

Developing “Practical Radiological Culture” –A Proposal of “*Kizuna Square*” in Fukushima–

Japan Atomic Industrial Forum, Yuko Wada,
Seiichi Nakata and Takiko Fukumoto

Belarus was severely affected by the Chernobyl Nuclear Accident. A few years later, the country established local information centers as places where local experts could actually conduct dose measurements with children and other members of the community while also performing other activities aimed at cultivating a practical radiological culture. These centers play a practical role in people’s everyday lives. In Ukraine, an initiative has been introduced to provide psychological care.

Having conducted field studies to evaluate these activities, the Japan Atomic Industrial Forum (JAIF) concluded that similar initiatives led by “*kizuna squares*” (tentative name) might enable the municipalities and citizens of Fukushima to apply their radiological knowledge and feel safe enough to carry on their daily activities. The JAIF is proposing this idea while making sure that the squares can be autonomously operated according to the circumstances of each municipality and the particular needs of the community members. This commentary explains the intended purposes of *kizuna squares* and presents an initiative led by Mr. Sasaki, a teacher based in Koriyama, to provide a specific example.

I. Assistance Provided by the JAIF in Fukushima

The nuclear accident that occurred at the Fukushima Daiichi Nuclear Power Plant due to the 2011 Tohoku earthquake that struck on March 11 caused serious damage to local communities and wider society. The Japan Atomic Industrial Forum (JAIF) felt a keen sense of responsibility for having promoted nuclear power as part of the industrial world. Presenting a united front, the JAIF worked resolutely to provide aid to affected municipalities and community members with the aim of reconstructing Fukushima.

Representatives of the JAIF visited affected municipalities and evacuees from these areas to offer various forms of support that would meet their needs based on the outcome of a series of consultative meetings with municipal leaders and personnel in charge of disaster management and reconstruction efforts. Examples of this support include the provision of assistance to facilitate a better understanding of radiation, the establishment of venues that facilitate exchanges among municipalities, the collection of relief money and transfer of donations, and



Figure 1 An activity being conducted to promote a deeper understanding of radiation

the presentation of case studies from other countries.

In particular, to facilitate a better understanding of radiation, the JAIF is assisting in the organization of studies and consultation sessions with experts in an effort to respond to the need for more information about radiation and its impact, as was directly requested during discussions with municipality personnel and community members (**Figure 1**). The JAIF is taking extra care to hold discussions in small groups of people sitting in a circle. It compiles practical Q&A documents in relation to everyday life in the relevant area and shares them with other municipalities.

During these activities, a vague sense of unease with respect to radiation has emerged as a possible reason for the slow progress in the decontamination work and the return of evacuees. Some evacuees are beginning to return to their home communities, but it has become clear that the younger generations are still staying away and that the infrastructure required by returnees has not been adequately prepared. To advance the reconstruction of Fukushima, the JAIF deemed it necessary to learn from the experience gained in relation to past nuclear accidents.

II. Initiatives in Belarus and Ukraine

The JAIF identified the experience gained through the response to the Chernobyl Nuclear Accident and the subsequent reconstruction efforts as a useful point of reference for the reconstruction of Fukushima. In December 2011, a team from the JAIF visited Belarus and Ukraine to conduct studies mainly focused on the socio-economic reconstruction process, the provision of healthcare for community members and the mitigation of the psychological impact of the accident, and the pursuit of a deeper understanding of radiation.

The following activities were initiated by local communities to address their own needs or sponsored by international agencies.

1. Local Information Centers (LICs)

—An initiative in Belarus

The team visited Chachersk in the Gomel Region, one of the areas in Belarus that were most heavily affected by the Chernobyl accident. The aim of this visit was to collect



Figure 2 An LIC established in a room at Zaleski Academy

information on how community members acquire information on radiation and how this information is applied in their daily lives. In Belarus, local information centers (LICs) have been established at schools and cultural facilities so that children and community members can get together easily. Zaleski Academy, a school for first to eleventh graders, also has a room dedicated for use as an LIC (**Figure 2**).

LICs have been established in affected areas since the 1990s to allow local experts to conduct dose measurements on children and community members. These centers are also intended to facilitate other activities aimed at cultivating a practical radiological culture, which could be interpreted as a practical application of knowledge on radiation in people's everyday lives. Today, there are more than 50 LICs in Belarus.

At Zaleski Academy, four teachers have been assigned to operate its LIC, which is equipped with various detectors for measuring radiation in foods, space and so on, cooking equipment, a laptop, a printer, and radiation-related learning aids and materials.

The pupils bring food and soil there to measure the radiation doses, check how the dose levels change after the food has been dried or cooked, and learn how food should be cooked to reduce the doses. Theoretical and practical lessons on radiation are conducted three times a week. In addition to gaining this knowledge, pupils also learn how to limit the radiological impact on their health in their everyday lives by measuring and checking the doses for themselves in the LIC. Moreover, the pupils share what they learn about radiation with their parents and other community members so that the rest of society can gain a deeper understanding of radiation.

2. Socio-Psychological Rehabilitation Centers

—An initiative in Ukraine

The team visited a socio-psychological rehabilitation center located in Korosten in Zhytomyr Province, one of the areas in Ukraine that were most heavily affected by the Chernobyl Nuclear Accident. The aim of these rehabilitation centers is to alleviate psychological stress among affected community members, mainly by helping affected children to gain a more accurate understanding of radiation. There are five such rehabilitation centers located throughout the country. Each rehabilitation center is staffed with not only psychological experts, but also teachers or experts of social studies, art, and physical education so that they can assist in the provision of art therapies, health monitoring, proper guidance on lifestyles,



Figure 3 An extracurricular activity being conducted for pupils at a socio-psychological rehabilitation center

and vocational training.

During the visit, on the day before Chernobyl Accident Liquidators Memory Day, pupils offered silent prayers and drew pictures dedicated to that day (**Figure 3**).

The centers organize extracurricular activities aimed at providing psychological care for pupils and develop radiological education programs for the relevant schools. They organize individual counseling sessions and workshops to alleviate the psychological stress suffered by community members. Psychologists, doctors, and social workers conduct training at the centers.

The affected communities experience psychological pressure due to their exposure to radiological contamination. Further initiatives are deemed necessary to allow those affected to move beyond rehabilitation and confidently build up their communities for a brighter future.

III. A Proposal for the Establishment of *Kizuna* Squares

–An initiative by the JAIF

During visits by the JAIF to affected communities in Fukushima, people shared the distress and concerns that they harbored in terms of everyday life. Earlier field studies of the initiatives adopted in Belarus and Ukraine inspired the JAIF to consider the idea of establishing *kizuna* squares (tentative name), which are modeled after LICs and rehabilitation centers, in the hope that they might help the affected citizens of Fukushima to apply their radiological knowledge and feel safe enough to carry on their daily activities.

The intended *kizuna* squares would combine the roles played by LICs and rehabilitation centers to promote a practical radiological culture (i.e., the practical application of knowledge on radiation on people's everyday lives) and to alleviate psychological stress, respectively. The JAIF plans to provide municipality personnel and community members with the support necessary for them to operate these squares autonomously by picking useful options according to their own needs.

The objective of *kizuna* squares is to serve as venues that facilitate mutual communication among community members to alleviate the psychological effects associated with anxiety and stress while at the same time helping them to acquire an accurate understanding of radiation and thus promoting a practical radiological culture.

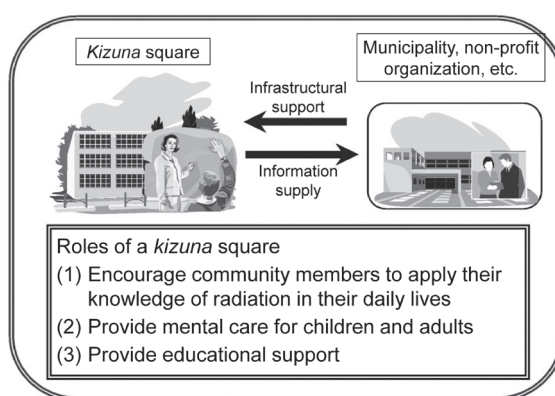


Figure 4 Concept behind kizuna squares

More specifically once they have been established in municipality offices, schools, town halls, and other gathering places, *kizuna* square could promote an understanding of radiation among wider society and serve as venues for communication (**Figure 4**).

The inputs that are required to establish a *kizuna* square include the following: radiation detectors, equipment for storing measurement data, personnel recruitment and training, a dedicated space, and funds.

The most vital element is personnel who will listen attentively to the concerns of local residents while providing them with accurate information on radiation. Our discussions with local residents revealed that they have lost trust in experts since the Fukushima Nuclear Accident occurred and are no longer sure who and what they can believe in. The presence of trustworthy personnel at each of the squares is vital to ensuring that local residents feel reassured and acquire accurate knowledge. Apt candidates for the position of *kizuna* square personnel would be people who are trusted in the local communities and close in distance to local people. Examples include (1) local officials (mainly for promoting a deeper understanding of radiation by conducting dose measurements on food); (2) teachers (mainly for conducting radiation-related educational activities and providing mental care for children); and (3) public health nurses (mainly for providing counseling support as well as medical and mental care).

A network should be forged among the *kizuna* square personnel, radiologists, sociologists, and other experts to give a boost to the activities performed by these personnel. Going forward, a network center will be needed to integrate the initiatives adopted by the respective *kizuna* squares.

It should be noted that “*kizuna* square” is only a tentative name. Each square should adopt a suitable name according to its local community and seek to serve as a familiar exchange venue extensively for local people.

IV. A Proposal for the Motomiya *Kizuna* Square

—An initiative developed by Mr. Kiyoshi Sasaki in Koriyama

As an example of a *kizuna* square developed by a teacher, this section describes radiation-related educational activities developed by Mr. Kiyoshi Sasaki, a teacher in Koriyama.

1. Radiation-Related Educational Activities

In the aftermath of the Fukushima Nuclear Accident, Mr. Sasaki felt that pupils urgently needed to gain an accurate understanding of radiation so that they would develop a rational wariness of it. Since September 2011, he has been conducting pupil-led radiological education at Meiken Junior High School in Koriyama. The aim of this is to enable pupils to measure radiation doses, analyze data, and make judgments for themselves as well as to work together to create initiatives.

Mr. Sasaki devised a plan for incorporating radiological education into the science curriculum taught at junior high schools by regarding 2011, when the Fukushima Nuclear Accident took place, as Year 1 of the radiological education program. Classes on radiation were conducted so that pupils could try taking dose measurements and creating their own models to acquire the skills necessary to measure doses, analyze data, and make scientific judgments. They were encouraged to engage in frank discussions based on scientific facts to cultivate their risk communication skills. After one lesson, a pupil took on a serious expression and said to Mr. Sasaki, “We will be facing the issue of radioactivity for a long time, and Fukushima must be reconstructed with our own hands.”

In 2012, Year 2 of the radiological education program, Mr. Sasaki worked with his fellow science educators from other junior high schools in Koriyama and elsewhere throughout Japan to promote radiological education. A model experiment on decontamination was conducted to investigate how soil can shield radiation. First, variations in the air dose rate over the next year were estimated. After that, soil samples with a slightly high dose were packed in plastic bags and buried at progressively greater depths. The measurements taken on the surface demonstrated that the radiation doses were reduced to a half and a quarter for the bags buried at depths of 4 cm and 8 cm, respectively. This hands-on experiment helped pupils understand that their school grounds were sufficiently safe as they are covered with an approximately 50-cm layer of soil with a low radiation dose (**Figure 5**). Greater understanding among pupils was also sought through the adoption of team teaching, which involves school nurses explaining how radiation affects the human body and how we can protect ourselves from it. Pupils were convinced by the school nurses’ explanation that the most important means of protecting ourselves from radiation is our immunity, which should be boosted by a balanced diet, adequate sleep and rest, and moderate exercise.

In April 2013, Mr. Sasaki was transferred to Koriyama Sixth Junior High School in Koriyama. In Year 3, he plans to continue this radiological education program with a focus on

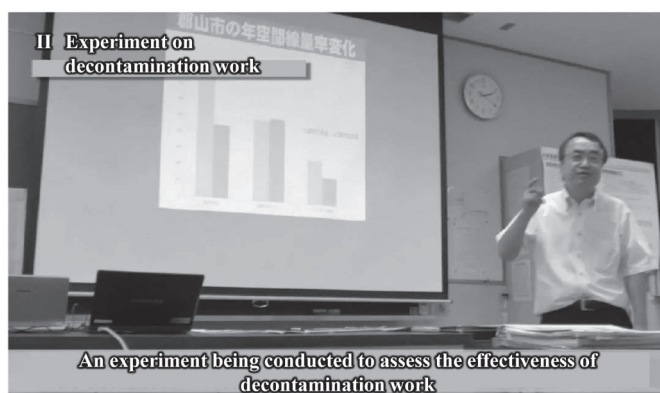


Figure 5 Mr. Sasaki conducting a lesson on radiation

autonomous learning.

2. An Initiative for Motomiya *Kizuna* Square

In July 2012, Mr. Sasaki visited Ukraine and Russia to seek further inspiration for his radiological education program in schools. During his visit, he became interested in the socio-psychological rehabilitation centers in Ukraine. Later, he supported the idea of the JAIF establishing *kizuna* squares. As a model project, he launched the idea of establishing Motomiya *Kizuna* Square to help children return to a more spiritually rich lifestyle. Motomiya is located about 60 km from the Fukushima Daiichi Nuclear Power Plant, so citizens are concerned and worried about the health effects of radiation. Local agriculture, fisheries, forestry, tourism, commerce, and other industries have been hit hard by harmful rumors.

Seven activities have been proposed for Motomiya *Kizuna* Square: (1) the provision of constant support by three resident personnel; (2) the collection of local information; (3) the running of mental care workshops; (4) the conducting of local awareness activities; (5) the promotion of radiological education; (6) the provision of integrated information; and (7) the promotion of study groups.

The personnel required include the following: (A) a radiation measurement officer (one resident staff member from the city office); (B) an intelligence and information officer (one resident staff member from the city office); (C) a mental care counselor (one resident staff member who is a local doctor or counselor); (D) radiation education facilitators (a few persons who are local teachers or NPO staff); and (E) community supporters (a few persons who are neighborhood association leaders or social workers). The idea is to hold monthly consultative meetings attended by all of the personnel involved in the *kizuna* square along with network conferences to be held as necessary for information exchanges and training (**Figure 6**).

In March 2013, Mr. Sasaki presented his idea of Motomiya *Kizuna* Square at a training session organized by the Adachi Liaison Sub-Council of the Municipal Education Board for Fukushima Prefecture. He plans to encourage Motomiya and the neighboring cities of Nihonmatsu and Otama (formerly known as Adachi district) to establish Motomiya *Kizuna* Square as a means of helping children to understand radiation and ensuring their sound mental development.

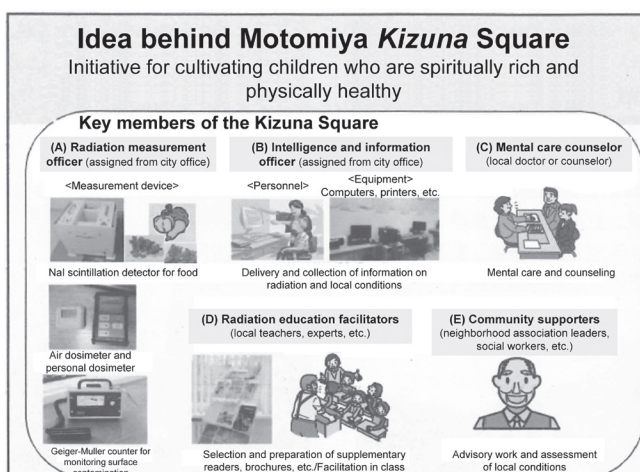


Figure 6 Idea behind Motomiya *Kizuna* Square

His initiative was initially driven by a desire to find out what was happening during the Fukushima Nuclear Accident. Later, his perceived need for pupils to acquire accurate knowledge on radiation so that they could make their own judgements led him to conduct radiation measurements, perform model decontamination experiments, and give lectures on the radiological health impact. He continues to work on the idea of Motomiya *Kizuna* Square because he is worried about the effects that prolonged evacuation will have on children. He believes that they need to be provided with mental care to avoid them falling into delinquency.

V. Conclusions

Many of the people affected by the Fukushima Nuclear Accident continue to lead difficult lives as evacuees or live in radioactively contaminated environments. Stakeholders in the nuclear sector have a responsibility to provide support to the people of Fukushima, especially given their earlier cooperation in the promotion of nuclear energy. The JAIF will continue to work closely with municipalities and local communities in an effort to further address their needs and restore their communities.

With trust in experts having declined, local initiatives need support. The JAIF will help municipalities and local communities autonomously operate their own *kizuna* squares to cultivate a practical radiological culture.

The specific roles that the JAIF would play in this initiative are as follows: (1) to forge partnerships with Mr. Sasaki and other advocates of the initiative; (2) to request support from the national government and municipalities; and (3) to build a network with various experts. The JAIF also intends to provide information to the wider society beyond Fukushima Prefecture so that they can gain a better understanding of the situation in Fukushima. To this end, further cooperation is being requested from members of Atomic Energy Society of Japan.

On a final note, we would like to express our deep gratitude to Mr. Sasaki, now teaching at Koriyama Sixth Junior High School in Koriyama, Fukushima, as well as many related educators, experts, and municipal stakeholders for their valuable insights.

General References

- 1) Japan Atomic Industrial Forum Report, Findings from Reconstruction Efforts in Belarus and Ukraine after the Chernobyl Accident [in Japanese], 2012.
- 2) Japan Atomic Industrial Forum Report, Activities of Information Centers in Belarus [in Japanese], 2012.
- 3) Kiyoshi Sasaki: Two Years of Pupil-Led Radiological Education [in Japanese], Radiological Education, Vol. 16, No. 1, 21–30, 2012.