Surrounding Areas', which was a set of disaster response guidelines created by the NSC.

However, the JCO accident in 1999 was serious enough to require evacuation and indoor shelter of residents, which was a first for Japan, and it brought to light the inadequacies of the disaster prevention structure in place at the time. The Act on Special Measures Concerning Nuclear Emergency Preparedness (Act No. 156 of 1999) was enacted after that accident in 1999 as a special provision of the Basic Act on Disaster Control Measures and the Nuclear Reactor Regulation Act [3]. This act clarifies the standards for notifications from plant operators and the declarations of states of emergency by the Prime Minister to ensure rapid initial responses. During nuclear disasters, there exists a possibility that damage unperceivable by the senses might occur; therefore, the act sets forth the role and responsibility of the national government, strengthens partnerships between the national government and local governments and clarifies the responsibilities of plant operators. Article 13 of the act stipulates coordinated disaster prevention drills between the national government, local governments and related plant operators on the basis of the plans set forth by the national government. A disaster response guideline established by the NSC has traditionally only targeted large-scale facilities such as nuclear power plants. This has been revised with a section on 'disaster response for nuclear power facility' that includes fuel-processing operations.

However, the preaccident disaster response guideline has been criticised for not incorporating results from the analysis of the Chernobyl accident [4]. The guideline has set an emergency planning zone (EPZ) of 8 and 10 km from nuclear power plants where disaster responses are focused. This distance was decided upon because 'making a larger EPZ would only have a negligible impact given a drastic reduction in the impact of radiated materials and radiation from nuclear facilities the farther one gets from the source of emissions.' In setting the size of the EPZ, 'even technologically impossible situations were supposed, and an ample distance from nuclear facilities was set.' It was confirmed that outside this perimeter, there would be no need to take shelter indoors or to set up protective measures for evacuees. Relationships with prior accidents were also considered in creating the guidelines [5].

Originally, there were no disaster response plans in Fukushima Prefecture for nuclear disasters. After the Three Mile Island (TMI) accident in 1979, the Prefecture created its first disaster prevention plans, which were later revised. The Prefecture also conducted disaster prevention drills. However, in 2008, the comprehensive nuclear energy disaster prevention drill sponsored by the national government based on Article 13 of the Special Measures Act set the evacuation area to within only a 2-km radius from the nuclear plant and indoor shelter area to within 5 km over 3/16 of the wind compass (72° angle) downwind from the plant (Fig. 2.3).

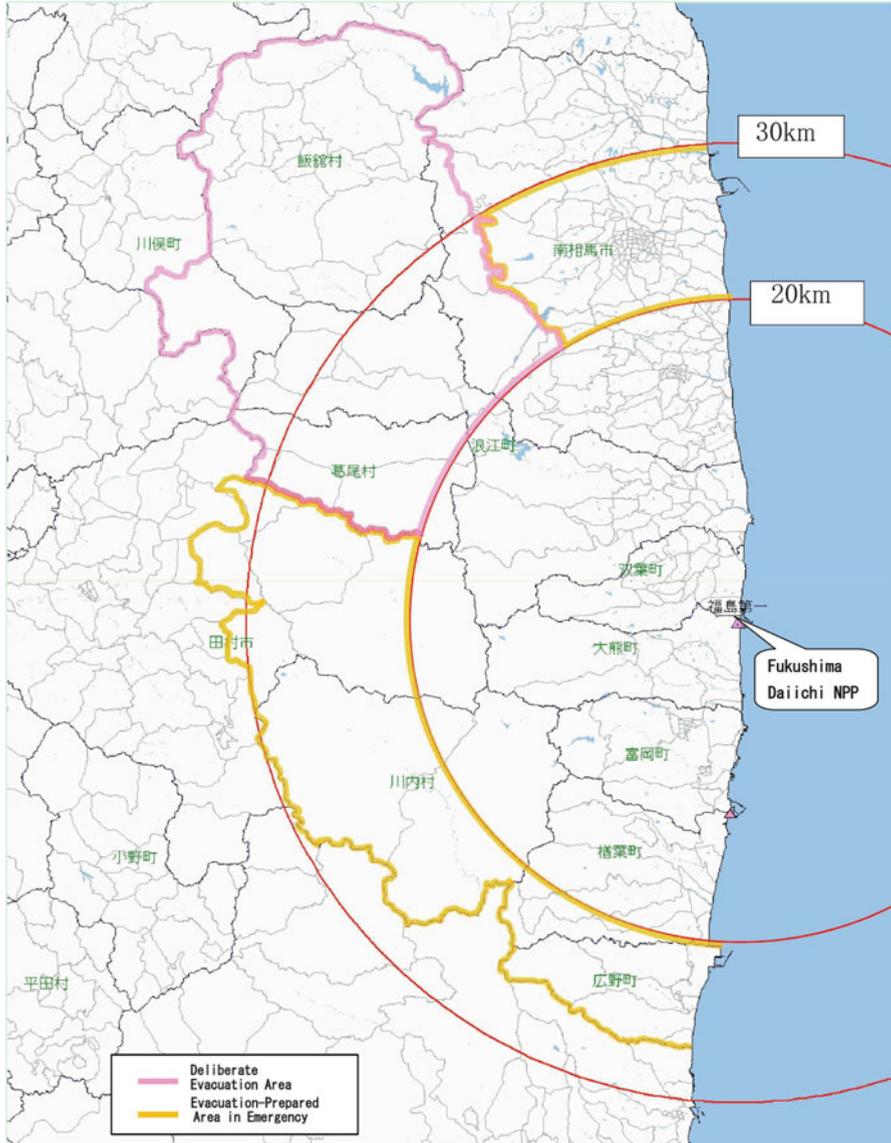


Fig. 2.4 Establishment of deliberate evacuation areas (Source: METI (<http://www.meti.go.jp/press/2011/04/20110422004/20110422004-5.pdf>))

Evacuations of medical institutions, homes for the elderly, welfare facilities, hospice care patients at home and the severely disabled were fraught with extreme difficulty [7–9]. Of the six hospitals designated as initial exposure medical institutions in times of a nuclear disaster, four had to evacuate all patients in their care. For

hospitals that had conducted disaster prevention drills under the assumption they would be receiving patients, these were completely unforeseen circumstances [10].

The NRC, which was newly created after the accident, decided upon the nuclear disaster response guidelines in October 2012, which they later revised multiple times. To prepare for a large-scale complex disaster and ensure the efficacy of protective measures for residents, evacuation standards were clarified. A Precautionary Action Zone (PAZ) was created to prepare precautionary protective measures. An Urgent Protective Zone (UPZ) was created to prepare urgent protective measures in case of broad evacuations: standards (Operational Intervention Level; OIL) were issued to determine whether such protective measures would be implemented. However, many issues still remain regarding the preparedness for persons having difficulties in evacuating by themselves and the execution of effective disaster prevention drills [11].

2.4 Postaccident Food Safety Standards

The NSC disaster response guideline prior to the Fukushima accident stated that ‘intake restrictions would be determined by referencing the results of emergency monitoring, as it takes time for contaminated food and drink to be consumed and there would normally be plenty of time’. Further, a guideline used by the disaster response headquarters to determine whether intake restrictions on food and drink were appropriate determined ‘indices for food and drink restrictions’. The NISA website under ‘Nuclear Disasters’ stated that ‘intake restrictions were not implemented’ during the TMI accident or the JCO accident [12].

On 17 March 2011, the Ministry of Health, Labour and Welfare (MHLW) set the provisional restrictions as an emergency response to ensure food safety on the ground of the indices for food and drink restrictions determined by NSC. Food with radiation levels above those restriction standards fell under Article 6, paragraph 2 of the Food Sanitation Act (Act No. 233 of 1947), in which case it was decided that the national government would provide direction on shipping restrictions to the governors of the prefectures involved. The government would then ‘deem food products conforming to the provisional restrictions as generally having no adverse impact on health’. However, the government found it difficult to gain the trust of citizens with regard to the restrictions. Even when Fukushima Prefecture measured radiation levels and confirmed the safety of seven types of vegetables cultivated in greenhouses as being below standard values and therefore safe for consumption, the market distanced itself from products labelled ‘made in Fukushima’, and prices of agricultural products from that area dropped to one-fourth of previous years [13].

These provisional restrictions were set as a response to the imminent emergency, without having gone through normal procedures. Thus, standard values for radiation levels based on the Food Sanitation Act were revised and took effect on 1 April 2012 (Fig. 2.5). The new values were set on the basis of international food standards from the Codex Alimentarius Commission. The new standards were set

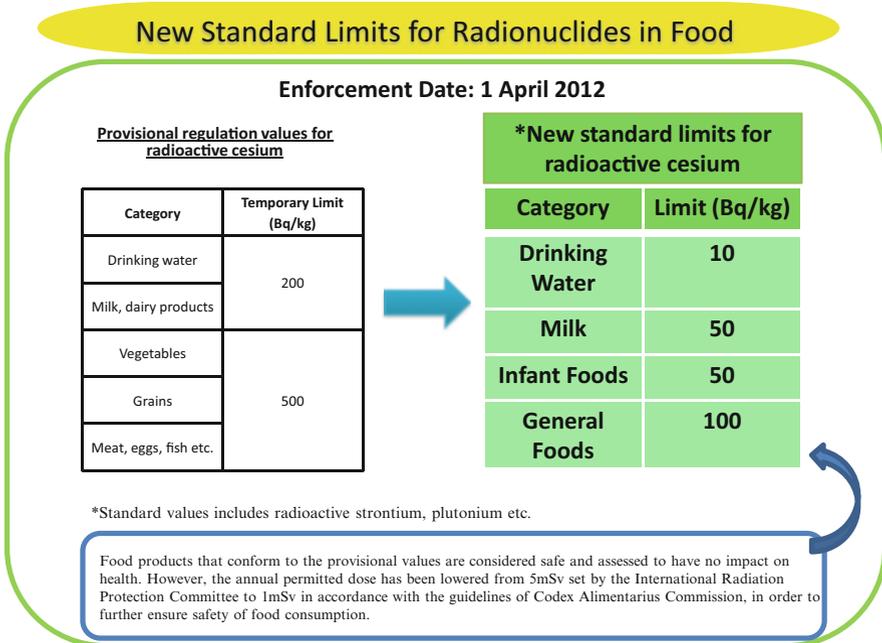


Fig. 2.5 New standards for radioactive substances in foods (Source: MHLW (http://www.sg.emb-japan.go.jp/japaninfo_newfoodstandard.pdf))

lower than the restrictions in other countries for acceptable levels of radiation, and producers worried whether they could meet the new standards. At the same time, there were also producers who expressed concern over the new standards, saying that even if they could meet the standards, consumers might think that ‘agricultural products might be only slightly below the standards. . .and we are worried about harmful rumours’ [14].

2.5 Environmental Laws and Regulations for Which Radioactive Materials Were Out of Scope

Prior to the Fukushima accident, no environmental laws or regulations dealt with radioactive substances. Article 13 of the Basic Environment Act prior to revision (the amendment was removed after the accident) (Act No. 91 of 1993) stated that ‘measures to prevent air pollution, water pollution and soil contamination caused by radioactive substances shall be implemented under the Atomic Energy Basic Act and other related legislation’. Article 2 of the Waste Management and Public Cleansing Act (Act No. 137 of 1970) makes an exception for ‘radioactive substances and items contaminated by them’, and Article 23 of the Water Pollution

Control Act (Act No. 138 of 1970) likewise provides that the Act does not deal with radioactive substances. Article 52 of the Environmental Impact Assessment Act (Act No. 81 of 1997) states that the Act is not to be applied to ‘air pollution, water pollution and soil contamination caused by radioactive substances’.

While radioactive substances were not covered under existing environmental laws and regulations, the Ministry of the Environment, which is responsible for waste management, was compelled to take on the jurisdiction for these substances. With no basis for setting standards for radioactive materials, the Ministry created its own rules. In May 2011, the first Disaster Waste Safety Review Meeting was held. The NSC presented its current thinking on ‘assuring safety for processing and disposal of waste that had been impacted by the Fukushima Daiichi Nuclear Power Plant accident’. This thinking was used as a benchmark for developing specific guidelines for processing radioactive waste. This Review Meeting compiled the ‘Guidelines for Processing Disaster Waste Thought to be Contaminated by Radioactive Substances’ in June 2011, stating that waste would be incinerated or recycled as much as possible and that rather than burying waste when radioactive caesium concentration in the waste exceeded 8000 Bq/kg, the waste would be temporarily stored until the government could confirm the safety of its disposal.

These processing criteria were later reviewed by the Radiation Council and the NSC to become legal standards based on the Act on Special Measures for Dealing with Environment Pollution by Radioactive Materials, which will be described later. However, this Review Meeting was not initially made public, causing criticism that the processing criteria were looser than the clearance level (100 Bq/kg) that determines materials that do not need to be treated as radioactive waste among the waste materials generated in dismantling the nuclear reactor according to [15].

The Act on Special Measures for Dealing with Environment Pollution by Radioactive Materials discharged by the Nuclear Power Station accident associated with the Tohoku district – off the Pacific Ocean earthquake that occurred on March 11, 2011, was enacted in August 2011. The Act set forth measures that are to be established by the national government, local governments, TEPCO and others as well as setting forth measures to eliminate soil pollution caused by radioactive substances. It designated areas of marked environmental pollution as special decontamination zones in which the government would undertake decontamination. Other regions would be decontaminated by the prefectural governor and the heads of local municipalities directed by government ordinance. Materials of 100,000 Bq/kg or higher were to be stored in interim storage facilities in Fukushima Prefecture. The Act on Interim Storage and Japan Environmental Storage & Safety Corporation (Act No. 44 of 2003) was revised in November 2014 and specified that final disposal of waste stored in these interim storage facilities would be implemented outside of Fukushima Prefecture within 30 years.

Many in Fukushima Prefecture were opposed to facilities for incinerating or reducing the volume of waste contaminated by radioactive substances, and it was difficult to gain the trust of residents [16]. In addition, residents from the coastal areas of Fukushima Prefecture where interim storage facilities might be built showed concern that those areas might become final disposal sites [17].

2.6 Setting Compensation Standards Took Time

The Act on Compensation for Nuclear Damage (Act No. 147 of 1961) prescribes liabilities for damages incurred due to nuclear disasters. The act only stipulates the general liability of plant operators for damages in the event of a nuclear disaster. It does not set forth specific standards for that liability. In April 2011, after the Fukushima accident, a Dispute Reconciliation Committee for Nuclear Damage Compensation was created to mediate settlements between plant operators and victims per Article 18 of the Compensation Act. In August 2011, the Nuclear Damage Compensation Dispute Resolution Centre was created by the Dispute Reconciliation Committee to smoothly, speedily and fairly resolve disputes over liability claims by victims against plant operators.

On 28 April, the Committee set forth initial guidelines for damages related to evacuation orders from the government and then published a second set of guidelines on 31 May covering so-called damage caused by harmful rumours or mental damage caused by being forced to live as an evacuee. On 5 August, the Committee established interim guidelines that provided the overall scope of nuclear damage liability. Thereafter, initial supplementary guidelines regarding damages for voluntary evacuees were issued on 6 December, followed by a fourth set of supplementary guidelines on 26 December 2013. In addition, the Dispute Resolution Centre began accepting settlement petitions in September and decided upon 14 comprehensive standards that define issues common to many of the petitions. These steps demonstrated rough estimates of damage compensations for this nuclear accident.

Prior to the Fukushima accident, there had not been any debates over damage compensation for residents, so it required some time to set appropriate standards. This put a large economic burden on residents and caused a great deal of anxiety until they received compensation. On 24 March 2011, the day after shipping restrictions for cabbage were put in place, one farmer committed suicide [18]. Shipping restrictions were also imposed on raw milk, which forced the disposal of dairy cows. One dairy farmer took his own life on 10 June [19].

The Dispute Resolution Centre's comprehensive guidelines provided for compensation of actual costs of evacuation, temporary housing, etc. for voluntary evacuees not under any evacuation order. These guidelines were published on 14 February 2012 [20]. TEPCO received the second set of supplements to the interim guidelines of the Committee, and on 18 September 2014 announced that they would pay compensation for costs related to voluntary decontamination [21]. For those that opted against a voluntary evacuation or voluntary decontamination for economic reasons, these actions were all too late.

2.7 Conclusion

By not having a legal framework in place for the eventuality of a severe nuclear accident, authorities were unable to execute proper measures at the proper time, which in turn exacerbated postaccident chaos. From a legal perspective, for administrative authorities to take proper action based on the principle of law-based administration (which says that administration must be done by lawful authorities in the manner prescribed by law), there must be standards in place beforehand that are as detailed as possible. Setting aside arguments over what to do with nuclear power in the future, there are currently more than 50 nuclear reactors in Japan. Thus, for the time being, the Japanese must coexist with nuclear power. From the Fukushima experience, accident countermeasures that assume the occurrence of another such disaster must be created within the legal system.

There is a proverb in Japan: ‘preparedness removes worry’. While there may be a question of how far in advance of an event decisions can be made, putting in place countermeasures to ensure the safety of residents and minimise damage to residents and property is certainly an issue of great urgency.

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<http://www.springer.com/978-4-431-55698-5>

Mental Health and Social Issues Following a Nuclear
Accident

The Case of Fukushima

Shigemura, J.; Chhem, R.K. (Eds.)

2016, XXI, 130 p. 20 illus., Hardcover

ISBN: 978-4-431-55698-5