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Be Evacuated, This Is Not A Drill - Fukushima Nuclear Accident Left Nursing Home Empty

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Abstract

Coronavirus Disease’s (COVID-19) rampant rise has caused numerous challenges to the already strained health. It seems unbelievable to hear the rumor of aborted babies because of Fukushima Accident, but we must face the truth and confront rumors indifferent to the reality in radiation caused by nuclear accident to lift up the shadows behind atomic bomb mushroom cloud.

Introduction

In the Fukushima Nuclear Accident, mandatory evacuation was ordered to all the residents either young or elderly. It took only a couple of days to complete the evacuation and most of the Japanese are proud of the successful relocation of all the residents from the potentially dangerous area of within the 20km radius. The Japanese in nature tend to be obedient to the government order and this compulsory evacuation without individual liberty seemed to be accepted.

As we see in the timeline below [1-3] :

2011	
11 March, 19:03	The State announced a Nuclear Emergency Declaration
11 March, 20:50	Fukushima Prefecture ordered evacuation to the area of within 2 km radius from Fukushima Nuclear Power Plant
11 March, 21:23	State ordered evacuation to the area of within 3km radius
	State ordered the residents to stay home to the area of within 10km
12 March, 05:44	State announced Nuclear Emergency Declaration
12 March, 18:25	State ordered evacuation of residents within the 10km radius from Fukushima Nuclear Power Plant
14 March, 22:30	A nursing home for intensive-care residents and staff of 280 left isolated and could not be evacuated
15 March, 22:30	National Police Agency announced that all the residents within the evacuation area of 20km to the Fukushima plant had now been completed

The government of Japan had never had horrible nuclear disaster. Having no prior experience in nuclear disaster, they anticipated that a larger evacuation area must be a better precaution. It is apparent in the quick increase of evacuation radius from 2km to 20 km. The evacuation area is carefully decided with the exposure levels of 20mSv/year, which numbers are about 10 times higher than ordinary radiation level in Japan. The government officers were able to evacuate the elderlies who needed intensive care from the contaminated area. Whether the evacuation of elderlies is justified or not is the question to be discussed here. In the following chapters, I introduce the prejudice of harmful radiation and our misunderstanding of radiation to cause social tension in nuclear accident.

Where the need of evacuation envisaged

Mr. Yukio Edano, Chief Cabinet Secretary at the time of Fukushima Accident repeatedly use the phrase of “Not in a situation that needs immediate actions” before the hydrogen exposure at Fukushima Daiichi nuclear plant. The phrase is quite reasonable for those who are familiar with argument on detriment of low dose level of radiation or low dose rate to our body. According to Dr. Mueller’s Nobel Prize lecture dated 12 December, 1946, titled “The Production of Mutation”, radiation is taken to cause mutation even when the exposure is so trifle and small [4]. It is known as Linear No-Threshold (LNT) hypothesis, sometimes renamed as LNT model. Many radiation protection experts tried to convince safety authorities to cast aside LNT hypothesis/model with epidemic research or mutations caused by other factors than radiation alone. Unfortunately, it could not be gotten rid of. The media, however, showed contradictory action against the detriment caused by radiation. They emphasized the story of “radiation is harmful to our health even though the radiation level is so trifle”. They sensationalized how the radiation affects the residents living near the nuclear facilities. They pushed the government to announce compulsory evacuation as early as possible, asking repeatedly the need of evacuation to Chief Cabinet Secretary at each press conference. As the LNT hypothesis is commonly accepted in our society, no one dares to oppose the justification of a swift evacuation is better than nothing in any sense. Exposure levels of 20mSv/year referring to the International Commission on Radiological Protection (ICRP) standard [5] seems to be still high in comparison to the average exposure of natural environment in Japan to be 2.1mSv/year. Nevertheless, International Commission on Radiological Protection (ICRP) also expressed cancer risk increases slightly if radiation exposure exceeds 100 mSv/year, which suggests we should not stick to the rigid numbers of 20mSv/year but be flexible to accept radiation in the range of 20 to 100mSv/year [5].



Tragedy

Most of the nursing homes were taking care of socially vulnerable elderly who need intensive care in Fukushima. Compulsory evacuation was ordered in their area and the rescue team had to swiftly move them to the outskirts of town more than 20 km away from the nuclear power station. Although they wore protective clothing and masks, the rescue staff was also advised to stay in the area as short as possible and unintentionally with their own fear of contamination, they rushed to accomplish the evacuation procedure, proper care to the condition of the elderly at a minimum [6]. The details of evacuation in nursing homes were reported by Yurina Aikawa through intensive interviews with nursing home owners and staff [6]. The chaotic situation facing the nuclear disaster can be shared with them through her work and thus, we have got a lesson learned through the accident. Some nursing homes were located in the area of surface contaminated levels of less than 100,000 Bq/m², which was less than one hundredth of the highest levels of more than 3,000,000 Bq/m² [7]. Radiation levels of areas where some nursing homes were located would have been lower than levels required for evacuation. Ideally, wedge-shaped areas towards the downwind of the plant are the best for evacuation order [8]. Since practically such designation is hard, simple circles of a certain radius are used as evacuation areas. Thus, there was a possibility that the compulsory evacuation might be extended to the nursing homes in areas not necessarily on the danger of being contaminated. Normally, emergency action is first implemented referring to the contamination levels of ground surface [9]. Immediate assessment of contamination soon after the disaster would be one of the key issues to mitigate the chaos experienced at nursing homes in Fukushima.

In the case of TMI Nuclear Accident

Contrary to the Fukushima Accident, in the Three Mile Island (TMI) Nuclear Accident pregnant women and pre-school aged children were advised to leave the area within a five-mile radius of the Three Mile Island facility [8]. Through the development of the accident, Governor awaited the best timing of announcing evacuation, while the NRC local staff tried not to announce the evacuation without thorough consideration, since they believed the radiation level at the border of the nuclear power plant site is low enough and not a condition to warrant requesting emergency evacuation at all [8]. Their efforts of persuading Governor were fulfilled with the correction of evacuation order to advisory of leaving the area with limited target persons of pregnant women and pre-school aged children. This emphasizes the need of prudence in releasing evacuation in nuclear disaster.

Conclusion

Nuclear energy was born in war time for the purpose of killing people, the prejudiced awful fear against radiation is rooted under the beauty of mushroom cloud and cannot be removed out of our brain [10]. I believe the fear will not stand well over 100 years. President Emmanuel Macron of France announced that France will construct six new nuclear power reactors, considering building a further eight on his visit to GE Steam Power's manufacturing site at Belfort in eastern France [11]. Proper understanding of radiation effects on our health contributes to the revival of nuclear energy in our societies.

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